"Decision-making in the fund management industry: empirical evidence from European fund managers, buy-side analysts and sell-side analysts"

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DEDICATION

This thesis is dedicated to:

My wife, Berna, for her understanding and support,

for believing in me and helping me

to turn my dreams into reality,

and above all for her love.

In loving memory of my father, Owen Kevin Kelly,

for inspiring my interest in the stock market.

"Whenever you buy a stock, thinking it's going to do well, someone else is selling it thinking it's going to do badly, and one of you is always wrong. The key to successful investing is to understand why you are the one who is going to be on the right side of the trade"

(Bruce Greenwald, The Great Minds of Investing, 2015)

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In the name of Jesus, I give all thanks, glory and honour to God the Almighty Father for His enduring mercy and benevolence to me and my entire family. I will be forever grateful to HIM for sustaining me throughout this process, giving me the wisdom and strength that I needed.

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And finally, I wish to thank the **339 investment management questionnaire respondents** and the brilliant and generous **10 fund manager interviewees** for so freely donating their wisdom and time. To you I extend my everlasting gratitude.

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ABSTRACT

This thesis responds to calls from prominent academics for research on the so-called investment management 'black box' of decision-making practices in capital markets.

Motivated by four overarching research objectives, the study examines the following key areas of investment management praxis: (1) the backgrounds, personal traits and investment management proclivities that tend to influence the decision-making practices of portfolio managers, buy-side analysts and sell-side analysts; (2) the utility of intrinsic and relative accounting valuation techniques for pricing equities; (3) the utility of single and multi-factor risk-adjusted finance models for pricing equities; and (4) the utility of sell-side research in buy-side equity decision-making.

Adopting a mixed-methods research philosophy, the study conducted in-depth semi-structured interviews with 10 high-ranking European fund managers, and collected 339 completed structured questionnaires from portfolio managers, buy-side analysts and sell-side analysts around the world, to build on the 'black box' perspectives provided by Brown et al. (2015), Bradshaw (2011), Ramnath et al. (2008), Brown (1993), Schipper (1991) and Arnold & Moizer (1984).

The main findings reveal that capital market participants are: (1) ambivalent to human capital. The interview findings indicate that portfolio managers view gender, experience, age, education and graduate skills to be important workplace attributes that tend to positively influence buy and sell-side investment management practices, but comparatively, for example, the questionnaire findings reveal huge gender disparity exists across buy and sell-side firms even though the evidence reveals females frequently outperform their male counterparts; (2) ambivalent to accounting theory. Investment managers use DCF and P/E techniques as the mainstay of their accounting-based valuation practices, but seldom take

advantage of convenient short-cut approaches to intrinsic valuation, such as RIV or AEG; (3) ambivalent to modern finance theory. Investment managers use CAPM a lot, but seldom use CCAPM, ICAPM, APT or other stylised single or multi-factor finance models to price equity stocks; and (4) ambivalent to sell-side equity research. Portfolio managers and buy-side investment managers believe it is currently unfit for purpose, citing sell-side bias and dysfunctional sell-side incentive schemes as the primary attributing factors. Some of the more notable manifestations of their ambivalence towards the sell-side include: (a) 'binning' sell-side analysts' reports with disquieting regularity; (b) distrustful of analysts' earnings forecasts, stock recommendations and price targets, yet expressing confidence in their periodic earnings updates and revisions; (c) incredulous, per se, towards sell-side 'industry knowledge', yet accepting of 'specialised' sell-side industry knowledge, (d) wary of Institutional Investor All-Star sell-side status rankings, yet believing innate ability, work experience, education, age and sometimes gender equip some sell-side analysts with a comparative, even star-like, advantage in analysing certain stocks.

The findings also identify a need to: (1) redefine theoretical explanations of 'value premiums' because apocryphal stories in the accounting and finance literature (Penman, 2011; and Fama and French, 1992/3) about 'value' stocks and 'growth' stocks can sometimes mislead[1] investors; (2) re-assess the value-relevance of theoretical market efficiency (Fama (1970) because the evidence indicates that capital markets are becoming more efficient as new technologies begin to permeate the investment management industry – which in turn has implications for the 'active' and 'passive' investment management paradigms; (3) recognise the emerging educational importance of big data reduction and computer algorithm skills, lest under-graduate and post-graduate education falls out of step with employers' fast changing needs; and (4) recognise that gender diversity is extremely

[1] Arguably, 'value' stocks are simply 'cheap' or 'bargain' stocks.

lacklustre across the investment management industry; and (5) re-assess the value-relevance of conference calls and private communications with company management because some investment managers distrust them, preferring to observe and judge management and/or their communications from a distance.

The findings are relevant to investors, fund managers, analysts and academic researchers.

Keywords: portfolio managers; buy-side analysts; sell-side analysts; black box; asset pricing; multi-factor finance models; fund manager characteristics; analyst characteristics; capital markets theory; accounting theory; intrinsic valuation; relative valuation; finance theory; factor-pricing; risk-adjusted finance models; equities; investment management; investment decision-making processes; big data; data reduction; structural equation modelling; exploratory factor analysis; confirmatory factor analysis; Nvivo; SPSS; SEM; CFA; EFA; mixed-methods; missing data, questionnaires; interviews; and LinkedIn.

Chapter 1

INTRODUCTION

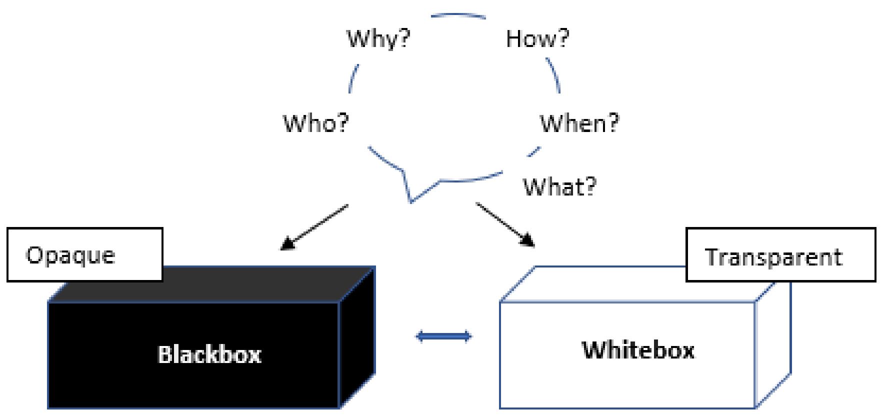
1.1 Introduction

This thesis responds to calls for research that aims to penetrate the so-called investment management 'black box', see for example Brown et al. (2015), Bradshaw (2011), Ramnath et al. (2008) and Arnold & Moizer (1984). The term 'black box' originated in Britain during World War II (Cauer et. al., 2000). Since then the term has established itself within the science, computing, engineering and financial disciplines of the literature, as well as the present-day vernacular. In essence, the term 'black box' describes a device, system or object which can be viewed in terms of its inputs and outputs without any knowledge of its internal workings.

A purely black-box system implies there is no a priori information available, whereas a purely white-box system implies all necessary information is available. Practically all systems lie somewhere between these two black-box/white-box extremes; so this concept is useful only as an intuitive guide for describing how much transparency surrounds buy/sell-side activity within the investment management industry as a whole.

Conceptually, the investment management 'black box' phenomenon may be depicted as shown in the following diagram:

5 Key Investment Management Black Box Processes



- *Who* makes investment management decisions?
- *Why* do they make the investment management decisions they make?
- *How* do investment managers make decisions?
- *When* do investment managers make decisions?
- *What* processes, systems, algorithms, procedures, models, techniques are used to make investment management decisions?

Some Implications for Investment Management Praxis

- *Who*: Investment Managers and/or Artificial Intelligence (AI): Robo-Advisors, Robo-Self-Driving Funds, Robo-traders?
- *Why*: Passive vs. Active Investment Paradigms?
- *How*: (Big) Data Reduction & Regression: Breiman Decision Trees, Structural Equation Modeling, Exploratory Factor Analysis?
- *When*: Instant Access to Data Sources, Real-Time Processing of Information: 'Semi-Strong' vs. Near 'Perfect' Market Efficiency?
- *What*: Accounting, Finance, AlphaSense, StarMine, SPSS, Nvivo?

Figure 1.5: Key Investment Management Black Box Processes
Source: Developed by the author (Kelly, 2019)

As depicted in Figure 1, the phenomenon of the 'black-box' within the investment management literature refers to all of the unknown decision-making processes that portfolio managers, buy-side analysts and sell-side analysts participate in when performing their various functions, i.e. the who, why, how, when, and what of investment management. For example, little is known about how sell-side analysts routinely derive firm/share valuations, provide earnings forecasts, make buy/sell recommendations, issue earnings revisions and disseminate analyst reports. Even less is known about how fund managers and buy-side analysts perform many of the same tasks, albeit when analysing companies they seldom engage in as much detail because, per capita, buy-side investment managers are usually required to cover more firms than their sell-side counterparts. In a supplemental manner, the normally closely-knit buy-side investment management teams often devote a good deal of their time and resources to managing or optimising the portfolios assigned to them, e.g. appraising multi-factor models and making asset allocation decisions.

Notably, it is the ostensibly hidden and composite nature of these multifarious buy/sell-side decision-making activities that constitute the investment management 'black box'. Added to this, buy-side firms are generally more secretive about their activities compared to their more publicly-minded sell-side counterparts. Thus, the extra privacy that surrounds buy-side firms tends to cast their activities in a comparatively more intriguing light from the standpoint of the 'black box' research literature.

Hence, the purpose of this research study is to investigate some of the hidden or less well-known buy/sell-side 'black box' phenomena in anticipation of having something worthwhile to contribute to the extant accounting, finance and investment management research literature on completion.

The remainder of the chapter provides an overview of the thesis and outlines its structure. First, the motivations for undertaking the research are explained in Section 1.2. Second, a number of specific research gaps are identified in Section 1.3. Third, a statement of the research aims, objectives and questions is presented in Section 1.4. Fourth, the research philosophy, methodology and methods are described Section 1.5. Fifth, the significance of the research and key contributions to theory and practice are outlined in Section 1.6. Sixth, the chapter concludes with a brief description of the thesis structure in Section 1.7.

1.2 Motivation for the Research

The motivation for undertaking this research study was to extend the academic literature as it relates to the appraisal methods used by European investment managers and analysts.

From an a priori perspective the mysteries surrounding the investment management 'black box' are not a new phenomenon, seemingly dating back to Arnold and Moizer's (1984) seminal paper on the behaviour of UK fund managers, buy-side and sell-side analysts. Recognising that market participants lacked knowledge and understanding of how investment managers used alternative information systems to determine security prices they advocated that future researchers should expend more effort unmasking the so-called black box of market information processing. In this light their study outcomes provided a broad description of the procedures UK fund managers and analysts employ to appraise ordinary shares. Their research efforts concluded with an appeal to researchers in this area to be open to alternative methodologies of data collection and analysis if the black box of investment management decision-making processes was to be meaningfully unravelled in the future. Afterwards Schipper (1991), Brown (1993), Zmijewski (1993) and others issued similar calls. Subsequently, when Ramnath et al. (2008) reviewed 250 published sell-side financial analyst papers they concluded that the literature had made some progress in this regard; essentially shifting its focus away from the largely defunct research habit of examining the statistical properties of analysts' earnings forecasts, in favour of more useful research agendas that seek to explain the valuation metrics and hitherto unknown decision-making processes that tend to precede the dissemination of sell-side analyst outputs. However, whilst acknowledging the progress that has been made in some of the areas that Schipper (1991), Zmijewski (1993) and Brown (1993) had specifically identified, their review concluded that much of the analysts' decision-making processes still remained hidden inside a 'black box'.

Since then the issue of the investment management black box has continued to grow in significance, due in part to the deepening realisation amongst academics (for example Bradshaw, 2011) that what constitutes the decision-making processes by which fund managers and analysts evaluate investments remains unknown. What's more, most of the research literature that does exist tends to pertain to sell-side financial analysts and is inclined to relate to how they derive their various outputs, e.g. stock recommendations, earnings and price forecasts, forecast revisions, target prices and/or analyst commentaries. Adding to the problem, this literature often appears nebulous and contradictory. This may be because, as alluded to in Fridson (2014), brokerage houses tend not to think of research as a service that is bought and sold within the market-place for sell-side equity research (i.e. the marketplace for trading in security analysis). Instead, it tends to be viewed rather more ambitiously as a means to sell securities. Additionally, Groysberg and Healy (2013) assert that the marketplace for sell-side research is an industry that remains bedevilled by colossal conflicts of interest; which can occur when analysts define their mission as 'beating the benchmark' and letting the short-run economics of the investment management business dominate the long-term values of the profession, or when sell-side analysts issue only favourable recommendations on their brokerage firms' investment banking clients.

Unsurprisingly, the ensuing literature continues to call upon researchers to move beyond the aforementioned, largely defunct, research activities that examine the time-series properties of earnings forecasts and instead embrace more useful research agendas that seek to examine the broader reality and context within which fund managers and analysts make their investment decisions. To illustrate, Litterman and Sullivan (2012) make a more general call for research papers to include in future editions of the 'Financial Analyst Journal' (FAJ) that will better serve investors' understanding of investment portfolios, the capital markets and the workings of the analyst profession generally. They assert that any research that serves to capture the very best practical investment industry insights has the potential to constitute a valuable contribution to the literature. Related studies include Abhayawansa et al. (2015), Brown et al. (2015), Clatworthy and Lee (2014), Fridson (2014), Rees et al. (2014a), Groysberg and Healy (2013), Litterman and Sullivan (2012), Ellis (2011), Bradshaw (2011), Loh and Stulz (2009), Leone and Wu (2007), Kothari (2001), Zmijewski (1993), Brown (1993), Stickel (1992) and Schipper (1991). Some of this research is described further in Chapter 2: Financial Analysts in Action.

Thus, motivated by the aforementioned calls from prominent academics, plus the desire to extend the research literature related to the phenomenon of the investment management 'black-box', this study conducts its research inquiry along three related fronts: First and foremost, it investigates the utility of accounting and finance theory as it relates to investment management decision-making. However, supplemental to prior research (Bradshaw, 2011; Ramnath et al., 2008; Brown, 1993; Zmijewski, 1993; Schipper, 1991; and Arnold and Moizer, 1984), this study not only investigates the comparative roles played by intrinsic accounting methods of valuation and also heuristics, but extends the inquiry to include the roles played by single and multi-factor finance models in asset pricing (valuation). Secondly, the study considers the influence that personal investment manager traits, background and investment related proclivities exert on investment management decision-making. Thirdly, the study looks at the wider role played by sell-side analysts in the capital markets.

1.3 Research Gaps

The extant fund manager and financial analyst research literature has increased substantially in the last four decades, some notable examples of which include Abhayawansa and Guthrie (2016), Abhayawansa et al. (2015), Brown et al. (2015), Cascino et al. (2014), Fridson (2014), Groysberg and Healy (2013), Ellis (2011), Gassen and Schwedler (2010), Bradshaw (2011, 2009), Schreiner (2011), Espinosa et al. (2009), Imam et al. (2008), Ramnath et al. (2008), Vanstraelen et al. (2008), Campbell and Slack (2008), Clatworthy and Jones (2008), AAR Ramírez and García Pérez de Lema (2006), Frankel et al. (2006), Cowen et al. (2006), Glaum and Friedrich (2006), Ernst et al. (2005), Asquith et al. (2004), Dimakakos et al. (2004), Zuckerman (2004), Hong and Kubik (2003), Mikhail et al. (2003), Kothari (2001), Hong et al. (2000), Marton (1998), Olbert (1994), Brown (1993), Zmijewski (1993),Vergoossen (1993), Pike et al. (1993), Schipper (1991) and Arnold & Moizer (1984). However, surprisingly little of this research evidence relates to the appraisal methods used by European investment managers and analysts. Nonetheless, some notable exceptions include: Cascino et al. (2014), Espinosa et al. (2009) and Vanstraelen et al. (2008) for Europe; Imam et al. (2008), Campbell and Slack (2008), Clatworthy and Jones (2008) and Arnold & Moizer (1984) for the U.K.; Gassen and Schwedler (2010), Glaum and Friedrich (2006), Ernst et al. (2005) and Marton (1998) for Germany; Vergoossen (1993) for the Netherlands; AAR Ramírez and García Pérez de Lema (2006) for Spain; Olbert (1994) for Sweden; and Pike et al. (1993) for Germany and the U.K. Even so, as Cascino et al. (2014, p.9) assert: “much of the survey evidence in this field is now dated, but there is significant consistency across studies”.

In light of the review of the related literature several research gaps were identified, some of which are as follows:

- The emphasis in the research literature on market participants and anomalies affirms investment management performance is related to a number of key fund manager and analyst characteristics such as age, experience, employer, education, gender, investment management style, investment management genre, equity investment typology (value stocks, growth stocks and momentum stocks, index funds and ETFs), industry typology plus a range of motivational factors known to influence investment behaviour. However, this literature predominantly focuses on sell-side investment analysts; seldom examining the same traits and propensities from the perspectives of portfolio managers and buy-side investment analysts. Consequently, this study aims to address these gaps in the literature.

- The emphasis in the accounting literature predominantly focuses on fundamental analysis, e.g.: value creation and/or value capture. With the exception of DCF methods, analysts seemingly prefer accounting multiples over intrinsic accounting methods of investment appraisal. However, relatively few empirical studies have investigated the utility of some of the more recent innovations in the accounting theory literature, for example: the role played by Residual Income Valuation (RIV) or Abnormal Earnings Growth (AEG) Models in either buy or sell-sell-side equity research praxis. Notably, Brief (2007, p.429) calls for further research on these models; remarking: "Clearly, these results need further study."

- The emphasis in the modern finance literature predominantly centres on risk and return phenomena, e.g.: Capital Asset Pricing Models (CAPM), Value Premiums and Momentum Factors. Nonetheless, with the exception of CAPM, surprisingly few studies have investigated whether some of the finance literature's more well-known neo-classical asset pricing models are actually used in practice. For example, we do not know whether the Arbitrage Pricing Model (APM), the Inter-temporal Capital Asset Pricing Model (ICAPM), and/or the Consumption Capital Asset Pricing Model (CCAPM) are used widely in practice, or hardly at all.

- The modern neo-classical finance literature, not the behavioural finance literature, would have us believe that capital markets are efficient. But most funds are 'active', not 'passive', so that doesn't make sense. Yet relatively few academic studies have investigated what motivates portfolio managers, buy-side investment managers and sell-side analysts to make the investment choices they evidently do. For example, we do not know whether the personal backgrounds, personal attributes and private attitudes of the key players significantly influence their behaviour.

- As noted above, the current capital markets research literature tends to focus on fundamental accounting techniques over the neo-classical techniques of modern finance. However, limited studies have looked at how elements from both of these academic paradigms can be merged to enhance 'value' creation on the one hand (a core pillar of the accounting literature) and 'risk and return' performance on the other (core pillars of the modern finance literature). This is an example of 'paradigm polarity', which we've noticed is a common phenomenon that can be linked to several research 'gaps' in the extant accounting and finance literature. For example, we found very few studies have investigated the out-performance possibilities known to arise when 'Value meets Momentum' (Asness et al. 2013; Leivo, 2012; Bird & Casavecchia, 2007; and Asness, 1997).

- The review of the literature affirms that buy and sell-side investment managers often differ in the way they use accounting and finance techniques to appraise companies. This gives rise to numerous conflicts of interest and results in all kinds of dysfunctional buy/sell-side investment management practices. For example, the research findings reveal that fund managers 'bin' Analysts Reports with disquieting regularity, yet we found no studies that had investigated this alarming practice. Furthermore, the research findings reveal that sell-side earnings forecasts and stock recommendations are routinely ignored by buy-side investors and analysts. This 'black box' practice is also disturbing, yet surprisingly few studies (if any) have investigated this behaviour or its consequences for the wider investment management industry.

- Currently, transformative technological change is sweeping across the investment management industry; examples of which are manifest in the growing use of AI, machine learning, big data and computer algorithms. The collective effect of these innovations on the decision-making behaviour of fund managers and financial analysts is already evident in practice. Some examples of which include: computer-generated Analyst Reports, auto-reading and analysis of Annual Reports, automatic portfolio optimisation and allocation decision-making, self-driving funds (zero human input), automatic stock market trading and fusion (automation) of many hitherto investment management functions that until recently were partitioned according to the job specifications of portfolio managers, buy-side investment managers and sell-side financial analysts. Nonetheless, even though these events are currently transforming investment management praxis - and by implication rendering much of the investment management literature obsolete - few studies have investigated these phenomena or their consequences for the wider investment management industry.

In conclusion, this research study seeks to investigate these related 'black box' phenomena with a view to both closing known research gaps and enhancing our understanding of how investment managers process the information they need to make investment management decisions. Synchronously, the research findings might inspire researchers to consider more useful research agendas in the future. And notably, this is exactly what top academics in this field have been calling for since the seminal days of Arnold and Moizer (1984).

1.4 Research Aims, Objectives and Questions

Invoking the language of Brown et al. (2015), Bradshaw (2011, 2009), Ramnath et al. (2008) and Arnold & Moizer (1984), this research study aims to penetrate the 'black box' of investment management decision-making more judiciously than previous empirical research study has done to-date.

Breaking down the main research goal involves the formulation of four ancillary research objectives, as follows:

1. to investigate if the backgrounds, personal characteristics and proclivities of fund managers, buy-side investment managers and sell-side financial analysts tend to bias their investment decision-making behaviour. Specifically we investigate whether the following attributes are statistically significant (or non-significant) influences on their investment management behaviour: type of employer, job title, age, years of work experience, gender, education (undergraduate and post-graduate course of study), 'school ties', professional training, industry expertise, friends, peer groups and job description.
2. to investigate if accounting valuation theory and modern finance theory together with additional contextually relevant factors [e.g. industry knowledge, institutional analyst ranking, private communications with management] tend to aid equity investment decision-making.
3. To investigate the nature and size of the lacunae that separate accounting valuation theory and modern finance theory from equity investment decision-making praxis.

4. to investigate the role and utility of sell-side equity research in buy-side equity investment decision-making.

These overarching research aims are transposed into three thus far unanswered research questions. To illustrate, the research literature indicates that investment management performance is related to a number of fund manager and analyst characteristics, for example Fang and Wang (2015) show that gender balance influences investment management practices that can lead to stronger returns. More recently, a Financial Times fund management research ('FTfm') article dated 22.03.2018 cited UK Diversity Project (2017) research that found a correlation between gender diversity and sales. Hence, we posit the following question:

> *Research Question 1 – What personal attributes tend to exert the greatest influence on the behaviour, attitudes and beliefs of fund managers and financial analysts in practice? For example, to what extent does gender, age, education, nationality, choice of employer, work experience, job title, CFA qualification, university degree, field of study, preferred industries, investment management genre and investment management style affect their decision-making behaviour?*

Research has also shown that investment management performance is related to a number of key accounting and finance investment decision-making appraisal and pricing techniques of both academic and empirical origin. Thirty-five years ago Arnold and Moizer (1984, p.195) famously observed: "Surprisingly little evidence exists about the appraisal methods used by UK investment analysts". Today, it is likewise surprising to find there is an even greater paucity of research of this type that relates to European fund managers and investment analysts. Moreover, we know from our review of the related accounting and finance literature that multifarious schisms stand between what theory says and what investment managers actually do in practice. In essence, we are referring here to the so-called 'black-box' phenomena that characterise most of the recent calls in the investment management literature. Furthermore, we note that to-date this debate has largely been conducted from an accounting rather than a modern finance perspective. Hence, we posit the following question:

Research Question 2 – What accounting valuation and finance factors tend to exert the greatest influence on the investment management decision-making behaviour of European fund managers and financial analysts in practice?

Finally, our review of the research literature also revealed that buy and sell-side investment managers often differ in the way they use accounting and finance techniques to appraise companies. As noted earlier, this gives rise to numerous conflicts of interest that frequently result in all kinds of dysfunctional buy/sell-side investment management decision-making behaviour; the most visibly disquieting example of which relates to the buy-sides' practice of 'binning' Analysts Reports. In a similar vein it was noted that sell-side analysts' earnings forecasts and stock recommendations were routinely being ignored by buy-side investors and financial analysts. These issues, amongst others, only add to the enigma surrounding the so-called investment management 'black box'. Hence, we posit the following question:

Research Question 3 – How useful is sell-side equity research?

1.5 Research Philosophy and Methodology

Inspired by Bryman (2006), a research strategy involving a mixture of both qualitative and quantitative research methodologies – a '*mixed-methods*' research approach – was used to examine how fund managers, buy-side analysts and sell-side financial analysts process the information available to them to make investment decisions.

1.5.1 Questionnaire Collection

The survey segment of the research study employed a questionnaire design that comprised 103 Likert-style categorical and ordinal questions. No interval or ratio style questions were used.

The inclusion criteria for the survey were: any investment professional who identified him/herself as a portfolio manager, buy-side analyst or sell-side analyst. The survey also attracted responses from academics and other investment management professionals, which were classified as 'other'.

In total 339 questionnaires were returned by respondents. All 339 responses were included in the sample used to conduct the descriptive statistical analysis. Part A of the survey comprised 15 socio-demographic questions. Parts B, C, D and E comprised an assortment of 17 multiple-choice accounting, finance and general investment questions. Sample size varied from question to question in line with the listwise and pairwise deletion procedures inherent in SPSS v.24. This approach to handling 'missing data' is justified on the basis that 'smoothing' of the data occurs when expectations, means, medians, modes and frequencies form the basis of the descriptive and inferential techniques used by the researcher, i.e. contingency tables, cross-tabulations, chi square tests, phi and Cramer's v tests. However, for reasons that are explained in Chapter 9, an altogether different missing data screening and imputation strategy' was adopted in order to prepare the sample for structural equation modelling (SEM).

1.5.2 Interview Collection

The interviews segment of the research was conducted during the months of October, November and December 2015. The inclusion criteria for the interviews were: any investment professional who identified him/herself as the Portfolio Manager, Chief

Investment Officer (CIO), Managaing Director or equivalent and whose daily decision-making encompassed the evaluation of ordinary shares.

In total, the final sample comprised a cross-section of ten participants from ten different investment management firms in nine different EU member states. Firm size and geographic location were diverse; some were large, medium or small-sized firms and they variously spanned Northern, Western, Eastern and Southern Europe. Although the sample of interviewees appears small, the firms were nonetheless sufficiently diverse in size and interest to suggest that a reasonable cross-section of investment appraisal techniques would be covered. Thus the mix of interviews provided a pool of data that was both rich in commentary and deeply insightful; in many ways richer than that provided by the questionnaire survey. Notably, some of the interviewees are profiled in "The Great Minds of Investing" (Leber, 2015). In light of the overarching importance attached to 'credibility', 'dependability' and 'believability' in qualitaive research studies - which pertains to the 'validity', 'reliability' and 'objectivity' criteria traditionally used in positivistic quantitative research – it was felt that this was a notable scholarly achievement, not least because being 'Great Minds of Investing' their opinions would enhance the soundness of the qualitative research findings, conclusions and recommendations (Adu, 2016; Morrow, 2008; Trochim, 2006; and Lincoln and Guba, 1985). Moreover, we expected their opinions would help to substantiate and otherwise inform our quantitative research findings, conclusions and recommendations.

1.5.3 Rationale for Adopting a Mixed-Methods Research Philosophy to Address the Study Aims and Answer the Research Questions Set

Philosophlically, the rationale for selecting a mixed-methods research strategy to address the study aims and answer the research questions is eloquently narrated in Sogunro (2002, p.7), as follows: "*the use of numbers and descriptions, which anchor both quantitative and qualitative research paradigms, are mutually complementary, and the strengths of both can produce a research synergy whose collective benefits are greater than that obtainable from either approach taken alone*".

Pragmatically, in light of the specific research aims and questions outlined earlier, a more useful portrayal of the merits of utilising a mixed-methods research approach is given in Arnold & Moizer (1984). They contend that although questionnaire responses provide information about the types of appraisal methods and sources of information that portfolio managers, buy-side analysts and sell-side analysts use, they generally are of less help in furthering our understanding of the cognitive processes that underpin buy-side and sell-side investment management decision-making. Therefore, for studies seeking to understand how particular types of information are used, they suggest that researchers consider using more appropriate research methods such as direct observation, interviews and/or laboratory experiments. These options can be used in conjunction with questionnaires as appropriate, as a way to both clarify and substantiate certain aspects of the decision-making processes under investigation. In a similar vein, Guba and Lincoln (1994, p.106) point out that "Precise quantitative approaches that focus on selected subsets of variables necessarily 'strip' from consideration, through appropriate controls or randomization, other variables that exist in the context that might, if allowed to exert their effects, greatly alter findings." Likewise, Arnold & Moizer (1984, p.207) state "where there are numerous differences of detail between the precise procedures used by analysts, as appears to be the case for UK investment analysts, a questionnaire survey is unlikely to be a satisfactory means of capturing these differences; a questionnaire which provided the necessary level of detail would be so long as to discourage probably all but the most committed respondents."

In the context of the current research, interviews were chosen alongside questionnaires because they offered the researcher the opportunity to identify and take account of contextual factors that potentially could uncover 'emic' or insider views on the phenomenon being studied. This contrasts with quantitative approaches, which tend to take an 'etic' or outsider perspective that may or may not capture useful findings pertaining to the individuals or organisations being investigated (Clatworthy, 2002; and Guba and Lincoln, 1994). Additionally, the semi-structured interview process has the advantage of affording the researcher the opportunity to explain the objectives of the research thoroughly to the interviewees and/or clarify any complex questions (Oppenheim, 1992). In turn, the interview participants usually feel spurred to respond to the question(s) posited to them by the researcher (Clatworthy, 2002; and Weetman et al., 1994). Hence, as discussed in detail in Chapter 9, the typical ‘missing data problems’ that nearly always accompany the collection of questionnaire data are seldom a problem post interview data collection. Moreover, in face-to-face interviews “the interviewer does have the opportunity to identify non-verbal clues which are present, for example, in the inflexion of the voice, facial expressions or the clothes that the interviewee is wearing, and these can be used to develop secondary questions” (Easterby-Smith et al., 1991, p.73). Overall, qualitative research approaches tend to provide researchers with a thorough understanding of the relevant issues, resulting in a richer, more complex picture (Marston, 1999a). Nevertheless, relative to other data collection methods, interviews can be expensive to administer given the time required to collect the data and then subsequently process and interpret it (Oppenheim, 1992; Seidman, 1991). Additionally, interview findings, although usually more detailed and comprehensive than questionnaire findings, are unlikely to be generalisable to the wider population of, in this instance, fund managers and analysts. This is one of the key limitations of conducting interview-based research in general.

In conclusion, questionnaire surveys alone are unlikely to elicit the kind of depth called for in the recent investment management literature (Brown et al., 2015; Bradshaw, 2011; Ramnath et al., 2008; Brown, 1993; Pike et al., 1993; Schipper, 1991; and Arnold & Moizer, 1984), nor fully address the research aims and questions specified by this researcher.

Hence, it was considered that a mixed-methods or multi-strategy research approach, in this instance incorporating structured questionnaires and semi-structured interviews, held out the most promise of delivering deep and meaningful insights related to the hidden phenomena of the investment management 'black-box'. Creswell & Creswell (2018, p.4) lend further credence to this argument; they assert that "The core assumption of this form of inquiry is that the integration of qualitative and quantitative data yields additional insight beyond the information provided by either the quantitative or qualitative data alone." Correspondingly, Bryman (2011) attests that triangulation is a much-lauded approach to validating mixed-methods research findings. Conspicuously, this mixed-methods research study oftentimes employed the principles of 'triangulation', cross-substantiation and cross-validation to help inform the data collection, processing and analysis stages of the research. Nevertheless, it was when verifying several qualitative and quantitative research findings that these techniques proved most useful to the researcher.

1.6 Significance of this Research: Key Contribution to Theory and Practice

Raising awareness of this study's research findings can potentially enhance the working of the capital markets. Capital market participants (academics, investors, portfolio managers, buy-side investment managers and sell-side analysts) serve each other's best interests when their decision-making behaviour reflects the best conventions of theory and practice. Thus the theoretical insights and empirical findings revealed in this study can potentially make a valuable contribution to the literature plus benefit the investment management profession generally.

The study lifts the lid on the so-called 'black box' of investment management praxis to reveal some key insights that shed light on the research gaps identified in Section 1.3 above. Synchronously these insights address the study's research questions, which are as follows: (1) whether the backgrounds, personal traits and investment management proclivities of portfolio managers, buy-side analysts and sell-side analysts tend to influence their decision-making practices; (2) the utility of intrinsic and relative accounting valuation techniques for pricing equites; (3) the utility of single and multi-factor risk-adjusted finance models for pricing equites; and (4) the utility of sell-side equity research in buy-side decision-making.

1.6.1 Theoretical Contributions

From a theoretical viewpoint, the study contributes to our understanding of how theory adds value-relevance to investment decision-making, and where it does not. To illustrate:

Referring to points #2 and #3: The findings identify a need to redefine theoretical explanations of 'value premiums' because apocryphal stories in the accounting and finance literature about 'value' stocks and 'growth' stocks may potentially mislead investors, see for example Penman (2011) and Fama and French (1992/3). Specifically, Penman (2011) uses different combinations of P/E and P/B ratios to argue that the so-called 'value premium' is an erroneously labelled concept that assigns greater risk to 'growth stocks', and not less risk as argued in Fama and French (1992, 1993).

The findings also identify a need to revisit theoretical explanations of market efficiency (Fama, 1970) with a view to re-assessing its value-relevance in light of the impact that new technologies are having on investment management practices. Specifically, the findings reveal that capital markets are becoming rapidly more efficient as new technologies begin to proliferate across the investment management industry – which in turn has implications for the 'active' and 'passive' investment management paradigms of the literature.

The findings also identify a need for more penetrating theoretical research on 'momentum' and 'value' phenomena in asset pricing. Specifically, the interview evidence indicates that innovative combinations of 'value' and 'momentum' stocks can generate risk-adjusted stock market returns in excess of the returns that can be achieved when using value, growth or momentum stocks alone. To illustrate, value and momentum factors are negatively correlated. That means, a 'value portfolio' will normally comprise value stocks with low momentum. In contrast, a 'momentum portfolio' will normally over-weight growth (expensive) stocks. Therefore, if a value investor invests according to value indicators, his/her portfolio will comprise low momentum stocks. But then, low momentum stocks are prone to under-valuation and high volatility. Thus, if an investor invests only in undervalued companies with a high or above average momentum, he/she may find they can exclude some of the negative downside risks inherent in purely value portfolios. Conversely, the same rules apply for momentum strategies. In essence, 'value – momentum' strategies are an under-researched area of the literature which this example illustrates could benefit from further research.

1.6.2 Practical Contributions

From a practical viewpoint, the study contributes to our understanding of how portfolio managers, buy-side investment managers and sell-side analysts conduct investment management decision-making. To illustrate:

Referring to points #1, 2 and 3: The accounting and neo-classical finance literature, not the behavioural finance literature, would have us believe that capital markets are efficient. But the evidence in this study reveals that most funds are 'active' not 'passive' funds, so that doesn't make sense. Yet relatively few academic studies have investigated this somewhat obvious empirical anomaly; at least not from the perspective of what motivates investment managers, especially active portfolio managers, to believe they can earn excess risk-adjusted returns on a consistent basis over the longer-term. In essence, this study's findings reveal that 'active' portfolio managers believe they can 'beat the market' (i.e. outperform passive investment strategies), but they don't believe everyone can. In almost all cases, their explanations have to do with the prowess of individual institutional firms plus their in-house buy-side investment management teams. In contrast to market efficiency arguments in the theoretical literature, they contend that their proven success rates are the result of 'skill', and not luck!

Relatedly, the study's findings identified a number statistically-significant associations in the data that linked a respondent's job title to their employer, age and experience. Thus by extension demonstrating that these personal characteristics tend to influence investment management performance. Afterall, it only stands to reason that a portfolio manager's 'skill' is a function of his/her composite experiences, age and employer. Furthermore, the study's findings also identified a number of non-statistically-significant associations in the data that linked a respondent's job title to their gender identity, type of education and type of university undergraduate/postgraduate course of study undertaken; albeit being statistically non-significant results they may have occurred by chance or were the result of sampling error. Nevertheless, these results matter because as the evidence indicates knowledge of an investment manager's employer, job title, age and experience can be used to improve firm/fund performance. To illustrate, the evidence reveals considerable gender imbalance exists on both the buy and sell sides of the asset management divide. This is significant, because as Fang and Wang (2015) show, gender differences influence investment management practices that can lead to stronger returns. Similarly, the 'UK Diversity Project'

(2017) highlighted the correlation between gender and sales. And if these results are to be believed, the vast majority of institutional firms may wish to ponder why they employ relatively so few females. But whether these findings are an indication of deliberate gender recruitment bias is a matter for further research. In the same vein, educators may feel persuaded by the findings to re-examine the content of their under/postgraduate courses with a view to appraising their likely usefulness to potential employers. Therefore, an awareness of the study's gender and education findings can potentially help investment managers to 'functionally' allocate staff more effectively by (say) setting personnel targets based on industry gender performance 'norms', or (say) on the basis of educationally-derived performance expectations. Finally, these findings tend to add weight to the 'active' investment management argument that what makes active investment management more worthwhile, compared to passive investing, are the personal characteristics, attributes and beliefs of the individual investment managers making the decisions.

Referring to point #2: the findings reveal that investment managers use DCF and P/E techniques as the mainstay of their accounting-based valuation practices, but seldom take advantage of convenient short-cut approaches to intrinsic valuation, such as the RIV or AEG equity valuation models. Overall, the results demonstrate that, except for DCF methods, investment managers prefer accounting multiples over intrinsic methods of valuation. As Gleason et al. (2013, p.112) suggest, "analysts employ heuristics presumably because they provide a ''fast and frugal''… mechanism for reducing the complex equity valuation task to a simpler judgmental operation". Similarly, Imam et al. (2008) also contend that multiples valuation models are favoured by analysts for their simplicity, intelligibility and short-term focus, and because they enable them to more easily communicate with their clients. In contrast, it is not so easy to explain the RIV findings. Firstly, because of Penman's (2005, p.367) claim that "…Residual income valuation (RIV) has become the centerpiece of accounting-based valuation…”. Secondly, because the survey findings do not mirror the study’s theoretical insights that demonstrate RIV models make it potentially easier for investors and financial analysts to use intrinsic equity valuation methods in practice. Therefore, given the current findings, Penman’s (2005) assertion seems to make no practical sense. Consequently, the RIV findings, for now at least, are something of an empirical conundrum that perhaps future researchers may feel motivated to investigate further. Nonetheless, these findings can make an important contribution to knowledge, because if the study manages to raise awareness of them, capital market participants may in turn feel prompted to re-evaluate the merits of alternative intrinsic applications in the workplace, especially RIV. And as Penman (2005, p.367) also points out: “It is of course imperative that a valuation model be consistent with valuation theory, but it is not sufficient. Valuation models are utilitarian – they serve to guide practice – so the choice between competing technologies ultimately comes down to how useful they are for the practical task of evaluating investments.”

Referring to point #3: the findings reveal investment managers use CAPM a lot, but seldom use the Consumption Capital Asset Pricing Model (CCAPM), the Inter-temporal Capital Asset Pricing Model (ICAPM), the Arbitrage Pricing Model (APM) or other stylised single or multi-factor finance models to price equity stocks, such as the Fama and French (1992/3) 3-factor model used to identify value and growth stocks plus the size effect. Few prior studies, if any, have investigated whether these acadmically well-known asset pricing models are actually used in practice, and by whom. Thus, the lack of pragmatic interest in these models may cause academe and future researchers to ponder whether the liteature is out of step with contemporary investment management reality.

Referring to points #2 and #3 combined: when choosing between accounting and finance theory, the survey findings reveal what is largely already known in the investment management literature, i.e. given the choice, investment managers prefer accounting techniques over the neo-classical techniques of modern finance when evaluating equity investments. Nevertheless, the study's fund managers intimated that the appraisal systems of the future will are likely to be complex factor-based composites of accounting, modern finance and behavioural finance techniques set within computerised decision-making frameworks that will be capable of processing unlimited numbers of factors and/or pieces of data, almost instantly – the implications for the investment management industry will be widespread, not least in terms of employment downsizing, retraining/upskilling, transformed sell-side service provision and investment appraisal approaches generally

Referring to point #4: the findings reveal investment managers are ambivalent to sell-side equity research in buy-side decision-making. Specifically, portfolio managers and buy-side analysts believe it is mostly unfit for purpose in its current state. They cite unreliable earnings forecasts, erroneous price targets, biased stock recommendations and questionable incentives schemes as motivating factors. However, they synchronously acknowledge that earnings forecast revisions and 'specialised' industry knowledge are the exception. They attribute the current poor state of sell-side equity research to the range of dysfunctional incentives and biases that have proliferated across the industry in recent years. Consequently, the research findings reveal that fund managers and buy-side analysts 'bin' sell-side Analyst Reports with disquieting regularity. Moreover, some of the frequency distribution results arising from the questionnaire findings highlight the existence of notable schisms between the buy and sell-side paradigms of the industry. Specifically, the evidence indicates that the sell-side are routinely using accounting and finance metrics that do not easily fit into buy-side decision-making processes. Left unchecked, being out-of-sync with one's customer base usually begets fatal implications! Finally, the majority of portfolio managers and buy-side analysts indicated they are ambivalent to Institutional Investor All-Star sell-side rankings, even though the related media and literature contend differently.

Referring to the technology related gaps in the literature noted in Section 1.3: As indicated, transformative technological change is currently sweeping through the investment management industry, examples of which are manifest in the growing use of AI, machine learning, data mining and computer algorithms; illustrations of which include AlphaSense, Thomson Reuters StarMine, Investars Light and Breiman's decision tree based classification and regression algorithm. The collective effect of these innovations on the decision-making behaviour of fund managers and financial analysts is already evident in practice. Some examples of which include: computer-generated Analyst Reports, auto-reading and analysis of Annual Reports, automatic portfolio optimisation and allocation decision-making, self-driving funds (zero human input), automatic stock market trading, and fusion (automation) of many hitherto investment management functions that until recently were partitioned according to the job specifications of portfolio managers, buy-side investment managers and sell-side financial analysts. Nonetheless, even though these events are currently transforming investment Management praxis - and by implication rendering much of the investment management literature obsolete - few studies have investigated these phenomena or their consequences for the wider investment management industry. In contrast, as illustrated in Figure 1, this study's interview findings have alluded to several changes that have either already taken place or are expected to be implemented shortly in the wake of new technologies entering the investment management space. The implications for portfolio managers, buy-side investment managers, and sell-side analysts are expected to be deep and widely felt. In essence, the era of robo-advisors, self-driving funds, big data reduction technologies and widespread computer automation is already here. Unless, active fund managers and investment analysts fully embrace these new technologies they will likely find it harder (effectively impossible) to find and exploit market inefficiencies in the future, i.e. generate alpha for their clients. Notably, this was one of the more explicit recommendations to emerge from Chapter 6 (fund manager interviews). In this light, it seems future researchers are facing an almost blank canvas of interesting research possibilities ahead. In a similar vein, academe ought to be concerned because the relevance of much of what is contained in the accounting and finance extant literature may potentially be called into question if the literature is allowed to pass beyond its perceived sell-by date into a state of technical obsolescence. Moreover, the interview evidence described in this thesis reveals that any future valuation research framework that does not incorporate recent innovations in technology and big-data analysis techniques is unlikely to cut the mustard with sophisticated users, such as institutional investors, e.g. portfolio managers.

1.7 Structure of the Thesis

The thesis is presented in ten chapters according to the following structure: Chapters 2 to 4 comprise a review of the relevant literature; Chapter 5 describes the research philosophy and methodology used to collect and analyse the data and answer the research questions; Chapters 6 to 9 contain the results; and Chapter 10 concludes the thesis, discusses the key contributions and limitations, and offers suggestions for future research.

Chapter 1: Introduction

This introductory chapter presents a brief overview of the research. The chapter affirms that the motivation for undertaking the research study is to extend the academic literature as it relates to the decision-making (black box) processes and appraisal methods used by European investment managers and financial analysts. It then briefly critiques the current state of the research literature, identifies some existing knowledge gaps and outlines their significance. Next, it explains why a mixed-methods research strategy encompassing interviews and questionnaires was adopted to satisfy the research objectives. Finally, the introductory chapter concluded with a brief overview of the thesis structure.

Chapters 2 - 4: Literature Review and Theoretical Research Framework

The aim of the literature review was to identify prior research that was relevant to the dissertation – thereby serving to set the research project within a conceptual and theoretical research framework that would inform and guide the research objectives plus the research methodology chosen to administer the study. Overall, the literature review encompasses three chapters, as follows:

Chapters 2: Financial Analysts – *in Action*

This chapter examines relevant and significant literature pertaining to the ostensibly nebulous activities of financial analysts *in-action* [in practice] - what Brown (2013), Bradshaw (2011), Ramnath et al. (2008) and Arnold & Moizer (1984) describe as the 'black-box' of sell-side financial analysts' decision-making processes. This so-called 'blackbox' conprises multiple factors that invariably influence the actions and corresponding outputs of sell-side analysts. They argue that this 'black box' holds the key to *how* analysts derive 'industry knowledge', make stock recommendations, set target prices and derive the supporting commentaries that accompany Analysts' Reports. Additionally, the review of the financial analysts literature surveyed: what they do; what appraisal methods they use; what type of informtation sources they use; and the role of private discussions and/or meetings with company management. In conclusion, this review highlighted the existence of two sizeable schisms; one reflected the divide between investment theory and investment management praxis, the other pertained to the divisions that separate buy and sell side decision-making within the investment management industry. However, this review did not reveal a great deal about how analysts actually process the information available to them, which may partially explain why the so-called ‘blackbox’ remains an intriguing gap in the literature to this day.

Chapter 3: Review of Accounting Theory

This chapter examines the relevant and significant extant accounting literature as it pertains to the valuation practices and appraisal methods used by fund managers and financial analysts in practice. Some of the themes included in the review are: the nature of accounting valuation theory; the role of accounting theory and why accounting valuation theory should matter to investors and analysts, and; the role of fundamental analysis, technical analysis and beta analysis in equity valuation. Chapter 3 also reviewed the complimentary roles played by the ‘absolute’ and ‘relative’ theoretical equity valuation frameworks in asset management. For example, we reviewed the following fundamental ‘intrinsic’ equity valuation models that are derived from accounting theory: Discounted Cash flow (DCF) Model, Residual Income Valuation (RIV) Model, Abnormal Earnings Growth (AEG) Model and Dividend Discount Model (DDM). In a similar vein, we reviewed several market-based ‘multiples’ models, which is another term for ‘relative’ valuation models, for example: Price/Earnings multiple (P/E ratio), Shiller-Cape multiple (CAPE ratio), Price/Book multiple (P/B ratio), Enterprise Value/EBITDA multiple (EV/EBITDA ratio), Price/Cashflow multiple (P/C ratio), Earnings Yield multiple (E/Y ratio), Dividend Yield multiple (D/Y ratio) and Price/Sales multiple (P/S ratio).

Chapter 4: Review of Modern Finance Theory

This chapter examines the relevant and significant extant modern finance literature as it pertains to the three principal determinants of the equity premium – risk, return and time. Accounting for time and risk – theoretically and empirically - is what everything in asset pricing is about Cochrane (2005). Factor Pricing Models represent one of several theoretical and empirical approaches used by investors and researchers to capture these omnipresent facets of investing. There are single beta-return factor pricing models [for example CAPM and CCAPM] and there are multi-factor versions [for example ICAPM and APT]. These topics, as well as the related factor pricing literature, are discussed in Chapter 4 under three inter-connected headings that taken together comprise the theoretical finance research framework portion of this study: Part A – Contemporary Asset Pricing Theory; Part B – Contemporary Asset Pricing Facts; and Part C – Neo-Classical Factor Pricing Models.

Chapter 5: Research Philosophy and Methodology

Chapters 2, 3 and 4 reviewed the capital markets literature on equity analysis from three paradigmatic perspectives: the investment *in-action* (practitioner) literature (Ch. 2), accounting valuation theory (Ch. 3) and modern finance theory (Ch. 4). This chapter drew on these bodies of literature to inform the research objectives that motivate the research questions outlined in Chapter 1, Section 1.4. Ostensibly, as discussed in Chapter 5, academic research is driven by the philosophical orientation of the researcher. If the researcher has a predisposition towards a 'positivistic' philosophy, he/she will be inclined to adopt a quantitative research methodology. Alternatively, if the researcher is predisposed to a 'constructivistic' philosophy, he/she will be more persuaded to adopt a qualitative research methodology. However, not all questions for social science research are driven exclusively by paradigmatic considerations, that is communities of research that accept a particular 'worldview' or consensus of beliefs (Creswell & Creswell, 2018). Instead, different sorts of questions often require different methods for answering them. Punch (2005, Pg.3) articulates this well when he states; "To choose the pragmatic approach is to start by focusing on what we are trying to find out in research, and then to fit methods in with that". In essence, it is this 'pragmatic' philosophical orientation that underpins the mixed-methods research strategy espoused in this study. Thus, the research philosophy assumes that collecting diverse types of data provides a more complete understanding of a research problem than either quantitative or qualitative data alone.

Finally, the research methodology and philosophy set forth in Chapter 5 includes discussions on the research paradigm along with the ontological and epistemological perspectives underlying the study, which in turn influenced the asset management research population and sample-sets chosen; the data collection methods used to gather evidence; and the procedures used to administer the interviews and questionnaires.

Chapter 6: Fund Manager Interview Results

This chapter presents the interview evidence accompanied by a descriptive thematic analysis of the semi-structured interview findings that arose from the interviewer's discussions with 10 high-ranking European fund managers in 2015. The chapter is organised as follows. Firstly, Section 6.2 describes how the interview evidence was collected and analysed to reflect the objectives and questions underpinning the research study, as well as the themes in the literature review. Secondly, Section 6.3 relates to Thesis Research Objective #1 and presents the personal characteristics and backgrounds of the fund managers. Thirdly, Section 6.4 relates to Research Objective #2 and presents the views of the participants on the utility of accounting and modern finance theory within the equity investment management industry in Europe. Fourthly, Section 6.5 relates to Research Objective #3 and presents that portion of the interviewee findings that relate to the role and utility of sell-side equity research in buy-side equity investment decision-making. Fifthly, Section 6.6 presents the views of the participants on the utility of technical analysis in equity decision-making. This section could arguably have been shown under Section 6.4 and in turn linked to Research Objective #2, however it was felt that to do this might inadvertently blur the dividing paradigmatic line separating accounting and modern finance theory in equity decision-making. Finally, Section 6.7 concludes the chapter.

Chapters 7 and 8: Questionnaire Results

These chapters present the questionnaire survey evidence accompanied by a descriptive statistical analysis of the quantitative findings together with a discussion of the non-parametric test results. The evidence spans two chapters, Chapter 7 and Chapter 8, which link directly to the three research questions outlined in Section 1.6, Chapter 1. Firstly, Chapter 7 relates to Research Question #1 and presents the summary statistics, proportions, frequency distributions and cross-tabulations that were used to garner useful insights on the backgrounds, personal attitudes and proclivities of the sample's respondents. In a similar vein, Chapter 8 relates to Research Questions #2 and #3. First off, the summary statistics, proportions, frequency distributions and cross-tabulations used to elicit useful insights on the respondents' attitudes to a series of accounting and finance related investment management questions are presented. Secondly, the frequency distributions and cross-tabulations that were used to examine the utility of sell-side equity research in buy-side equity decision-making are presented. Since the data was mostly categorical (nominal and ordinal), the analysis employed extensive use of chi square tests of statistical dependence/independence to assess levels of association and sampling error between groups. Additionally, Phi and Cramer's V were the techniques most often used to measure effect sizes (Gravetter and Wallnau, 2013; Sheskin, 2011; Murphy et al., 1998; and Cohen, 1988).

Chapter 9: Structural Equation Modelling (SEM)

The SEM modelling steps presented in this chapter provide a useful methodology for understanding and then expressing how the set of observed variables in the dataset (individual questions and their responses, correlations and factor constructs) related causally to each other (Kline, 2010). Moreover, they served to affirm the validity and reliability of the factor structure and corresponding indicator items in the questionnaire. Additionally, they helped to affirm the validity and reliability of the quantitative findings generated from the collated dataset. They also generated useful insights pertaining to the utility of accounting and modern finance theory within the investment management industry, which is one of the study's primary research questions.

The chapter is presented under 6 inter-connected headings which when taken together comprise the EFA, CFA and SEM quantitative analysis framework portion of the study. Section 9.2 examines the phenomena of missing data, case & variable screening and data imputation. Section 9.3 performs exploratory factor analysis (EFA). Section 9.4 performs confirmatory factor analysis (CFA). Section 9.5 discusses the phenomenon of Common Method Bias (CMB). Section 9.6 concludes the chapter with a presentation of the tentative structural equation model design that future researchers may find informative, but nonetheless is beyond the scope of the current research study.

Chapter 10: Discussion, Conclusions and Recommendations

This final chapter discusses a selection of key research findings congruent with the research objectives and the literature reviewed in the study. Some limitations of the research are highlighted, and the chapter concludes with suggestions for future research. The chapter is organised as follows: Section 10.2 reviews the findings that relate to the backgrounds and personal characteristics of the questionnaire respondents and interview participants. Section 10.3 discusses the findings that relate to the utility of accounting and modern finance theory in equity investment management decision-making. Section 10.4 presents a synopsis of the thesis. Section 10.5 examines the limitations in the design of the research. Section 10.6 considers the implications for theory and practice. Section 10.7 discusses the contribution the thesis makes to knowledge and outlines some suggestions for future investment management research. Section 10.8 concludes the chapter.

Chapter 2

FINANCIAL ANALYSTS IN *ACTION*

2.1 Introduction

Lifting the lid on the 'black box' of sell-side financial analysts' decision-making processes is one of the key research objectives of the thesis. Therefore, this chapter reviews the related buy and sell-side financial analysts' literature with the aim of better understanding what it is that financial analysts' do and why they do it, "particularly in an information environment characterised by multiple and potentially complementary information sources" (Beccalli et al., 2015). Moreover, the chapter examines what the extant literature says about the usefulness of accounting valuation theory and modern finance theory as it pertains to the role of financial analysts' in the capital markets, see for example Brown et al. (2015), Bradshaw (2011), Ramnath et al. (2008), Kothari (2001), Brown (1993), Zmijewski (1993), Schipper (1991) and Arnold and Moizer (1984).

The structure of the chapter is as follows: Section 2.2 presents a discussion on the brokerage business model and the marketplace for sell-side equity research. Section 2.3 describes the historical development of the investment management 'black-box' literature. Section 2.4 looks at the phenomenon of sell-side bias in the extant financial analysts' literature. Section 2.5 discusses alternative perspectives on the analysts' 'black-box'. Section 2.6 concludes the chapter.

2.2 Brokerage Business Model and the Marketplace for Sell-side Equity Research

The brokerage business model is a significant actor within the marketplace for sell-side equity research. The influence exerted by the model over the behaviour of financial analysts' *in-action* (Hopwood, 2009), not least their incentives and rewards systems, is significant (Brown et al., 2015; Bradshaw, 2011; Ramnath et al., 2008; and Arnold and Moizer, 1984). The other significant actor within the market-place for sell-side equity research is the investors (fund managers and private individuals). However, according to Ellis (2011) the mix of investors has changed profoundly over the past 50 years — from 90 percent of total NYSE listed "public" trading being done by individuals to 90 percent being done by institutions. A similar split applies to European stock exchanges as well as the exchanges of other developed capital markets free from direct government intervention. In contrast, China currently has a private investor—institutional investor mix that is the polar inverse of the NYSE. This is the result of a number of cultural and social factors, including: its relative infancy as a capital market, government policy and direct intervention. Moreover, Ellis (2011) refers to the extraordinary level of concentration within the investment management industry, whereby the 50 most 'active' institutions do 50 percent of all NYSE listed stock trading, while the smallest of these 50 giants spend $100 million annually in fees and commissions buying services from the global securities industry. Notably, Groysberg and Healy (2013) assert that circa 80% of this expenditure goes towards paying for analysts' research. Clearly, the revenue generating potential of institutional investors is the mainstay of the brokerage business model. Thus, one would imagine that providing fund managers and buy-side analysts with the information they both need and want is paramount if the brokerage business model is to grow and prosper. Notwithstanding this seemingly obvious business axiom, the review of the extant sell-side financial analyst literature was to prove informationally lacklustre. Thus this researcher felt compelled to investigate the conundrum further during the fund manager interviews as well as the more broadly-based investment management questionnaire surveys. Also of note, as outlined by Ellis (2011), there is currently legislation before the EU and the US that if passed into law stands to significantly impact the existing brokerage business model discussed above. Specifically, the new legislation will force brokerage firms and/or investment banks to separate the activities of share trading (fees and commissions) from their research and advisory services. Therefore, these firms will no longer be able to package research and trading commissions as one product. It is anticipated that if approved in 2017[2] the impact on the sell-side business model, and by default the role of sell-side financial analysts in the capital markets, will be profound. Correspondingly, the impact of the proposed new legislation on fund managers and fund governance will likely be profound also, not least their operating and expense budgets. Finally, the face of investing is changing too; for example algorithmic stock-market trading, computer models and numerous inventive quantitative models are increasingly emerging as powerful market participants.

2.3 Historical Development of the Investment Management 'Black-Box' Literature

This section presents a brief historical review of the origins and subsequent development of the extant investment management literature, noting in particular its current research focus. When undertaken, the process helped to reveal many gaps in the investment management literature. Moreover, the process correspondingly shed light on the evolution of the so-called investment management 'black box'. What is more, the process served to affirm that the

[2] Update: The revisions to the European Union (EU)'s Markets in Financial Instruments Directive (MiFID II) finally came into force on 3 January 2018, a year later than originally planned. MiFID II requires under certain conditions that MiFID firms unbundle the research and trading costs and charge them separately. Moreover, charging for research services separately may expose research fees to be accorded a separate VAT treatment than the execution services.

aims motivating the PhD research project have an unambiguous genesis within the framework of the extant investment management, accounting and modern finance literatures.

Prior to 1980 researchers seemed fixated on studying the value relevance of accounting earnings and tests of market efficiency, which in turn prompted a considerable amout of research on the relative usefulness of time-series models of earnings compared to analysts' earnings forecasts, see for example Brown (2013), Bradshaw (2011), Ramnath et al. (2008), Kothari (2001), Brown (2000), Brown (1993), Schipper (1991) and Givoly & Lakonishok (1984). However, restrictive academic research agendae such as these were of only limited usefulness to investors.

Subsequently, beginning in the 1980's, researchers (Fried and Givoly, 1982) began to conclude that analysts' forecasts were a better proxy for expected earnings than the estimates derived from the often more complex time-series models. This growing realisation prompted researchers to alter their empirical research focus in favour of closer scrutiny of the analysts themselves. The studies that then followed (Arnold and Moizer, 1984 and Demirakos et al., 2004 for the U.K; Pike et al., 1993 for Germany and the U.K; Block, 1999 for the U.S; and Fouche and van Ren burg, 1999 for South Africa) examined the role of financial analysts as capital market intermediaries and as proxies for investor attitudes and behaviour. Moreover, these studies investigated the accounting and financial methods plus information sources that analysts *in-action* [in practice] used to generate their various sell-side outputs that when viewed holistically represented a sizeable portion of the marketplace for sell-side equity research. Specifically, these sell-side outputs include: earnings and price forecasts, analyst commentaries, forecast revisions and stock recommendations.

More recently, researchers [which includes this research project] have shown an interest in investigating the more nebulous activities of financial analysts in practice - what Brown

(2013), Bradshaw (2011), Ramnath et al. (2008) and Arnold and Moizer (1984) describe as the 'black-box'[3] of sell-side financial analysts' decision-making processes.

This latter point epitomises the motivation for undertaking this mixed-methods research study. Furthermore, it resonates with several recent academic calls for researchers to take a deeper look at analysts' investment decision-making processes. Nonetheless, the aforementioned review of the related literature reveals that research practice to-date has largely been myopic, a view that is corroborated in Brown et al. (2015), Clatworthy and Lee (2014), Fridson (2014), Groysberg and Healy (2013), Litterman and Sullivan (2012), Ellis (2011), Bradshaw (2011), Ramnath et al. (2008), Kothari (2001), Brown (1993), Zmijewski (1993) and Schipper (1991). As a corollary, this research project investigates the decion-making processes and practices of both fund managers and financial analysts (buy plus sell-sides).

2.4 Sell-side Bias in the Extant Financial Analysts' Literature

Clatworthy and Lee (2014) in the UK assert that the literature on financial analysts, which focuses primarily on sell-side equity analysts, pays too much attention to the properties of earnings forecasts. Likewise in the USA Bradshaw (2011, p.39) asserts that the academic literature´s disproportionately large emphasis on earnings forecasting research amounts to nothing less than "a gross mischaracterization of the analyst's job function, and hence his/her incentives". According to Fridson (2014, FAJ web page) the ultimate objective of equity research is not to issue accurate earnings estimates but rather to pick stocks that beat the averages. Moreover, he asserts that "certain analysts acquire the power to move the market for a stock over the very short run, not because they can identify outperformers, but because they earn high *Institutional Investor* rankings by demonstrating industry knowledge".

[3] From what the researcher can tell from the literature reviews the phrase originated in Arnold and Moizer (1984).

Likewise, Bradshaw (2011) observes that the annual Institutional Investor (II) ranking of analysts indicate that the most important trait valued by institutional investors is industry knowledge. In a similar vein, Groysberg and Healy (2013) observed that the 1998 annual *Institutional Investor* rankings of sell-side analysts had reported 'buy-siders' rated stock recommendations second in importance behind industry knowledge. When Brown et al. (2015) investigated the inside of the 'black box' of sell-side financial analysts they too found that industry knowledge was the single most important determinant of their compensation and the most important input to both their earnings forecasts and stock recommendations. They rated broker votes, the measure of client satisfaction, as the second most important factor in determining analysts' compensation behind industry knowledge.

Separately, Loh and Stulz (2009) infer that analysts who are highly ranked in the *Institutional Investor*'s All-America Research Team survey may be the factor - other than the content of analysts` reports - to explain why the recommendations of some financial analysts are more influential than other analysts. That is, recommendation changes issued by higher-ranked analysts are more likely to affect a stock's price than the forecast revisions of lesser-ranked analysts. On the other hand, Fridson (2014) reports that institutional money managers do not appear to put much faith in the 'favourite stock' opinions of star analysts. Or as Groysberg and Healy (2013) assert, there is no generally accepted empirical evidence available to show that the performance of top-ranked analysts' recommendations are superior to those of a random walk process. However, in an earlier paper Groysberg et al. (2008) report that institutional investors' rankings represent the first-order determinant of an analyst's compensation. Furthermore, Bradshaw (2011, p.39) writes: assuming "analysts wish to maximize their compensation, then providing institutional investors with what they need, as reflected in the rankings, will be descriptive of aspects of their job towards which they devote significant effort". These sentiments are under-scored in Stickel (1992), Leone and Wu (2007) and Rees et al. (2014a). That is, these studies report that the *II*'s annual All-America Research Team rankings are important to the compensation and career advancement of financial analysts. Nonetheless, the signals in question remain noisy and frequently contradictory.

As a corollary it is understandable that Ramnath et al. (2008) should affirm that further research on the 'black box' of sell-side financial analysts' decision processes is required for the literature to progress. In addition, several prominent academics including Kothari (2001), Brown (1993), Zmijewski (1993) and Schipper (1991) have likewise repeatedly called upon researchers to move beyond the largely defunct research activity that examines the time-series properties of earnings forecasts in favour of more useful research agendas that seek to examine the broader reality and context within which analysts make their equity investment decisions. In point of fact, Litterman and Sullivan (2012) assert that any research that serves to capture the very best practical investment industry insights has the potential to constitute a valuable contribution to the literature. Specifically, they make a general call for research papers to include in future editions of the 'Financial Analyst Journal' (FAJ) that will better serve investors' understanding of investment portfolios, the capital markets and the workings of the analyst profession generally. Furthermore, they assert that "this duty requires a solid foundation and rationale for decision making and client recommendations that are based on independent and sound judgment, intelligent analysis, and the courage to stand by one's convictions" (Litterman and Sullivan, 2012, p.4). Nonetheless, as Ellis (2011, p.11) so eloquently explains: "For all its amazing complexity, the field of investment management really has only two major parts. One is the profession—doing what is best for investment clients—and the other is the business— doing what is best for investment managers." But then, just as in other professions such as law, medicine, architecture and management consulting, there is a continuing struggle between the *values* of the profession and the *economics* of the business. What's more, Groysberg and Healy (2013) explain that the realities of the investment management industry are such that firms are increasingly being run as international businesses for the primary purpose of making profit, not as professional business organisations building their success through serving the needs of their clients as investors. Therefore, it should not be that surprising to learn that the market for sell-side research is an industry that remains bedevilled by colossal conflicts of interest. For example, conflict can occur when analysts define their mission as 'beating the benchmark' and letting the short-run economics of the investment management business dominate the long-term values of the profession, or when sell-side analysts issue only favourable recommendations on their brokerage firms' investment banking clients. In like manner Fridson (2014) asserts that brokerage houses tend not to think of research as a service that is bought and sold within the marketplace for sell-side equity research (i.e. the marketplace for trading in security analysis). Instead, it tends to be viewed rather more ambitiously as a means to sell securities. And since firms must recover the costs of producing research, this task can become a source of tension for sell-side financial analysts who must continuously strive to strike the right balance between the quality of investment advice issued and their compensation. Ellis (2011, p.14) encapsulates the conflicted nature of day-to-day investment management reality well as follows: "When business dominates it is not the friend of the investment profession". In essence, when actions aimed at increasing an organization's results as a business increase, such as cost controls, fee increases and drives for greater productivity, the chances that the professional results achieved for investors will also rise tends to fade.

Finally, this brief review of the fund manager and financial analyst literature paints a somewhat nebulous and confusing picture of investment management reality. However, this is perhaps understandable (to a degree) because the day to day realities of what investment managers actually do, and why, is afterall a noisy world. Ergo, there are always multiple factors influencing the decision-making behaviour and outputs of capital market participants. Some notable literature in this regard includes: incentives and conflicts of interest (Clatworthy and Lee, 2014; Bradshaw, 2011 and 2009; Schipper, 1991; and Arnold and Moizer, 1984); firm and industry factors (Penman, 2010 and 2004; Schreiner, 2007; Cochrane, 2005; Spremann, 2005; Tapiero, 2004; and Kothari, 2001); market and macro-economic conditions (Buraschi and Carnelli, 2014; Oprean, 2012; Kothari, 2001; Fama and French, 1998, 1996 and 1993; Carhart, 1997; Lo and Mackinlay, 1990, 1988 and 1987; Breeden, 1979; Ross, 1976; Fama, 1993, 1970 and 1965; Merton, 1973; Sharpe, 1964; and Tobin, 1958); and behavioral and psychological biases (Shiller, 2011, 1999 and 1981; Merkl-Davies et al., 2011; Brennan, 2006; Barberis & Thaler, 2003; De Bondt and Thaler, 1985; and Kahneman and Tversky, 1979). Notwithstanding the extensive nature of this literature, Bradshaw´s (2011) instructions to future researchers are at the same time straight-forward and insightful. Specifically, she advocates that researchers - who are interested in understanding what it is that fund managers and sell-side financial analysts actually do, and why - should spend less time advancing earnings forecasting research and more time investigating the arguably more important analyst activities that underpin their decision-making processes. Put simply, Bradshaw (2011, p.43) calls for research that provides for "any kind of penetration of the 'black box' of how analysts actually process information…."

In conclusion, although the epistemological research perspectives of Brown et al. (2015), Clatworthy and Lee (2014), Fridson (2014), Groysberg and Healy (2013), Litterman and Sullivan (2012), Ellis (2011), Bradshaw (2011), Ramnath et al. (2008), Kothari (2001), Brown (1993), Zmijewski (1993), Schipper (1991) and Arnold and Moizer (1984) frequently differ, they nevertheless all have one overarching theme in common; which is their call for research aimed at penetrating the inside of the investment management decision-making 'black box'. It is this 'black box' that holds the key to *how* fund managers make portfolio optimisation and asset allocation decisions; *how* analysts obtain 'industry knowledge', *how* analysts derive target prices and stock recommendations; and *how* analysts gather the supporting commentaries that accompany analysts' reports. In this light it becomes clear why Bradshaw (2011) should suggest that researchers in this area may need to be open to alternative methodologies of data collection and analysis if the literature on analysts is to proceed in a meaningful way.

2.5 Alternative Perspectives on the Analysts 'Black-Box'

Over the last fifty years the hegemony of neoclassical research within the accounting and finance paradigms of acedeme is evident. Research in these areas has spawned several 'rational economic theories' that famously include: portfolio risk analysis (Markowitz, 1952, 1959 and 1967); single-factor risk-return models such as the capital asset pricing model (CAPM; Sharpe, 1964) and the consumption capital asset pricing model (CCAPM; Breeden, 1979); and multi-factor risk-return models such as the Fama & French three-factor model (FF3F; Fama and French, 1992 and 1993) and the Carhart (1997) four-factor model. While notably famous in the literature, these models nevertheless tend to have a relatively narrow focus that aim to capture abnormal returns stemming from such factors as value, growth, size and momentum. However, there are other multi-factor finance models that do not restrict the number of factors that can be added to a model, such as the arbitrage pricing model (APM; Ross, 1976) and the inter-temporal capital asset pricing model (ICAPM; Merton, 1973). While less 'famous' per se, they potentially offer far more useful applications (author's opinion), for example an SPSS computer modeler using either the ICAPM or APM theoretical framework can accommodate 1 million plus risk factors in a model should he/she so wish.

Recently, research scholars and investment professionals have displayed a growing interest in alternative theories of accounting and finance that together represent what is known as behavioural finance theory (BFT). In effect this hotchpotch of non-neoclassical accounting and finance theories have emerged into what is now a distinctly important new paradigm of academic research activity that coexists alongside the related classical schools of the academic literature. Its raison dêtre is the belief that some financial phenomena can be better understood using models in which agents are assumed to be ´irrational´ rather than 'rational' (Barberis & Thaler, 2003; and Ricciardi & Simon, 2000). In essence behavioural finance theory offers a refreshing alternative perspective on the study of financial markets, financial intermediaries and other market participants. At its heart it seeks to expand peoples awareness of the emotional biases and psychological processes affecting individuals and entities that invest in financial markets. It highlights inefficiencies such as under or over-reactions to information as causes of market trends and in extreme cases of bubbles and crashes. Such reactions are variously attributed to limited investor attention, over-confidence, over-optimism, herding and noise trading. Therefore, it is perhaps unsurprising that 'technical analysts' should consider behavioural finance theory to be the theoretical basis for 'technical analysis' (Vasiliou et al., 2008). It is the adoption of this inter-disciplinary research approach that arguably has contributed to BFT's very rapid growth in recent years. But in a nutshell the field of behavioural finance theory may be viewed as having two building blocks[4]: (1) limits to arbitrage[5] and (2) psychological and sociological factors.

[4] The idea that behavioral finance rests on the two pillars of limits to arbitrage and investor psychology is originally attributed to Shleifer and Summers (1990).

[5] Arbitrage is "an attempt to enjoy a risk-less profits by taking advantage of pricing differences in identical securities being traded in different markets or in different forms as a result of mis-pricing of securities." (Ricciardi & Simon, 2000, p.3)

2.6 Conclusion

This research project responds to the numerous appeals in the accounting, finance and investment management literature that call for researchers to provide deeper penetration of the so-called financial analysts' 'black box'. However, this 'black box' conundrum is not a new research phenomenon, seemingly it dates back to Arnold and Moizer's (1984) seminal UK paper on the behaviour of fund managers, buy-side and sell-side analysts. The behavioural finance literature also contains many studies on the behaviour of capital market participants. While no universally agreed upon definition of behavioural finance theory exists as of yet, the issues it examines usually translate into discussions about 'irrational' investor and analyst behaviour competing with 'rational' investor behaviour (Schiller, 2011). Additionally, a popular new strand of this research activity has emerged recently. Described as 'impression management', it examines how fund managers and financial analysts form impressions about companies, sectors, industries and stocks, see for example Brennan et al. (2014), Merkl-Davies et al. (2011), Brennan et al. (2009), Clatworthy and Jones (2001) and Beattie and Jones (2000). In principle the aims of this research are similar to BFT's, the goal being to reach a deeper understanding of how various sociolgical and psychological factors impact on the behaviour, attitudes, cognition and decision-making processes of fund managers and financial analysts.

In closing, the motivational forces driving this this research project are encapsulated in the researcher's earlier stated desire to 'lift the lid' on the so-called investment management 'black box' more judiciously than prior academic research has achieved to-date. In the meantime, it seems from the review of the related investment management literature that academia's understanding of how fund managers, buy-side analysts and sell-side financial analysts make equity investment decisions will likely remain skewed.

Chapter 3

ACCOUNTING VALUATION THEORY

3.1 Introduction

Shareholders, investors, and lenders have an obvious interest in the value of a firm (Kothari, 2001). As outlined in Chapter 1, 'Finance Theory' (Asset Pricing Theory) and 'Accounting Valuation Theory' are the two broad academic paradigms in the literature that are relevant to this research study. Asset pricing theory mainly examines the nature of risk and returns in capital markets (Cochrane, 2005; Campbell, 2000; Jagannathan et al., 2010; and Kothari, 2001), while accounting valuation theory tends to focus on the measurement and reporting of company/share values (Penman, 2011; Deegan and Unerman, 2006; Damodaran, 2006, 2002; Kothari, 2001, Copeland et al., 2000; Barker, 1998, 1999a and 1999b; Beaver and Morse, 1978; and Ball and Brown, 1968). However, as also pointed out in Chapter 1, the dividing line – valuation lacuna (Hopwood, 2009, 1983, 1978) – separating both of these academic paradigms from investment in-action is for most capital market participants in practice, a blurred one (Clatworthy, 2014; Arnold, 2009; and Hopwood, 2009). Nonetheless, the foregoing academic paradigms generally cite returns, risk, growth and earnings as 'key drivers' of share price performance. Moreover, in the reality of day to day financial practice, financial analysts make routine buy, sell and hold decisions based on a complex and recognisably nebulous cacophony of inputs; some of which relate to accounting and finance theory, some are the result of behavioural and psychological biases, while some are more aptly attributable to what is otherwise described in the empirical academic literature as 'private information' (Brown et al., 2015; Bradshaw, 2011 and Ramnath et al., 2008;

Kothari, 2001; Brown, 1993; Zmijewski, 1993 and Schipper, 1991). Therefore, deciphering what is 'going-on' within the financial analysts' decision-making 'reality' (Hines, 1988) can be challenging during the best of times.

To summarise, this chapter recognises that accounting valuation theory provides one of several potentially coherent sources of rational economic thought that most fund managers and financial analysts have the educational background and professional training-in to help guide their equity decisions. Moreover, accounting valuation theory is just one of several information sources (inputs) that invariably influence the routine outputs [stock recommendations, target prices, earnings and price forecasts, forecast revisions, and/or analyst commentaries] that so often are mistakenly cited to describe what it is that financial analysts do, and why they do it (Bradshaw, 2011; Zmijewski, 1993; and Schipper, 1991). But whether and to what extent fund managers and financial analysts choose to utilise, or not utilise, accounting valuation theory in some or all of their day to day decision-making activities is the subject of the remainder of this chapter.

The structure of the remainder of the chapter is as follows: Section 3.2 describes the nature of accounting valuation theory; Section 3.3 discusses why accounting valuation theory should matter to fund managers and financial analysts; Section 3.4 examines the role of accounting theory in equity valuation, and compares fundamental analysis, technical analysis and beta analysis; Section 3.5 discusses the empirical evidence as it relates to financial analysts' preferences, and compares the absolute and relative fundamental equity valuation paradigms within the framework of the efficient markets hypothesis; Section 3.6 presents a brief note on the Appendix to Chapter 3: Valuation Paradigms in Accounting Theory; and Section 3.7 concludes the chapter.

3.2 Nature of Accounting Valuation Theory

In referring to capital markets research in accounting, Kothari (2001, p.106) states that "empirical research is (or should be) informed by theory, since interpretation of empirical analysis is impossible without theoretical guidance." However, Watts and Zimmerman (1986, p.1) assert that the 'accounting literature includes many different views of theory.' Alternatively, Hill (2012, p.4) states that "The key to unlocking stock market analysis, irrespective of volatility, is an understanding of theories of share price determination that underpin its performance." More generally, whilst referring to accounting information and capital markets research, Kothari (2001, p.107) states that "The mounting evidence of apparent market inefficiency documented in the financial economics and accounting literature has fuelled accounting researchers' interest in fundamental analysis, valuation, and tests of market efficiency." Arguably, these prominent academic assertions ought to provide fund managers and financial analysts with at least the initial motivation to pursue an understanding of accounting valuation theory. Therefore, we now refer to the underlying accounting theory that influenced the research outlined in this thesis and likely bears on the decision-making processes of investment managers and financial analysts' *in-action* (Hopwood, 2009).

Hendriksen (1970, p.1) defines a theory as "a coherent set of hypothetical, conceptual and pragmatic principles forming the general framework of reference for a field of inquiry". This definition is very similar to the US Financial Accounting Standards Board's definition of their Conceptual Framework Project (Deegan and Unerman, 2006). However, accounting theory represents only one of several information sources that together inform the investment management decision-making processes. From the author's epistemological perspective there are two alternative theoretical viewpoints in the literature that particularly impress upon his perception of how accounting valuation theory adds value to financial analysis.

These pertain to two related objectives; the objective of accounting theory and the objective of a company. Watts and Zimmerman (1986, p.2) describe accounting theory's purpose as follows: "The objective of accounting theory is to explain and predict accounting practice. *Explanation* means providing reasons for observed practice… *Prediction* of accounting practice means that the theory predicts unobserved accounting phenomena. Unobserved phenomena are not necessarily future phenomena; they include phenomena that have occurred but on which systematic evidence has not been collected." However, while this is undoubtedly a useful definition of accounting theory, it is nevertheless notable that Kothari (2001) should pass remarks on the conspicuous absence of a singular universal definition of accounting theory within the broadly based extant academic accounting literature. On the other hand, Welch (1981) and Rappaport (1986) assert that the objective of a company is the maximization of shareholder wealth. This philosophy is affirmed in Damodaran (1996, p.8), who likewise asserts that "Most corporate financial theory is now constructed on this premise" [i.e. when referring to the assumed theoretical financial objective of a company].

In summary, the above definitions and assertions underpin the motivation and much of what follows in this chapter on related accounting valuation theory.

3.3 Why Accounting Valuation Theory Should Matter to Fund Managers and Financial Analysts

Shareholder wealth maximisation (increased share price) is based upon the economic law of supply and demand in capital markets which assumes that while stock markets may not be perfectly efficient, they are nevertheless reasonably efficient - at least in a semi-strong sense (Fama, 1965, 1970). Furthermore, investors are assumed to respond rationally to new information; buying, selling and/or holding shares in a market that is without too many barriers to trade (Ross, 1976). As a consequence, yesterday's trading decisions (and prices) are independent of today's expectations, which implies equity investments are a 'fair game' for all (Cochrane, 2015; Hill, 2012; Malkiel, 1973; Fama, 1965; Cootner, 1964; and Bachelier, 1900). However, these traditional views of investor rationality, the random walk hypothesis (RWH), stock market efficiency (EMH) and arbitrage pricing theory (APT) are not as widely accepted contemporaneously as they were in the past. They remain controversial, especially in light of the increasing influence exerted by behavioural finance proponents in the capital markets (Shiller, 2011, 1999 and 1981; Barberis & Thaler, 2003; De Bondt and Thaler, 1985; and Kahneman and Tversky, 1979). Additionally, there is abundant evidence of market inefficiency (i.e. anomalies) documented in the financial economics and accounting literature over the last thirty years, some of the most important examples of which have included: the *Size Effect* (Banz, 1981; Reinganum, 1981; and Roll, 1983), the *January Effect/Turn-of-the Year Effect* (Rozeff and Kinney, 1976), the *Turn-of-the Month Effect* (Ariel ,1987; Lakonishok and Smidt, 1988; and Ogden, 1990), the *Intraday Effect* (Wood, et al., 1985; Jain and Joh, 1988; McInish and Wood, 1990a; and Brooks & Chiou, 1995), the *Holiday Effect* (Merrill, 1965; Fosback, 1976; and Ariel, 1990), the *Index Effect* (Shleifer, 1986; Harris and Gurel, 1986; and Wurgler & Zhuravskaya, 2002) and the *Weekend-Effect* which occurs when share prices appear to follow a consistent pattern of peaking on Fridays and then falling on Mondays (Cross, 1973; French, 1980; Gibbons and Hess, 1981; Lakonishok and Levi, 1982; Miller, 1988; Lakonishok and Maberly, 1990; and Brockman & Michayluk, 1998). Moreover, there are many additional examples of anomalies in the accounting and finance literature.

Notably, the view taken by many prominent academics and practitioners (Cochrane, 2015; Damodoran, 2006; Wilcox and Philips 2005; Kothari, 2001; and Copeland et al., 2000) is that irrespective of whether investors are rational, or markets are efficient, or returns are random, the investment community still requires standards of comparison to justify their latest trading decisions. It is in this respect, despite its deficiencies, accounting valuation theory, together with traditional finance theory, has much to offer financial analysts and investors. Furthermore, stock market performance is not an *absolute* social science but rather a *relative* one which must be related to some standard of comparison. For example, as revealed by the financial press, a firm's current share price may rise, fall, or stay the same over time *relative* to the market as a whole, the business sector in which it operates and/or its direct competitors. Thus, financial analysts must understand how share returns, as evidenced for example by either dividend yields or P/E ratios, fit into their broader comparative performance analysis of companies and/or equities (Hill, 2012).

In summary, to answer questions about the information content of share prices and general behaviour of stocks, financial analysts need to understand the theoretical determinants of share prices and specifically the capitalisation of a perpetual annuity. Furthermore, this concept underpins the derivation of maintainable dividend yields and the P/E ratio, which are important accounting metrics published world-wide in the financial press.

3.4 Role of Accounting Theory in Equity Valuation: Fundamental Analysis, Technical Analysis and Beta Analysis

3.4.1 Fundamental Analysis

First popularised by Graham and Dodd (1934) - the father of security analysis and mentor to the well-known modern investor, Warren Buffett - fundamental analysis seeks to determine the intrinsic value of equity (Stowe et al., 2007).

Foster (1986) states that this approach to investing assumes that the intrinsic value of each security can be determined on the basis of such fundamentals as earnings, dividends, capital structure, and growth potential. Penman (2004, pp.74-75) elaborates further and states that "Fundamental analysis is the method of analysing information in current and past financial statements, in conjunction with other firm specific, industry, and macroeconomic data to forecast future payoffs and eventually arrive at a firm's intrinsic value." Fernandez (2015) asserts that in practice, the financial analyst will draw up a forecast of expected payoffs to the firm based on his/her analysis of the fundamentals and input these forecasts into a valuation model to produce an intrinsic price for the stock. Penman (2001) encapsulates this real-world application of fundamental equity valuation in his five-step programme of valuation, as follows: Knowing the business; Analysing information; Forecasting payoffs; Converting forecasts to a valuation, and; Trading on the valuation. Damodaran (1986) asserts that in general, discounted cash flow models are used to estimate intrinsic value. Kothari (2001, p.173) elaborates further and states that "For fundamental analysis and valuation, the accounting literature relies on the dividend-discounting model or its transformation, like the earnings (capitalization) model or the residual income model." Kothari (2001) additionally asserts that he balance sheet model, with its often-noisy estimates of market values, is also popular in the literature. Penman (2001) notes that, in practice, no reference is made to the market price of the share during the intrinsic analysis. Rather, the intrinsic price as determined by the valuation is compared to the market price and a recommendation issued on the back of this comparison. Alternatively, Kothari (2001) asserts that the difference between the current price and the intrinsic value is an indication of the expected rewards for investing in the security.

In summary, in an 'efficient market' there is an important role for fundamental analysis since it helps investors and management to understand the determinants of a firm's market value, thus facilitating equity investment decision-making and valuation of private firms (Schreiner, 2007). Alternatively, Kothari (2001, p.171) states that "the principal motivation for fundamental analysis research and its use in practice is to identify mispriced securities for investment purposes". Arnold and Moizer (1984) found that investment analysts tended to use fundamental analysis techniques in order to identify shares that appeared over – or – under-valued.

3.4.2 Technical Analysis

Foster (1986) asserts that technical analysis assumes that there are systematic dependencies in security market returns that can be exploited to yield abnormal returns. It involves studying the past performance of the market and deriving a target price for a share based on what the financial analyst expects the future trend to be. This is in contrast to fundamental analysis which concentrates instead on the external factors which impact upon the market as opposed to focusing on the market itself. The assumption underlying technical analysis is that markets are inefficient and overlook information contained in past prices when pricing shares in the future. Technical analysts are therefore dependent on price changes recurring in the future and on history repeating itself (Levy, 1966).

3.4.3 Beta Analysis

Beta analysis compares the risk associated with an individual stock to the risk associated with the market as a whole by analysing its volatility, alternative measures of which include: standard deviation, beta, r-squared, and the Sharpe ratio. A beta of greater than 1 indicates that the stock is more volatile (risky) than the market in which it trades, and a beta of less than 1 indicates that it is less volatile than the market. It is unlikely that betas will be used as an appraisal technique in isolation, but may be utilised in conjunction with other techniques. Beta analysis is explored in detail in Chapter 4 of this thesis: Modern Financial Theory.

3.5 Empirical Evidence Related to Financial Analysts' Preferences

The empirical evidence of the past 35 years has consistently found that practicing investment analysts attach more importance to fundamental analysis – as opposed to technical or beta analysis – when conducting equity analysis and company valuation. Arnold and Moizer's (1984) seminal paper on UK analysts revealed that fundamental analysis was used in 92% of cases of investment appraisal by UK financial analysts, while technical analysis was used 41% of the time, and beta analysis was used with considerably less frequency, i.e. 21%. Similar results were borne out in further empirical studies in the decades that followed [Demirakos et al. (2004) for the U.K.; Pike et al. (1993) for Germany and the U.K.; Block (1999) for the U.S.; and Fouche and van Rensburg (1999) for South Africa]. However, in the Pike et al. (1993) study that compared the perceived usefulness of appraisal techniques by UK and German analysts, the study found that German analysts ranked technical analysis as the second most important valuation technique ahead of a number of fundamental accounting methods. The difference in preference was attributed to the German stock market being less efficient than London's, which in turn afforded a greater role for technical analysis. We conclude from these empirical observations that UK investment managers may behave differently to their European investment management counterparts, and that likewise there may be differences in preferences from one EU member state to the next. We examine these propositions later in the thesis. More recent research by Barker (1999) found that technical analysis and beta analysis were of little practical importance in investment decision-making. Also, Kothari (2001) found that fundamental analysis acts as the guiding principle of most mutual fund managers in the US. Iman et al. (2008) focus only on methods of fundamental analysis which in and of itself suggested to us that they viewed (assumed) technical and beta analysis to be relatively unimportant players within an overall scheme of financial analysis. Nonetheless, this study proceeds on foot of an entirely different philosophy that takes the view that beta analysis likely occupies a strategically more important place within European investment management decision-making than the extant accounting literature would have us believe.

Finally, many observers believe that "price convergence to value is a much slower process than prior evidence suggests" (Frankel and Lee, 1998, p.315). This view of stock market reality is the paradigmatic polar opposite to what accounting theory would have us believe, e.g. the view espoused by Fama (1965, p.4), which is cited Kothari (2001, p.114) as follows: ''In an efficient market, on the average, competition'' among rational, profit maximizing participants ''will cause the full effects of new information on intrinsic values to be reflected 'instantaneously' in actual prices''. Therefore, there is an obvious tension between the short and the long-term reality in SSFAs equity decision-making, and between the reality of investment *in action* and accounting theory (Arnold, 2009 and Hopwood, 2009). These accounting-finance differences are profound, and they lie at the very heart of the debate on the usefulness of accounting theory in equity valuation. Unfortunately for investors, as discussed in Ellis (2011), Bradshaw (2011) and Kothari (2001), the consequences are both serious and widespread. For example, institutional investors routinely waste their clients' money actively chasing short-term trading strategies when they should instead be pursuing theoretically passive robust long-term, intrinsically-based value investment strategies. On a wider scale, the capital markets are replete with the consequences for investors when departures from fundamental accounting theory takes place, which in reality is an almost daily occurrence; one need only look to the numerous crises and stock market upheavals for empirical evidence of this fact (Clatworthy, 2014; Loh and Stulz, 2013; and Olbert, 1994). So the big question for accounting theorists (Penman, 2011; Palepu et al., 2004; Damodaran, 2002; Kothari, 2001; Copeland et al., 1995; and Fairfield, 1994) might be; what does reality tell us about our interpretation of the role of accounting theory in sell-side equity decision-making? What ought reality look like? Largely, this important 'black box' theme runs through much of this thesis. According to Kothari (2001, p.109) the "principal focus of fundamental analysis is on valuation aimed at identifying mispriced securities"

To summarise, the crucial thing about fundamental analysis, from a theoretical accounting viewpoint, that financial analysts especially ought to note, is that it is the premium on the intrinsic value over the current market value of the share that should determine the analyst's expectation of the likely future performance of the stock in question. Thus, analysts have at their disposal a convenient argument that they can use to 'sell' a specific buy, sell or hold recommendation to institutional clients. Moreover, Bradshaw (2011) asserts that any credible data that sell-side financial analysts can use to back-up their claims regarding a stock's likely future performance is an important consideration for their clients. But curiously, the extant survey evidence continues to show that sell-side financial analysts frequently downplay the importance of intrinsic valuation techniques in sell-side equity research!

In conclusion, given the so-called dominance of fundamental analysis amongst financial analysts in practice (Brown et al., 2015; Abhayawansa et al., 2015; Demirakos et al., 2004; and Arnold & Moizer, 1984), further investigation of its two principal theoretical paradigms, absolute and relative equity valuation, seems warranted.

3.5.1 Absolute and Relative Fundamental Equity Valuation Frameworks

Whilst we acknowledge that fundamental analysis is widely viewed within the academic accounting literature to represent the predominant valuation framework operating across the equity investment management industry in practice, there is however a notable schism running through it, that in turn defines two further equity valuation paradigms. These are, the 'absolute' equity valuation framework and the 'relative' equity valuation framework.

3.5.1.1 'Absolute' (Intrinsic) Equity Valuation Framework

Arnold and Moizer (1984) explain that absolute (intrinsic) valuation usually involves discounting expected future dividend payments to their present value equivalent based on some estimated discount rate and expected annual growth rate in dividends. Alternatively, future earnings and pay-out ratios may be estimated. Likewise, Kothari (2001, p.108) states that "In an efficient market, firm value is defined as the present value of expected future net cash flows, discounted at the appropriate risk-adjusted rate of return." However, Kothari (2001, p.109) also observes that "A firm's current performance as summarized in its financial statements is an important, but not the only input to the market's assessment of the firm's future net cash flows and thus into the firm's market valuation. This is consistent with the Financial Accounting Standard Board's (FASB's) conceptual framework that financial statements should help investors and creditors in ''assessing the amounts, timing, and uncertainty'' of future cash flows (FASB, 1978)."

A number of alternative absolute valuation models exist, each with a different perspective on intrinsic value: cash distribution, cash generation or value generation, see for example Ohlson (1995, 2002, 2005) and Ohlson & Juettner-Nauroth (2005). However, all are extensions of the Dividend Discount Model (DDM) which was originally developed by Williams (1938). These are:

- The dividend discount (DDM) model, which is based on (free) cash flows;
- The discounted cash flow (DCF) model, which is based on (free) cash flows; and
- The residual income models (RIV and AEG methods), which are based on (abnormal) earnings.

Each of the valuation approaches estimate the present value of a firm directly from its expected future payoffs, without appeal to the current market value. The approaches can be structured in two ways:

The first is to directly value the equity of the firm, since this is usually the variable of most interest to the financial analyst. The second is to value the assets of the firm, that is, the claims of equity and net debt and offset these against the final equity estimate. Theoretically, both approaches should generate the same values Palepu (2004). However, reconciling the approaches in practice can be challenging (Schreiner, 2007). Therefore, in practice, financial analysts will usually employ a wide variety of valuation approaches. For example, whilst referring to the list of absolute and relative valuation methods discussed in this chapter, among other issues, Palepu (2004, p.7-1) states that the financial analyst will "commonly use five to ten different methods of valuation",

In summary, it is evident that dividends are payoffs to shareholders, but it is also well recognized that dividend discount approaches have practical problems. Therefore, as described in this thesis, the accounting and finance literature offer a number of alternative valuation methods, which are theoretically equivalent to dividend discounting (Schreiner, 2007).

3.5.1.2 'Relative' (Multiples) Equity Valuation Framework

Arnold and Moizer (1984) also offer valuable insights into relative ('multiples') valuation *in-action* (Hopwood, 2009), the second category of the aforementioned fundamental analysis techniques used by investment managers to identify shares that appear over – or – under-valued. Arnold and Moizer (1984) found that financial analysts tend to firstly calculate an 'estimated market value' for a company's shares using their chosen fundamental analysis technique, which they then compared to the 'current market value' of those shares. Their survey results also revealed that in arriving at these ‘estimated market values’ (i.e. estimated current share prices) most analysts first estimated a company's earnings for a subsequent year on an historical cost basis, and then applied a P/E ratio to those ‘expected earnings’ based on the analyst's experience and judgment. In simple decision-making terms, an over-valuation prompted the financial analyst to issue a ‘sell’ recommendation, while an under-valuation prompted a ‘buy’ recommendation. Although the multiples valuation method per se does not require forecasting pro forma financial statements and discounting future payoffs, it would be wrong to conclude that multiples have no economic meaning (Schreiner, 2007).

The more recent academic survey literature continues to confirm that the P/E ratio remains the most frequently used multiple in use today, see for example Demirakos et al. (2004) for the U.K., Pike et al. (1993) for Germany and the U.K., Block (1999) for the U.S. and Fouche and van Rensburg (1999) for South Africa. However in practice, investment analysts – who typically cover a long list of companies – do not build their decisions solely on the P/E multiple. Instead, they tend to calculate a short-list of multiples – the empirical evidence suggests in the region of five to eight (Schreiner, 2007) – and then base their final investment decisions (recommendations) on the most value-relevant one or two of these. Also, several academics (Penman, 2011; Wilcox and Philips, 2005; Bhojraj et al., 2003; Fairfield, 1994; Fama-French, 1992 and 1993; Block, 1995; Wilcox, 1984 and Block, 1964) attach considerable importance to binary combinations of price to earnings (P/E) and price to book (P/B) ratios, indicating that these measures provide useful indications of value and growth stocks. However, the relative level of importance that practicing investment managers attach to this literature, and to binary combinations of multiples generally, to aid their decision-making capabilities - either in isolation or as combinations - remains unclear from an examination of the accounting valuation and finance literature. Furthermore, the concept of the 'value premium' is not without controversy and is a source of lively contemporaneous debate between notable academics in the accounting and finance literature. For example, Fama and French (1992 and 1993) demonstrate how combinations of P/E and P/B ratios can be used to construct risky portfolios that can generate abnormal returns over the longer term. But, Penman (2011) uses alternative combinations of P/E and P/B ratios to argue that the so-called 'value premium' is an erroneously mislabeled concept that assigns greater risk to 'value stocks' and not less risk as argued in Fama and French (1992 and 1993). Alternatively, Fairfield (1994) demonstrates how combinations of P/E and P/B ratios can be used to construct profitable trading positions. Finally, Ellis (2011) makes the remarkable observation that financial analysts, as well as investors, appear unclear as to the role of risk within financial analysis and performance appraisal generally.

3.5.1.3 Efficient Markets Hypothesis

Fama's (1965) interpretation of market efficiency, the efficient markets hypothesis (EMH), was an extension to the positive research methodologies of Keynes (1891) and Friedman (1953) which stood as polar opposites in the face of the normative methodologies that preceded them. The EMH signalled the beginning of a new era in positive theoretical research science, spearheaded for example by such notable accounting academics as Ball and Brown (1968), Beaver (1968) and Watts and Zimmerman (1986). These new positive capital markets research methodologies used "changes in security prices as an objective, external outcome to infer whether information in accounting reports is useful to market participants" (Kothari, 2001, p.114). The EMH's widespread implications for capital markets research in accounting were shown to elicit similarly profound effects on finance theory [e.g. CAPM (Sharpe, 1964)]. The implications for capital markets research in finance are discussed at some length in the next chapter, Chapter 4: Modern Finance Theory. As a generalisation, the combined extant literature on the testing of market efficiency in finance, economics, and accounting is huge (Kothari, 2001). Therefore it is only feasible to afford light coverage in this chapter on related accounting valuation theory.

The accounting literature draws inferences about market efficiency from two empirical sources: short and long horizon event study tests and cross-sectional tests of return predictability, or the anomalies literature (Brown, 2015; Cochrane, 2011; Bradshaw, 2011; Ramnath et al., 2008; and Kothari, 2001).

Kothari (2001) asserts that event studies constitute the bulk of the accounting literature concerned with tests of stock market efficiency, which includes among other things the market efficiency with respect to accounting methods literature (Ball, 1972; Kaplan and Roll, 1972; Dharan and Lev, 1993; Hand, 1990; and Ball and Kothari, 1991).

Cross-sectional tests of return predictability, or the anomalies literature, examine whether the cross section of returns on portfolios formed periodically using a specific trading rule [for example, high-minus-low price to book stocks (HML stocks) or small-minus-big cap stocks (SMB stocks)] is consistent with a model of expected returns like the CAPM (Cochrane, 2011; Kothari, 2001; Fama, 1992, 1993 and 1995). In general, the trading rules used have either been univariate indicators like earnings yield, or multivariate indicators employing several fundamentally derived accounting ratios. Kothari (2001, p.110) cites Basu (1977 and 1983) and Lakonishok et al. (1994) as examples of tests using univariate indicators to investigate the market's (mis)-pricing of earnings and cash flow yield. He also cites Ou and Penman (1989a and b), Greig (1992), Holthausen and Larcker (1992) and Abarbanell & Bushee (1997 and 1998) as examples of ratio-based fundamental analysis tests using multivariate indicators to earn long-horizon abnormal returns. Furthermore, he cites Frankel and Lee (1998) as an example of fundamental value strategies.

3.6 Brief Note on Appendix to Chapter 3: Valuation Paradigms in Accounting Theory

In general, the valuation literature discusses two broad approaches to estimating the value of firms. The first is fundamental equity valuation, in which the value of a firm is estimated directly from its expected future payoffs without appeal to the current market value of other firms. Fundamental equity valuation models are based on dividends, (free) cash flows, or (abnormal) earnings, and involve the computation of the present value of expected future payoffs, see for example the DDM, DCF, RIV and AEG methods. The second is a "relative valuation" approach in which firm value estimates are obtained by examining market values of comparable firms. As described in Bhojraj & Lee (2002, pp.413-414) "The approach involves applying an accounting-based market multiple (e.g., price-to-earnings, price-to-book, or price-to-sales ratios) from the comparable firm(s) to our accounting number to secure a value estimate."

However, in light of their evidently ubiquitous coverage in the academic literature and related textbooks, we don't attempt to add value to the thesis by reviewing these models in detail within the main body of this chapter. Instead, we provide a review of these models in the accompanying 'Appendix to Chapter 3: Valuation Paradigms in Accounting Theory'.

3.7 Conclusion

In conclusion, it is evident from this introductory review of the related accounting literature that familiarity with accounting valuation theory and techniques is a prerequisite for success as a practicing fund manager or financial analyst within today's highly competitive marketplace for investment information. Nonetheless, it is equally apparent that the size of the extant accounting valuation literature is vast (Bradshaw, 2011; Kothari, 2001; and Watts & Zimmerman, 1986) which in turn presents many unique challenges for professional investment managers faced with the task of equipping themselves with a working familiarity of every accounting valuation framework, paradigm and nuance available. Nevertheless, given the evident demand for capital markets research in accounting – wherein fundamental analysis and valuation science, in the midst of market inefficiency, represent a sizeable portion of this demand – there are clearly comparative advantages that can be traded (marketable benefits) when sell-side financial analysts possess a deeper understanding of accounting theory's decision-making consequences and effects (Brown, 2015; Ramnath et al., 2008; Schiller, 2003; and Kothari, 2001). The rewards for the pain of deeper learning could be substantial.

Chapter 4

A REVIEW OF FACTOR PRICING MODELS

4.1 Introduction and Background

This chapter reviews the main features of the most important asset pricing models used in the literature. Prominent academics such as Penman (2010), Cochrane (2005), Tapiero (2004) and Sentana (1993) separately assert that accounting for time, payoff and the risk of that payoff are what everything in asset pricing is about. Asset pricing models attempt to summarise and link these three components in simple formulas. Because of their simplicity and tractability, factor pricing models have attracted a great deal of interest from practitioners and researchers, especially the simple capital asset pricing model (CAPM). However, recently more elaborate models have been proposed in the literature, including the consumption CAPM and multi-factor models such as the inter-temporal CAPM (ICAPM) and the arbitrage pricing theory model (APT). These models, as well as related factor pricing literature, are discussed in this chapter.

The structure of the chapter is as follows: Section 4.2 presents a summary of the basic pricing equation. Section 4.3 reviews two well-known anomalous patterns in the cross section of stock returns. Firstly, Section 4.3.1 examines the CAPM and the Size Anomaly; and then Section 4.3.2 focusses on the Fama and French Three-Factor Model (FF3F) and the Value Premium. Next, Section 4.4 reviews the neo-classical factor pricing literature. It is divided into three principal sub-sections. Section 4.4.1 examines the risk and return trade-off. Section 4.4.2 focusses on single-factor models and contains a critique of the capital asset pricing model (CAPM) and the consumption CAPM (CCAPM). Section 4.4.3 focusses on multi-factor models and critically examines both the inter-temporal CAPM (ICAPM) and arbitrage pricing theory (APT). Section 4.5 presents a brief note on the Appendix to Chapter 4: Random Walk Model (RWH) and Beliefs in Stock Market Efficiency. Section 4.6 concludes the chapter.

4.2 The Basic Asset Pricing Equation

Cochrane (2005, p.XV) introduces the universal asset pricing equation $P = E(MX)$, that is, price (P) equals the expected discounted (M) future payoff (X). This is the *basic asset pricing formula* from which all of the classic theories of finance may be derived. This is often called the stochastic discount factor (SDF) approach. As Tapiero (2004, p.65) puts it "*The SDF approach, or the generalized method of moments, seeks to value an asset generally in terms of its future values using a stochastic discount factor*".

Formally, the basic model can be written as follows:

$$P_t = E_t(M_{t+1}\, X_{t+1})$$

where P_t is the asset price at time t (today), X_{t+1} is a time t+1 (tomorrow) random payoff, M_{t+1} is a stochastic discount factor, and E_t is the time-t conditional expectation.

In the utility version, where investors are assumed to optimise some utility function over consumption, say $U(C_t)$, the stochastic discount factor M_{t+1} is expressed as the ratio of *marginal utilities,* measured by the investor's marginal rate of consumption growth, which is written as $\beta \frac{U'(C_{t+1})}{U'(C_t)}$ (Tapiero, 2004, p.66; and Cochrane, 2005, p.6).[6] When the power

[6] The prime in $U'(C_t)$ indicates derivative of the utility function with respect to consumption.

utility version of the stochastic discount factor is used, M_{t+1} reduces to $\beta\left(\frac{C_{t+1}}{C_t}\right)^{-\lambda}$ (Cochrane, 2005, p.42).

Both versions enable the investor (*in theory*) to capture the two important facets of investing, i.e. *time* and *risk*. The beta coefficient (β) captures the *time* element and is measured in the same way that discount factors are measured throughout much of the accounting and finance literature, i.e. as one over the risk-free rate of return, $\frac{1}{R_f}$.

However, it is lambda (λ), the power utility factor in the above $P = E(MX)$ equation that captures the rational investor's propensity for *risk aversion*. Cochrane (2005) shows how the linear version the *utility function* represents a model of human behaviour that is defined over consumption today and consumption tomorrow. As lambda (λ) increases in size it causes the curvature (slope) of the utility function to become more concave downwards in favour of consumption today, thus reflecting the investor's heightened aversion to risk when choosing between consumption today and consumption tomorrow. Furthermore, the power utility version of the model highlights the evident fact that people prefer more of the payoff now than later and are afraid of losses more than they value gains.

In summary, Cochrane (2005) confirms that the consumption-based versions of $P = E(MX)$ are often difficult to work with empirically. For this reason, the researcher opted to abandon a lot of the theoretical purity embodied in the above equations in favour of more pragmatic approaches that connect the discount factor to data represented in factor pricing models. For example, as shown in Section 4.3.1 Sharpe's (1963) CAPM connects the discount factor to the market return; and in Section 4.3.2 Fama and French's (1993) Three Factor Model (FF3F) connects the discount factor to smb, and hml portfolios plus the excess market return $(R_m - R_f)$. Moreover, Section 4.4.3 reviews how the ICAPM and the APM connect the discount factor to the returns on pre-sorted sets of portfolios.

4.3 Anomalous Patterns in the Cross Section of Stock Returns

Some stocks pay more than other stocks. That is, there is strong variation across stocks in the risk premiums that they pay. This empirical fact has been known for a long time. The intriguing question for researchers and practitioners involves understanding why this should be the case; plus why is it that such differences persist overtime? Indeed, Buraschi and Carnelli (2014) assert that understanding the properties of risk premia is one of the most important yet challenging tasks in asset pricing. One of the challenges is related to the fact that, in general, it is difficult to identify risk premia demanded by investors. Numerous academics are directing their efforts toward estimating expected returns on stocks incremental to bonds. According to Ibbotson (2003), these equity risk premium studies can be categorized into four groups based on the approaches the authors took. The first group of studies has attempted to derive the equity risk premium from the historical returns of stocks and bonds; an example is Ibbotson and Sinquefield (1976a and 1976b). The second group has used fundamental information—such as earnings, dividends, or overall economic productivity—to measure the expected equity risk premium. The third group has adopted demand-side models that derive expected equity returns through the payoff demanded by investors for bearing the risk of equity investments, as in the large body literature following the seminal work of Mehra and Prescott (1985). The fourth group has relied on opinions of investors and financial professionals garnered from broad surveys (Brown et al., 2014: Demirakos et al., 2010 and 2004; Fouche and van Rensburg, 1999; and Arnold and Moizer, 1984).

4.3.1 CAPM and the Size Anomaly

The CAPM regression graphs, shown in Figure 4.1, depict 10 portfolios of stocks comprising bonds and equities formed on the basis of *size* (market capitalization). Each fitted line gives the predicted average return from the CAPM time-series regression, as follows:

$$E({R^e}_i) = \beta_E({R^e}_{im})$$

The small stocks feature on the RHS of each diagram, and big stocks are on the left-hand-side. It is clear from these graphs that some portfolios of stocks pay higher returns than others over long periods of time. That is, the big stocks are paying circa 7% to 8% returns pa, while the small stocks are paying circa 17% returns pa, giving rise to a risk premium on small stocks over big stocks (*SMB*) of about 10% pa.

According to Berk (1995), investors have known about this empirical phenomenon for over 50 or 60 years, yet they do not put all their money only into small stocks? The question that arises is why?

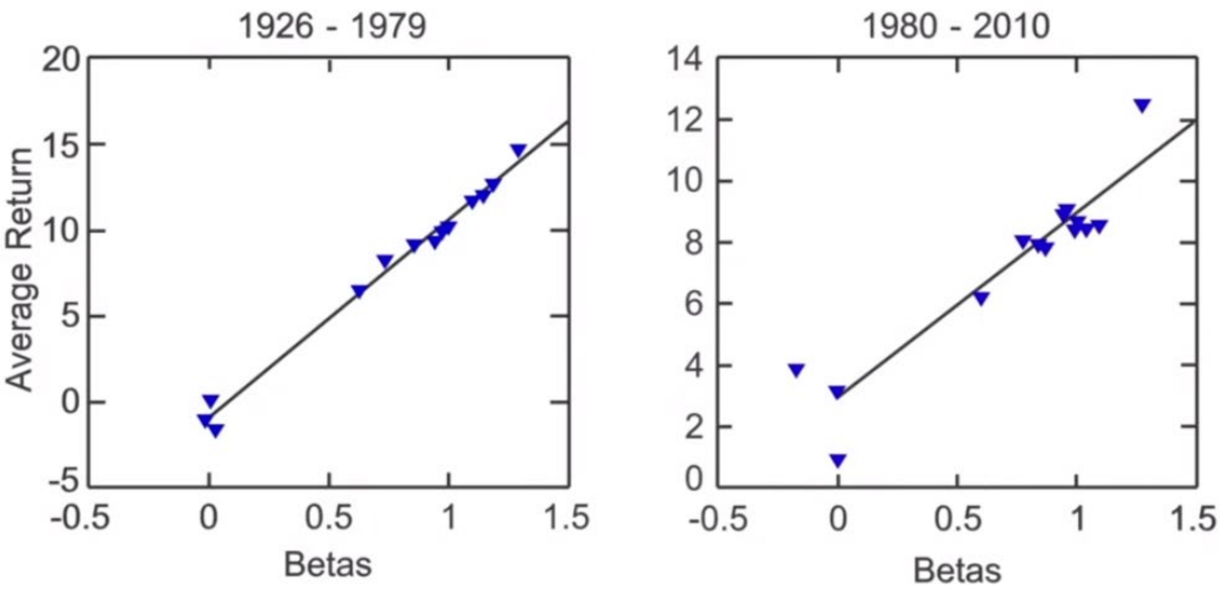


Figure 4.1: Average excess returns vs. betas on CRSP size portfolios, 1926-2010.
Source: Cochrane (2005, p.260) and Cochrane (2013).
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The generic risk model, the capital asset pricing model (CAPM), offers an explanation. According to the CAPM, the huge variation in expected returns across the 10 portfolios should in theory be proportional to their respective betas. Beta, in this linear factor model format, is the regression coefficient of each stock on the market return. That is, stocks with higher average returns should have higher betas. Therefore, the *economic explanation* inherent in the model asserts that the smaller stocks are only earning higher returns in proportion to their higher betas. That is, small stocks don't give you any premium over big stocks if the investor is able to synthesise the same return by borrowing money and investing in the big stocks.

However, given the nature of the empirical evidence now available, this explanation of the size anomaly is no longer satisfactory. Why? Because the evidence now reveals (for example, as outlined in the next sub-section) that there are other kinds of (hidden) systematic risks that are masked behind the CAPM measure of beta. Put another way, there is a need to decompose the systematic market based CAPM measure of beta into subsidiary components of systematic risk.

As a corollary, a more acceptable time series explanation of the size anomaly [the difference in the size of the equity risk premium across stocks and overtime] is provided by multi-factor models of the type represented by the ICAPM and the APT, or as seen in the Fama and French (1993) Three Factor Model (FF3F).

4.3.2 Fama and French Three-Factor Model (FF3F)

Fama and French (1996) assert that *anomalies* describe patterns of average stock returns that are not apparently explained by the CAPM – for example; firm characteristics related to size, earnings/price, cash flow/price, book-to-market equity price, past sales growth, long-term past returns, and short-term past returns. They find that, except for the continuation of short-term returns (the momentum effect), the anomalies largely disappear in a three-factor model.

In his presidential address and subsequent paper '*Presidential Address: Discount Rates'*, Cochrane (2011) contrasts the explanatory powers of the CAPM with those of multi-Factor Models - in particular the FF3F model. Using the graphical representation (below), he describes how the CAPM fails to explain the *value effect,* one of the most important empirical findings to have emerged post-CAPM.

Stocks are sorted into ten portfolios. On the X axis, the *value portfolios* consist of those stocks with the lowest prices compared to their book values (P/B ratios). Value stocks include the airline industry, steel mills, railroads; companies with a lot of book assets relative to stock market value. The *growth portfolios* contain stocks with the highest prices relative to their book values (P/B ratios). Growth stocks include companies like Google; huge stock market value but relatively few book assets.

The graph shows a big difference in average returns as you move up the $E(R_e)$ line from growth to value stocks. The value stock returns are practically double those of growth stocks. That's called the good stock versus good company fallacy; great companies with lots of profits, but the stock market knows about these companies already and so those prices are already high. Applying the theory of the CAPM, one would assume that the value stocks must be riskier. But, the CAPM beta line connecting the growth stocks to the value stocks is a flat line, which in turn implies that the systematic risks are exactly the same. This anomaly puzzled researchers up until Fama and French (1993) published their seminal three-factor '*explanation*'. The Fama and French (1993) version of the capital asset pricing model, their FF3F model, contained three regression coefficients on three factors: the traditional CAPM excess market return factor; a new factor of value minus growth stocks, *hml*; and another new factor, small minus big stocks, *smb*. Notwithstanding the foregoing regression-based *explanation*, several questions remained; for example, why are expected returns so high for value stocks and small stocks? Why do the *smb* portfolios generate a higher risk premium? Why does the market pay such high returns to the *hml* portfolios? Even more crucially, why is it that Fama and French can call this an *explanation*?

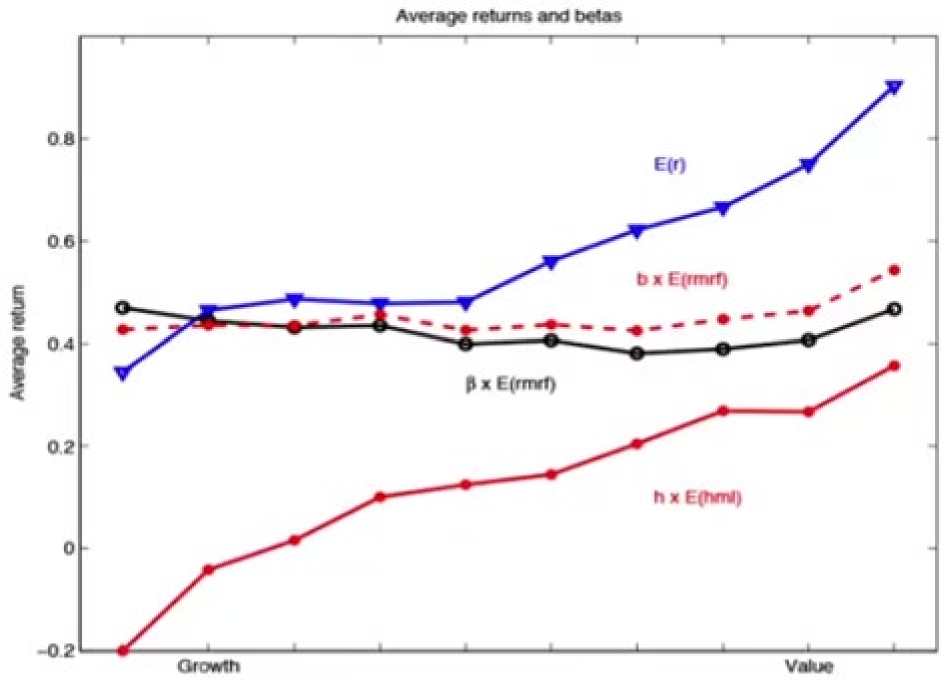

Figure 4.2: Average returns and betas for Fama-French 10 B/M sorted portfolios on CRSP monthly data, 1963-2010.

Source: Source: Cochrane (2011, p.1059).

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Fama and French (1996) provide an additional *explanation* for these anomalous phenomena, as follows:

Their Table 1, Panel A (Fama and French, 1996, p.58) summarises the average monthly return statistics on 25 stock portfolios, sorted by *size* and *book/market ratios*, for the period July 1963 to December 1993. Reading diagonally from left to right, it is observed that the variation in average returns between *big growth* stocks (0.37% per month) and *small value* stocks (1.08% per month) is threefold. That is, investors earn three times more returns on small value stocks than big growth stocks. All things being equal, value stocks appear to represent a great investment.

Their next table, Table 1, Panel B (Fama and French, 1996, p.59), details their *explanation* of these anomalous phenomena (i.e. their explanation of the value premium). The table comprises a list of summary regression statistics for each of the three factors: $s = smb$, $h = hml$, and $b = (R_m - R_f)$ - the excess market return factor. As shown in the table, the b *coefficients* reveal the absence of any capital asset pricing model risk - the betas are all the same. Therefore, according to Fama and French, the high $\underline{s}$'s and h's '*explain'* the high expected returns. That is, the increasing s coefficients correspond to rising expected returns, and likewise for the rising h coefficients. Furthermore, Fama and French (1996, p.77) outline a story that invokes a macro-economic argument that tries to connect *hml* (which they describe as relative distress, the state variable of special hedging to concern to investors) to *human capital (*the fear that people may have about losing their jobs at the same time as *hml* falls).

In conclusion, since then numerous additional multi-factor models have emerged to explain a whole range of '*multifactor anomalies,'* or why it is that higher returns may not necessarily imply higher betas of a particular type, or in an obvious form. The following section takes a closer look at some of the more well-known multi-factor models documented in the finance literature.

4.4 Review of Neo-classical Factor Pricing Literature

The objective of this section is to examine the historical development of equity pricing models, and in particular the genesis of factor pricing models.

Neo-classical research perspectives are pervasive in finance (Von Neumann and Morgenstern, 1944). Paradigms that emphasize 'rational theories' include: modern portfolio selection theory (Markowitz, 1952), capital asset pricing theory (Tobin, 1958; Sharpe, 1964; Merton, 1973; and Breeden, 1979), arbitrage pricing theory (Ross, 1976), and the efficient markets hypothesis, EMH (Fama, 1965 and 1970). The omnipresent nature of the EMH assumptions permeating the theoretical finance literature is striking; the most salient of which are: stock markets have no frictions, agents are rational and risk-averse, and investors correctly process all available information in order to form rational expectations of all parameters specified in a model. Furthermore, agents are assumed to understand 'Bayes Law' and make sensible choices [*preferences*] (Barberis & Thaler, 2003). Thus, under the EM hypothesis, '*prices are right*'; meaning no investment strategy can earn excess risk-adjusted average returns, i.e. average returns greater than those returns warranted for the risk borne by investors (Barberis & Thaler, 2003; and Ricciardi & Simon, 2000).

However, against this backdrop Behavioural Finance Theory, BFT (Kahneman and Tversky, 1979) - which recognises that various emotional biases and psychological processes can have an impact on share prices and returns - presents a notable theoretical challenge for the EMH (Shiller, 1999). Its emergence, at least in part, is the result of the growing body of anomalous evidence that has emerged in recent times to directly challenge such traditional paradigms as the CAPM and APT. In essence, BFT asserts that some financial phenomena can be better understood using models in which agents are assumed to be *'irrational',* rather than 'rational' (Barberis & Thaler, 2003; Ricciardi & Simon, 2000; and Shleifer and Summers, 1990).

4.4.1 Risk and Return Trade-off

Markowitz (1952) developed the *Mean-Variance Model* to demonstrate that there is an optimal set of portfolios - in terms of risk and return - for *all* investors. But he was unable to provide specific guidance as to how a rational risk-averse investor should go about identifying the '*optimal*' investment portfolio. Sharpe (1964) however solved this 'optimisation problem' by extending Tobin's (1958) Two-Fund Separation Theorem to show that, in equilibrium, all investors will hold the market portfolio, leveraging or de-leveraging it with positions in the risk-free asset in order to achieve their desired level of risk.

Mean-variance analysis remains an important ingredient in many asset pricing models, even though it is not necessarily true that people want to hold mean variance efficient portfolios. For instance, in some cases investors will be interested in hedging potentially adverse movements in the *investment opportunity set* (Merton, 1973), or smoothing consumption growth (Cochrane, 2005) or holding portfolios of assets representing the systematic risk of a factor that are sufficiently large enough to eliminate the idiosyncratic risks otherwise affecting an arbitrage pricing theory (APT) model (Ross, 1976).

Notwithstanding the foregoing, covariance and/or correlation – *not standard deviation* – not only explain portfolio diversification but occupy center stage in all of the neo-classical asset pricing models outlined in the following sections.

4.4.2 Single-Factor Models

4.4.2.1 Capital Asset Pricing Model (CAPM)

Treynor (1961 and 1962); Lintner (1965a, b) and Mossin (1966) published similar papers to Sharpe´s (1963 and 1964) papers, demonstrating that they too had independently derived a similar partial equilibrium model for the capital markets.

Sharpe's static CAPM is a parsimonious linear factor model that assumes that the pricing of assets is only influenced by a single mean-variance based risk factor (β), calculated as the covariance between a security's returns and the returns on the market portfolio. Subsequently, it is then a relatively easy task to estimate whether or not the expected returns on a security are correctly priced, over-priced or under-priced (Goetzmann, 1996; and Wang, 2003).

The model may be written as:

$$R_i = R_f + \beta\left(R_m - R_f\right)$$

where

$\left(R_m - R_f\right)$ describe the market risk premium.

$\beta\left(R_m - R_f\right)$ captures the asset's risk premium for bearing market risk.

R_m and σ_m describe the return and risk of the market portfolio, which is traditionally measured as the average return and standard deviation of a suitable stock market index, such as the FT all share index. However, the 'Roll Critique' (Roll, 1977) challenges, from a theoretical point of view, the validity of using a broad stock index as a proxy for the market portfolio. The CAPM assumes that the market portfolio includes all possible assets, but Roll (1977) argues that since the market portfolio is unobservable the CAPM cannot be tested. Consequently, the validity of the results of empirical tests of the CAPM may be biased in favour of the proxy selected to represent the market portfolio, which in turn undermines any conclusions made regarding whether the theoretical predictions of the CAPM should be accepted or rejected.

β (Beta) describes the systematic risk of the security relative to the risk of the market as a whole, as follows:

$$\beta = \frac{Cov_{(i,m)}}{Var\ (m)}$$

The formulae signifies that an individual asset's contribution to the portfolio risk depends on its correlation with the market portfolio.

R_f describes the risk-free rate, and is usually taken to imply the return from short-term government bonds. But any asset whose returns are uncorrelated with the market return is also a risk-free asset. Investing in a zero-correlation asset (beta = 0) should provide an expected return equal to the risk-free rate when it exists.

In conclusion, in spite of the unrealistic assumptions underlying the CAPM model, there is some evidence of a positive and linear relationship between the beta coefficient of a security and average market returns (Fama and MacBeth, 1973; Blume and Friend, 1973; Black et al., 1972; and Jensen and Scholes, 1972). However, the overwhelming evidence suggests that beta is not a complete measure of equity risk. That is, numerous variables are empirically proven to be incrementally informative in explaining and forecasting equity returns, see for example the dividend yield ratio (Cochrane, 2011), the earnings yield (Basu, 1977 and 1983) and the book-to-market equity price ratio (Fama and French, 1992 and 1993). See also Section 4.3 for a fuller discussion of two well documented anomalous patterns in the cross section of stock returns: CAPM and the Size Anomaly and the Fama and French Three-Factor Model (FF3F). Moreover, examples of anomalous evidence that theoretically challenge the Weak Form EMH include: Seasonal Anomalies, Momentum Patterns, Reversal Patterns, and Shiller's Excess Volatility Tests. In a similar vein, examples of anomalous evidence that theoretically challenge the Semi-Strong Form EMH include: Value Patterns, Briloff Phenomena, Post-Earnings Announcement Drift, Value Line Phenomena, and Excess Volatility. These anomalous patterns reflect inefficient prices and returns that are inconsistent with the CAPM, the traditional equilibrium model. Investors' exploiting these anomalies achieve superior (abnormal) returns, i.e. returns in excess of those predicted by the CAPM. See also Chapter 3, Section 3.3 and Appendix 4 for a fuller discussion of these anomalies and other related EMH evidence.

Finally, it remains a notable phenomenon that the CAPM is the most widely taught/used asset pricing model in business schools and amongst practitioners today (Cochrane, 2005).

4.4.2.2 Consumption CAPM (CCAPM)

Based on research by Rubinstein (1976), Lucas (1978) and Breeden (1979), the consumption-based capital asset pricing model (CCAPM) extends the traditional capital asset pricing model (CAPM) of Sharpe (1964) such that expected asset returns are *predicted* to change in linear proportion to their consumption betas (β). The main difference between the CCAPM and the CAPM is seen in the different assumptions underlying each model. The CCAPM attempts to associate the systematic risk of an asset with the state of the economy as measured by the aggregate rate of consumption growth, and not the market portfolio as defined by the CAPM (Sharpe, 1964).

Higher consumption betas (systematic risk) imply higher expected asset returns, and therefore lower asset prices. Alternatively, using the language of portfolio selection theory (Markowitz, 1952), assets that have a negative correlation with the aggregate rate of consumption growth in the economy will have lower returns and higher prices (Sorensen, 2005; and Cochrane, 2005).

A simplified version of Breeden's (1979) linear CCAPM may be written as follows:

$$E(R_{it}) = R_f + \beta_{ic}[E\left(R_{mct} - R_f\right)]$$

The model implies that the expected risk premium on a risky asset $[\mathrm{E_t}R_i^e]$ defined as the expected return on a risky asset less the risk-free return $[\mathrm{E_t}R_{it} - \mathrm{R_f}]$ is proportional to the covariance of its return with consumption growth in the period of the return.

where

$\mathrm{E_t R_{it}}$ = expected return on stock (i) on day t

$\mathrm{R_{mct}}$ = return on the market proxy on day t

R_f = risk free rate, and

β_{ict} = the consumption beta on day t. In practice, the β coefficient (β_{ict}) is derived from a regression of the asset's returns on aggregate consumption growth in the economy.

There are many versions of the consumption CAPM, depending on the assumed utility function of consumers (Sorensen, 2005). From the viewpoint of risk diversification, the CCAPM assumes that investors hold assets in order to finance consumption at times when income is low. Cochrane (2005) refers to this process as 'consumption smoothing'; assets which are expected to have higher returns when the consumption level of the representative agent is low (income may be low, or savings may be high) are more desirable than assets that pay-out when income is high, or savings are low. As a hedging philosophy this makes sense; an asset that pays off when consumption is low is better to have since it (partly) provides insurance against bad outcomes. And therefore it will have a higher price for a given average pay-out — and a high price implies a low return (Cochrane, 2005; and Sorensen, 2005).

Breeden (1979) argues that measuring the covariance of an asset's returns with aggregate consumption growth is a better measurement of the systematic risk of an asset than measuring the covariance of the asset's returns with the returns on the market portfolio.

In conclusion, the CCAPM provides an alternative way to characterize how investors perceive the risks in asset returns — a way that allows many risk factors to be collapsed into one. But the empirical evidence nevertheless tends to show that security returns are more closely related to the systematic risk (beta) measured with respect to a stock market index [the traditional CAPM] than to the beta that measures the covariance of security returns with respect to aggregate consumption growth [the consumption CAPM].

4.4.3 Multi-Factor Models

4.4.3.1 Inter-Temporal CAPM (ICAPM)

The CAPM model outlined in the previous section assumes that investors only have asset demands – *risk and return preferences* – that do not change over time. That is, the CAPM assumes that $R_f, R_m, \beta_{im}, \sigma_m$ and $(R_m - R_f)$ will remain static over time (Goetzmann, 1996; Wang, 2003).

In contrast, Merton's (1973) inter-temporal CAPM (ICAPM) extends the CAPM to a more realistic dynamic environment that captures the multi-factor / multi-period nature of financial market equilibrium. Thus, the ICAPM recognises that the *'investment opportunity set'* [comprising the market portfolio (R_m) and/or the risk-free investment (R_f)] is likely to shift over time. This means, using the language of portfolio selection theory (Markowitz, 1952), that the ICAPM expects changes in the *efficient frontier* and/or Sharpe's (1964) *Capital Market Line* to occur over time. Furthermore, in light of such a dynamic environment for investment, the model also recognises that investors may wish to change the amounts or fractions invested into each asset category, and/or they may also wish to withdraw a part of their investment for immediate consumption (Krause, 2001).

Merton (1990, p.510) shows that, in equilibrium, the expected risk premium (ER_i^e) on any security or portfolio (R_p) can be *predicted* using the following linear factor model:

$$ER_i^e = \beta_{im}(ER_m - R_f) + \beta_{ip1}(ER_{p1} - R_f) + \beta_{ip2}(ER_{p2} - R_f) + \cdots + \beta_{ipk}(ER_{pk} - R_f)$$

where

$\beta_{im}(R_m - R_f)$ = the covariance between the expected return on the risky asset, i and the market portfolio, m

R_{pk} = the return on all portfolios held by the investor that are different from the market portfolio

β_{ipk} = the sensitivity (covariance) of the stock or portfolio's return to all other risk sources [wealth or state variables] of concern to the investor over the longer-term. Typically, exposure to future macroeconomic uncertainty arises when unexpected changes to state variables [for example, the level of interest rates, inflation levels, future wages, the future price of consumption goods and/or shocks to the future investment opportunity set] occur in the economy.

Merton (1973) does not specify the state variables that influence the investment opportunity set. However, he notes that the interest rate is an obvious candidate for a state variable. Fama and French (1988) provide empirical evidence that the price dividend yield is a strong candidate for a state variable; while Cochrane (2011) also shows that the correlation between dividend yields and subsequent long horizon returns is very strong. Kothari and Shanken (1997) identify the book-to-market equity price ratio as another state variable.

Notably, the ICAPM specifically retains $R_f, R_m, \beta_{\text{im}}, \sigma_{\text{m}}$ and $(R_m - R_f)$ as factors and parameters. Thus, in the case of the constant investment opportunity set, Merton's (1973) ICAPM model predicts the same risk-return relationship as the CAPM. Therefore, the CAPM may be considered as a special case of the ICAPM.

Merton (1973) used the *Three-fund Separation Theorem*[7] to show how investors might offset (hedge) the kind of macroeconomic risk exposures that often lead to unfavourable shifts in the investment opportunity set. That is, investors can construct tailor-made portfolios of investments that act like a protective hedge against future adverse movements in the state

[7] Merton's (1973) 'Three-Fund Theorem' is the dynamic equivalent of Tobin's (1958) 'Two-Fund Separation Theorem' (Krause, 2001)

variables of concern to them. Sometimes they will need to accept lower returns as part of the 'cost' of implementing a favoured hedging strategy. Therefore, the total demand for financial assets will be the sum of investor demand for assets stemming from attempts to optimize the mean-variance performance and the demand for assets needed for the purpose of hedging.

A simple example will serve to illustrate how this process works: Suppose an investor saving for retirement is worried about a fall in future real interest rates and is not content with holding *only* the market portfolio (R_m) and the riskless asset (R_f). Therefore, he may wish to overweight assets that do well if real interest rates fall, even accepting lower returns on these assets relative to the CAPM predictions (Wang, 2003). For example:

1. The investor could hedge the interest rate risk by constructing a portfolio ($\mathrm{p_q}$) that is uncorrelated with the market (R_m) but highly correlated with changes in real interest rates (R_f) [the state variable of special hedging concern in this instance].

2. The optimal portfolio now consists of three funds [hence, the term '*Three-fund Separation Theorem'*]:

    1. Riskless asset
    2. Hedging portfolio (p_q)
    3. Market portfolio (M_p)

Portfolios #1 and #3 provide the investor with a mean-variance efficient holding of assets. As the state variable changes stochastically over time, it causes the efficient frontier and/or capital market line (the investment opportunity set) to shift over time also. However, any unfavourable shift is offset by the corresponding – in the opposite direction – movement in portfolio #2 (Cochrane, 2005; Wang, 2003; and Krause, 2001).

In conclusion, the ICAPM is a useful framework for building portfolios adapted to an investor's specific needs. The FF3F model (Fama and French, 1993) is probably the most famous application of the ICAPM to-date. If the CAPM is a 'one size fits all' model of investing, then the ICAPM [and the APM] are 'tailor-made suits' (Goetzmann, 1996). As with most asset pricing models, the ICAPM fails to explain short-term movements in security returns and prices.

4.4.3.2 Arbitrage Pricing Theory (APT)

Published by Ross (1976), Arbitrage Pricing Theory (APT) states that the expected return on an investment is dependent upon how that investment reacts to individual macroeconomic risk factors. It represents an alternative and more general approach than the either the CAPM or the ICAPM to estimating the expected risk premium on any security [$\mathrm{E_t}R_i^e$] or portfolio [$\mathrm{E_t}R_p^e$], as follows:

$$ER_i^e = \beta_{iF1}\left(ER_{F1} - R_f\right) + \beta_{iF2}\left(ER_{F2} - R_f\right) + \cdots + \beta_{iFK}\left(ER_{FK} - R_f\right)$$

where $F_{F1}, F_{F2}, F_{F3}, \ldots\ F_{FK}$ describe the systematic risk factors representing individual sources of macroeconomic risk; $\left(ER_{FK} - R_f\right)$ are the expected risk premiums (excess returns) associated with each factor; and where $\beta_{iF1}, \beta_{iF2}, \ldots\ \beta_{iFK}$ measure the sensitivity of the security (i) and/or the portfolio (p) to its k^{th} attribute.

The notion of arbitrage is an important one in theoretical finance. It assumes that two identical assets (or essentially similar securities) cannot sell at different prices on two different markets that are in equilibrium. This is because rational arbitrageurs will quickly identify any price inefficiencies and act (simultaneous purchase and sell the same security) so as to push prices back to their equilibrium level (Sharpe and Alexander, 1990). Thus, the theory assumes that the capital markets are perfectly competitive.

While the APM (Arbitrage Pricing Model) and the CAPM share similar underlying perfect capital market assumptions, the APM has fewer. Notably, formal proofs of the CAPM rely upon static equilibrium arguments that include the assumption that all investors have homogenous expectations; which further implies that all investors behave alike and care about just one source of macro-economic risk, the market portfolio [measured by beta (β_{im})]. But APT says there is no need to presume that this, or any factor, matches the unique world wealth portfolio. Instead, it argues that expected excess returns [$E_t R_i^e$] are influenced by the returns on multiple risk factors (R_{FK}) and multiple beta parameters (β_{iFK}), that together represent many possible sources of systematic risk and uncertainty, beyond solely the one right portfolio for everyone in the world.

Arbitrage Pricing Theory offers little guidance on the selection of risk factors (F_K) to include in the model. The theory does not specify how many of these APT risk factors '*drive*' returns, nor does it address what these risk factors are, or how an investment's sensitivity to changes in a particular factor (β_{iFK}) should be measured. Generally, potential sources of macroeconomic risk (macroeconomic 'surprises') include *unanticipated* changes in: inflation rates, real interest rates, GNP, the money supply in the economy, the level of industrial production, the level of personal consumption, and/or *unanticipated* shifts in a stock market index or consumption growth index of concern to the investor.

Notably, it is only the unanticipated macro-economic *'surprises'* that '*drive'* stock returns because, as was seen in the review of the RWH theory (Appendix 4), prevailing prices already reflect the known information about the economy. Thus, when something unanticipated happens in the economy it causes investors to re-act in order to revalue their positions, which in turn results in unanticipated and rapid (in theory) changes in equity prices and returns. Finally, these macroeconomic 'risk factors' cannot be avoided no matter how thoroughly investors diversify, although investors can tilt their portfolios away from them.

Over the last few decades empirical tests of the APT have mainly utilised one of the following three methods in order to identify and measure common risk factors in stocks: factor analysis, specifying factors and/or specifying firm characteristics. The first method, *factor analysis,* estimates *orthogonal* (uncorrelated) factor sensitivities; the second method specifies factors based on macroeconomic theory [both the APM and the ICAPM bear a close relationship here]; and the third method estimates security attributes directly, e.g. P/E and P/B ratios. However, when it comes to measuring the beta coefficients (β_{iFK}), regression analysis remains the traditional way to derive these.

Finally, the APM and the CAPM are equivalent when the APM is comprised of only one systematic market-based risk factor that is sufficiently large enough to render idiosyncratic risks irrelevant.

In conclusion, the main difference between the APT and the ICAPM is seen in the different assumptions underlying each model. In the ICAPM, systematic risk is fully captured in the beta coefficient of the security with the market portfolio, while the additional risk factors in the model serve as a proxy for changes in the investment opportunity set resulting from changes in the state variables of concern to the investor. However, in the case of the APT, systematic risk is measured as the summation of all the individual sources of macroeconomic risk affecting the security.

4.5 Brief Note on Appendix to Chapter 4: Random Walk Model (RWH) and Beliefs in Stock Market Efficiency

In general, the accounting and finance valuation literature discusses two largely polar opposite viewpoints that relate to the processes of competition to explain how equity prices behave over-time. The first, assumes that the behaviour of equity prices, over-time, is completely random and unpredictable. Theoretical support for this assertion can be found in the random walk theory, first formulated by Bachelier (1900), later developed into the theory of rational expectations by Muth (1961) and subsequently popularised as the efficient markets hypothesis (EMH) by Fama (1970). The second finds expression in numerous subsequent empirical tests that now confirm these models are defective, see for example Lo and Mackinlay (1988 and 1987), Keim and Stamgaugh (1986), Oprean (2012) and Buraschi and Carnelli (2014). These and related anomalous patterns are discussed further in the Appendix.

In conclusion, in light of their evidently ubiquitous coverage in the academic literature and related textbooks, we don't attempt to add value to the thesis by reviewing the market efficiency evidence in detail within the main body of this chapter. Instead, we provide a review of the evidence in the accompanying Appendix to Chapter 4: Random Walk Model (RWH) and Beliefs in Stock Market Efficiency.

4.6 Chapter Summary and Conclusions

In this chapter we have used a finance-based framework to review research on the main features of the most important asset pricing models in the literature. The objective was to develop a deeper understanding of multi-factor pricing models in the context of what the available empirical evidence says about their relative abilities to capture information of concern to investors. To this end, a selection of contemporary asset pricing theory and empirical facts, together with a brief history of the genesis of factor pricing models, was considered. As a result, there is no doubt that multi-factor pricing models help investors to capture and manage a wide variety of time varying risks across assets and/or portfolios of interest to them. Fama and French (1993) is undoubtedly the most famous example. However, numerous additional multi-factor versions of asset pricing models have also been shown to be effective in predicting time varying risk premiums across assets (Novy-Marx, 2012; Asness et al., 2000; Fama and French, 2006; and Kothari et al., 1995).

Together with Appendix 4, this chapter considered the explanatory power of multi-factor models alongside the large body of anomalous empirical evidence available in the literature that appears to challenge the concept of market efficiency (EMH) and the efficacy of the CAPM, as well as other related multi-factor capital asset pricing models. There is mounting evidence that suggests capital markets might be informationally inefficient and that prices might take years before they fully reflect available information (Kothari, 2001). This empirical fact strengthens the argument in favour of using multi-factor models to predict share prices and returns and/or identify market inefficiency and abnormal returns.

Finally, there is an inescapable connection between finance theory and accounting valuation theory in capital markets research. This is apparent from the review of the multi-factor models considered in this chapter. Unexpected changes in state variables are clearly a concern for investors, but so also is the publication of new periodic financial statement information. Thus, there is continued scope for multi-factor pricing models to capture diverse risk factors of special concern to investors. The previous chapter also addressed this theme, examining the relevance of the periodic financial statements within capital markets research generally, but focussing specifically on the role of accounting information when choosing between available multi-factor pricing models.

Chapter 5

RESEARCH PHILOSOPHY AND METHODOLOGY

5.1 Introduction and Background

As revealed in the previous chapters, the existing literature provides no universal advice on which investment appraisal methods lead fund managers and/or financial analysts to make better investment decisions. Our review of the literature highlighted the existence of some notable schisms within and between the paradigms of 'academic theory' and investment analysis 'in-action'. The 'in-action' lacunae refer to the evident divide that separates buy and sell side decision-making within the investment management industry as a whole. The 'academic theory' lacunae are more multifarious. They refer to the nebulous demarcation lines that separate the accounting, finance and behavioural finance paradigms. However, while some level of integration across the three paradigms is evident, the three theoretical frameworks appear to largely stand apart and often opposed to one another. Moreover, when the link between these three theoretical worldviews are compared to investment management practice, they reveal numerous additional schisms.

In light of myriad evident conflicts of interest, divisions, and gaps within the investment management research literature, it is not surprising that academia repeatedly calls upon researchers to conduct more in-depth and imaginative research into the so-called "black box" of investment management decision-making processes. Examples include Brown et al. (2015), Bradshaw (2011), Ramnath et al. (2008) and Arnold and Moizer (1984). Notably, it was in response to these calls that we formulated our bespoke 'mixed-methods research strategy' in order to tackle these 'black-box' phenomena head-on.

The structure of the chapter is as follows: Section 5.2 presents the research paradigm, epistemological outlook and ontological stance of the author. It is divided into three principal sub-sections that separately examine the philosophical worldviews underpinning the study: postpositivist, constructivist and pragmatic. Section 5.3 describes the qualitative, quantitative and mixed-methods research paradigms adopted in the study. Section 5.4 describes the research subjects. It is divided into two principal sub-sections that separately examine population and sample selection. Firstly, Section 5.4.1 describes the structure of the asset management industry in Europe; and then Section 5.4.2 describes the interview and questionnaire sample selections. Section 5.5 describes the research design, and is divided into four principal sub-sections. Firstly, Section 5.5.1 reviews the prior research literature relating to interview design; and then Section 5.5.2 describes the interview design utilised in the current research. Next, Section 5.5.3 reviews the prior research literature relating to questionnaire design; and then Section 5.5.4 describes the questionnaire design utilised in the current research. Section 5.6 concludes the chapter.

5.2 Paradigmatic[8], Epistemological[9] and Ontological[10] Considerations

A series of inter-related philosophical assumptions regarding the nature of reality (ontological assumptions), the role of the researcher (epistemological assumptions) and the process of the research (methodological assumptions) are implicit in any academic research study. The researcher's position vis-a-vis these assumptions permeates his/her research and will determine the research philosophy, the research design, the methods employed in collecting the data and the interpretation of results (Guba and Lincoln, 1994). Two

[8] A paradigm is “a cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied” (Bryman, 2007, p.25).
[9] An epistemological issue “concerns the question of what is (or should be) regarded as acceptable knowledge in a discipline” (Bryman, 2007, p.16).
[10] Ontology refers to “the nature of realities; whether we believe that the world exists independently and to which we are external, or do we see the world as a constructed reality which is based on the perceptions, interpretations and the actions of those who mould that reality” (Bryman, 2007, p.23).

paradigms that stand as polar opposites along the continuum of social science research are the quantitative paradigm and the qualitative paradigm. This research study embraces both of these philosophical paradigms or worldviews in order to conduct a bespoke mixed-methods strategy that aims to open the 'black-box' of investment management decision-making wider than researchers have hitherto done. Although there is ongoing debate about what philosophical worldviews or beliefs researchers bring to inquiry, we highlight three that directly pertain to our choice of a mixed-methods research design: Postpositivism (relates to quantitative designs), Constructivism (relates to qualitative designs), and Pragmatism (relates to mixed-methods designs). The major elements of each of these three interrelated research approaches are described in the sections below.

5.2.1 Philosophical Worldviews

Although philosophical ideas remain largely hidden in research, they nevertheless still influence the practice of research and need to be identified (Slife & Williams, 1995). Moreover, doing so helps researchers explain why they chose qualitative, quantitative, or mixed methods approaches for their research. (Creswell & Creswell, 2018).

Guba (1990, p.17) and Denzin & Lincoln (2005, p.22) use the term 'worldview' to mean "a basic set of beliefs that guide action". Other writers refer to these worldviews or beliefs as 'paradigms', see for example Lincoln et al. (2011) and Mertens (2010), while Crotty (1998) refers to them as epistemologies and ontologies. Denzin and Lincoln (2005, p.22) refer to paradigms as "the net that contains the researcher's epistemological, ontological, and methodological premises". Finally, Creswell & Creswell (2018, pp.5-6) assert that "individuals develop worldviews based on their discipline orientations and research communities, advisors and mentors, and past research experiences."

The types of beliefs or worldviews held by individual researchers will typically lead them to adopting a strong qualitative, quantitative, or mixed methods approach in their research. However, it is notable that Merriam (2009, p.8), while referring to qualitative research, cautions "there is almost no consistency among writers in how this aspect of qualitative research is discussed". Nonetheless, although there is ongoing debate in the literature about what worldviews or beliefs researchers bring to inquiry, we discuss three that directly pertain to our research study: Postpositivism, Constructivism and Pragmatism. The major elements of each position are presented in Table 5.1.

Table 5.1: Three Philosophical Worldviews:

Postpositivism	Constructivism	Pragmatism
Determination	Understanding	Consequences of actions
Reductionism	Multiple participant meanings	Problem-centred
Empirical observation and measurement	Social and historical construction	Pluralistic
Theory verification	Theory generation	Real-world practice oriented
Source: Adapted from Creswell & Creswell (2018) Used with the permission of the publisher: Sage College, Sage Publications, Inc.		

Whilst our philosophical worldviews are identified in Table 5.1, it seems appropriate to give some examples of how other writers have described their philosophies before we elaborate further on ours as described in Table 5.1. For example, Newman (2006) lists three philosophical perspectives (positivist, interpretive, and critical) while Glesne (2011) and Merriam (2009) advocate four alternative philosophical approaches to social science (positivist, interpretive, critical, and post structural/postmodern).

5.2.2 The Postpositivist Worldview

Postpositivist assumptions represent the traditional form of research and relate more to quantitative research than qualitative research. This worldview is sometimes called the scientific method, or doing scientific research. It is also called positivist/postpositivist research, empirical science, and postpositivism. "This last term is called postpositivism because it represents the thinking after positivism, challenging the traditional notion of the absolute truth of knowledge (Philips & Burbules, 2000) and recognizing that we cannot be absolutely positive about our claims of knowledge when studying the behavior and actions of humans" (Creswell & Creswell, p.6, 2018).

The knowledge that develops through a postpositivist lens is based on careful observation and measurement of the objective reality that exists in the world. Thus, developing numeric measures of observations and studying the behavior of individuals becomes paramount for a postpositivist. In addition, postpositivists tend to hold a deterministic philosophy and study problems wherein they deductively assess the causes that probably influence outcomes. In essence, the accepted postpositivist approach to research—otherwise described as the scientific method—requires the researcher to begin with a theory, collect data that either supports or refutes the theory, make necessary revisions and then conduct additional tests. In this light, it is also reductionistic in the sense that ideas are reduced into small discrete sets whereby the variables that comprise research questions and hypotheses can then be tested (Creswell & Creswell, 2018).

5.2.3 The Constructivist Worldview

Constructivism (often combined with interpretivism) is a philosophical perspective that is typically seen in qualitative research, see for example Creswell & Creswell (2018), Lincoln et al. (2011), Mertens (2010) and Crotty (1998). Individuals try to understand the world in which they live and work by developing subjective meanings of their experiences. Meaning develops through inter-action with others (hence social constructivism) and through historical and cultural norms that operate in individuals' lives. These meanings are usually multifaceted, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas. Hence, the researcher should rely as much as possible on the participants' views of the situation being studied. What's more, the researcher's role is to make sense of (or interpret) the meanings others have about the world. The more open-ended the questioning, the better, as the researcher listens carefully to what people say or do in their life settings. In consequence, instead of deductively starting with a theory (as in postpositivism), constructivist researchers generate or inductively develop a theory or pattern of meaning that fits with their research purpose, see for example Creswell & Creswell (2018), Bryman and Bell (2007) and Crotty (1998).

Applying this philosophy to this research study, we can affirm that our ontological stance– our way of viewing the world of asset management '*in-action'*– inclines us to see that world as a constructed[11] reality (in the sense of 'to construe'), that is a world in which asset management praxis reflects the perceptions, interpretations and the actions of those involved in moulding that reality (Bryman and Bell, 2007). Accordingly, experiences and objects are created and influenced by the participants within that reality through their interactions with other fund managers and financial analysts and with their environment (hence social constructivism). Moreover, that reality is forever being created and is constantly changing (Bryman and Bell, 2007). Alternatively, according to Potter (1996, p.98) (cited in Bryman and Bell, 2007): the world "… is constituted in one way or another as people talk it, write it and argue it." Therefore, for constructionists, there is no one 'true' perspective, and

[11] Constructionism "is an ontological position which asserts that social phenomena and their meanings are in a constant state of revision" (Bryman, 2007, p.23).

knowledge is not a definitive concept. Moreover, by studying the ontological stance and epistemological perspective of the typical constructivist researcher we have learned that no qualitative researcher can ever hope to be completely objective. As a result, regardless of the findings or results that emerge from this research study, it is unlikely they will ever be generalisable or predictive, even if they find or propose an explanation for the behaviour of fund managers and financial analysts in a particular context (Hines, 1988). Finally, it was in keeping with this constructivist philosophy that we purposefully reassured the interviewees (and questionnaire respondents) that we were not searching for ‘right' or ‘wrong' answers to any research questions. Rather, by acknowledging that everyone does things differently the researcher sought only to encourage participants and respondents to answer questions as fully and honestly as possible.

5.2.4 The Pragmatic Worldview

Pragmatism provides the philosophical underpinning for mixed methods studies, see for example Cherryholmes (1992), Morgan (2007), Patton (1990) and Tashakkori and Teddlie (2010). Pragmatists focus attention on the research problem and questions instead of focusing on methods, and then use all approaches available to understand the problem (Rossman & Wilson, 1985). According to Patton (1990), cited in Creswell & Creswell (2018, p.10), “There is a concern with applications—what works—and solutions to problems” rather than antecedent conditions (as in postpositivism). However, according to Cherryholmes (1992, p13) “there are many versions of pragmatism, with different points of emphasis, interpretations, and reinterpretations”. Nevertheless, in general, pragmatists derive knowledge about the problem using pluralistic approaches (Creswell & Creswell, 2018). Thus, pragmatism is not committed to any one system of philosophy and reality. This applies to mixed methods research whereby researchers draw liberally from both quantitative and qualitative assumptions when they engage in their research. In essence, individual researchers have freedom of choice. They are free to choose the methods, techniques, and procedures of research that best meet their needs and purposes. Thus, for this mixed methods researcher, pragmatism opened the door to multiple methods, different worldviews, and different assumptions, as well as different forms of data collection and analysis. Moreover, Punch (2005, Pg.3) asserts that "To choose the pragmatic approach is to start by focusing on what we are trying to find out in research, and then to fit methods in with that". Notably, Chapter 1 describes 'what we are trying to find out' in this dissertation research study, see Section 1.6: Research Objectives and Questions.

In conclusion, it is apparent from reading this section that not all questions for social research should be driven by paradigm considerations (communities of research that accept a particular 'worldview' or consensus of beliefs). That is, different sorts of questions require different methods for answering them (Punch, 2005). Thus, by adopting a pragmatic stance, together with the pragmatist's epistemological and ontological worldview, this researcher purposefully chose a mixed-methods research design (using both quantitative and qualitative data) to see how wide he could open the metaphorical lid on the enigmatic investment management 'black-box'.

5.3 Qualitative, Quantitative and Mixed-Methods Research Paradigms

5.3.1 Qualitative vs. Quantitative Research Paradigms

According to Creswell & Creswell (2018, p.4) "Qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data." An alternative and simpler definition is provided in Strauss and Corbin (1990, p.17) who describe qualitative research as "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification."

In contrast, Creswell & Creswell (2018, p.4) assert that "quantitative research is an approach for testing objective theories by examining the relationship among variables." These numeric variables are typically analyzed using statistical procedures. Researchers who engage in this form of inquiry typically "make assumptions about testing theories deductively, building in protections against bias, controlling for alternative or counterfactual explanations, and being able to generalize and replicate the findings."

Table 5.2 lists some typical qualitative - quantitative characteristics and highlights areas where there are similarities and differences between the two research approaches. In presenting this summary the researcher relied mostly on information contained in Bryman (2015), Mach et al. (2005) and Sogunro (2002). Also, the table reflects the methodological techniques and philosophical worldviews, ideas, concepts and principles that together reveal the epistemological perspective and ontological stance of the researcher.

In conclusion, quantitative empirical research is where the data are in the form of numbers, while qualitative empirical research is where the data are not in the form of numbers (Punch, 2005). Moreover, Sogunro (2002) observes that while both research approaches are equally recognized and used in conducting research, the major differences between them are in the areas of data collection and analysis. Finally, as described in the next sub-section, it may be advantageous to combine quantitative and qualitative research at different stages of the research process, for example when formulating research questions, sampling, data collection, and data analysis, see for example Bryman (2006).

Table 5.2: Comparison of Qualitative and Quantitative Research Methods

	Qualitative	Quantitative
Philosophical Worldview [Paradigm, Epistemology, Ontology]	Constructivism	Positivism
Research Tradition	Semi-structured methods: in-depth interviews, focus groups, and participant observation	Highly-structured methods: questionnaire surveys and structured observation
Analytical Objectives	Participant view Explore phenomena and describe variation Describe and explain relationships Describe individual experiences and group norms	Research view Describe characteristics of a population Predict causal relationships and quantify variation Descriptive, correlational, experimental, causal-comparative relationships.
Research Variables	Small number	Large number
Sample Population	Small population	Large population
Research Context and Relationship with Participants	Researcher close & intense Uncontrolled and a process Micro	Researcher distant Controlled and static Macro
Question Format	Open-ended	Closed-ended
Data Collected	Words Soft data – rich and deep Textual (obtained from audiotapes, videotapes, and field notes)	Numbers Hard data – reliable Numerical (obtained by assigning numerical values to responses)
Flexibility in Study Design	Unstructured Some aspects of the study are flexible (for example the addition, exclusion or wording of particular interview questions) Participant responses affect which, what or how researchers ask next questions Study design is iterative. That is, data collection and research questions are adjusted according to what is learned	Structured Study design is stable from beginning to end Participant responses do not influence which, what or how researchers ask next questions Study design is subject to statistical assumptions and conditions
Data Collection Techniques	Active interaction with sample population (Interview, observation by active participation)	Passive interaction through questionnaire and/or experimental design
Research Instruments/ Tools	Researcher as instrument, interview guide, tape recorder, skype recording, transcriber app, computer, e.g. 'in-vivo' coding & NLP processing using Nvivo software package	Questionnaires, computer, e.g. using the Statistical Package for the Social Sciences (SPSS), Interpris.
Data Analysis	Content/Coding/Interpretive thematic analysis, patterns and narrative synthesis e.g. NVIVO. Also, descriptive statistics including ranking, frequency, percentages, e.g. Interpris, SPSS.	Statistical analysis incl., descriptive and inferential statistics, e.g. SPSS, Interpris.
Interpretation of Information	Subjective	Objective
Research Findings	Inductive through creativity and critical reflection	Deductive through inferences from data
Interpretation of Results	Contextual understanding - nature of inquiry / Interpretive	Generalisations - positivist

5.3.2 Mixed-Methods Research Paradigm

Punch (1998, p.240) asserts that whilst it is evident that there are some major differences between the two research approaches represented in Table 5.2, “these differences should not obscure the similarities in logic, which makes combining the approaches possible.” In the same vein Creswell (1994, p.177) asserts: “It is advantageous to a researcher to combine methods to better understand a concept being tested or explored”. Sogunro (2002, p.7) also expresses his support for a mixed-methods research approach as follows: “I tend to disagree with those who strongly support one method and condemn the other. Quite simply, the key rule is understanding the nature and appropriateness of each of the two paradigms and entering the research or evaluation arena with an open mind. In other words, the strategies selected should suit the nature of the research being undertaken rather than making selection based on biases.” Creswell & Creswell (2018, p.4) declares that “Mixed methods research is an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The core assumption of this form of inquiry is that the integration of qualitative and quantitative data yields additional insight beyond the information provided by either the quantitative or qualitative data alone.” In conclusion, there are two notable components in this definition which serve to affirm that research involves philosophical assumptions as well as distinct methods or procedures. Creswell & Creswell (2018) provide a useful framework to explain the intersection of philosophy, research designs, and specific methods in a mixed-methods research strategy, as follows:

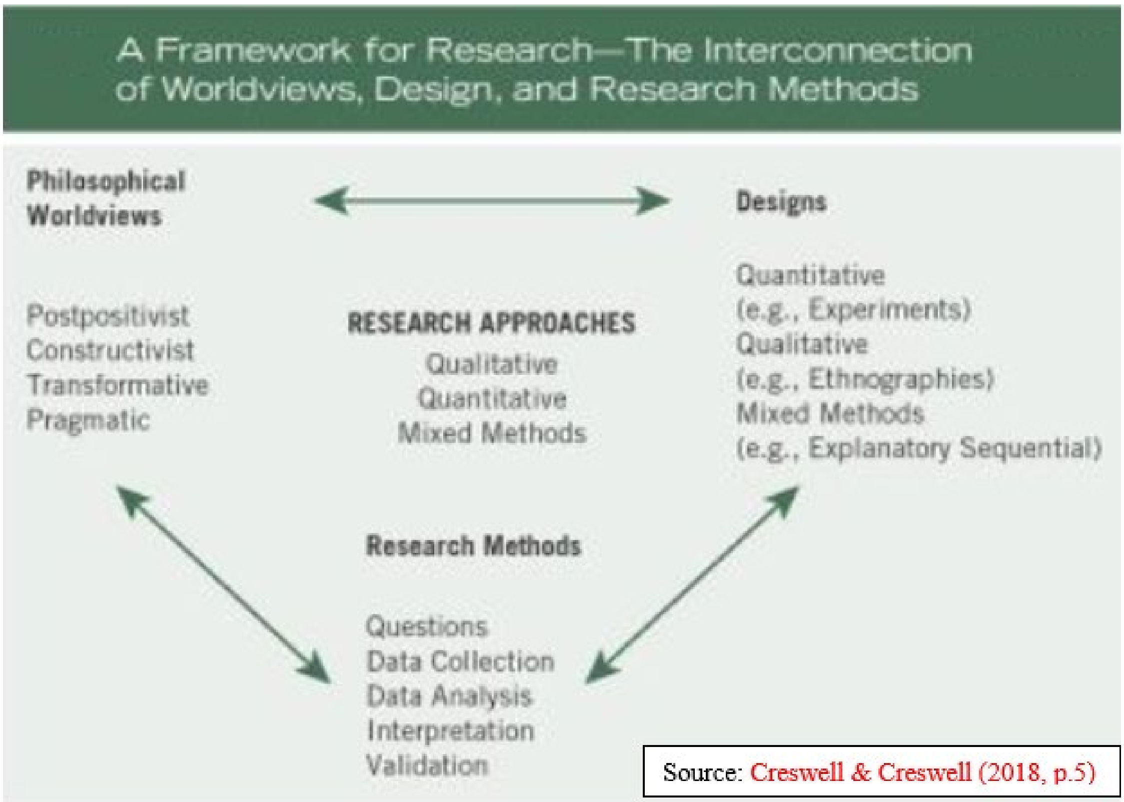

Figure 5.1: The Intersection of Philosophy, Research Designs, and Specific Methods

Source: Creswell and Creswell (2018, p.5)
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As shown in Figure 5.1, researchers need to think through the philosophical worldview assumptions that they bring to their study, the research design that is related to this worldview, and the specific methods or procedures of research that translate the approach into practice (Creswell & Creswell, 2018).

In closing, gaining an understanding of these philosophical orientations has helped this researcher to conceptualise his research design, choose both qualitative and quantitative methods to answer his research questions, justify his specific research approach (interviews and questionnaires), and finally explain why he adopted three well-known philosophical research approaches (constructivist vs. positivist vs. pragmatist) rather than just one type, see also Babchuk and Badiee (2010).

5.4 Research Subjects: Population and Sample Selection

5.4.1 Brief Description of the Asset Management Industry in Europe

Asset management firms act as a conduit through which capital flows from those who would like to invest to those who need investment. By way of example, if you have a pension, life assurance policy or unit trust, your money is being looked after by the investment management industry, see Figure 5.2. Institutional investors, acting on behalf of millions of end consumers, represent the largest client category of the management industry, accounting for 69% of total AuM. Insurance companies and pension funds accounted for 42% and 27% of total AuM for institutional clients at end 2010, see Figure 5.2. According to the Investment Management Association (2012), the industry invests its clients' money across a broad range of asset classes and products, including equity, bond, property, money market and hedge funds, see also Figure 5.3.

Europe, the main focus of this study, ranks as the second largest market in the global asset management industry, managing 33% of global assets under management or circa EUR 14.0 trillion (42*33%) at year end 2010, see Figure 5.2. The top three European countries – UK (33%), France (21%) and Germany (11%) – together accounted for 65% of this share, see Figure 5.3. Holdings of equity assets (the focus of this study) represented 31% of total AuM at end 2010, see Figure 5.3. More than 3,100 asset management companies are registered in Europe, employing about 85,000 people directly at end 2010. Finally, it is notable that the UK stands as the largest asset management centre in Europe and second-ranked in the world after the US, in terms of its scale and breadth (Investment Management Association, 2012).

In conclusion, it is apparent from the forgoing that fund managers and investment analysts, whether acting individually and/or as a group, hold enormous sway over the equity markets, and consequently their role in share price determination and valuation is inescapably significant.

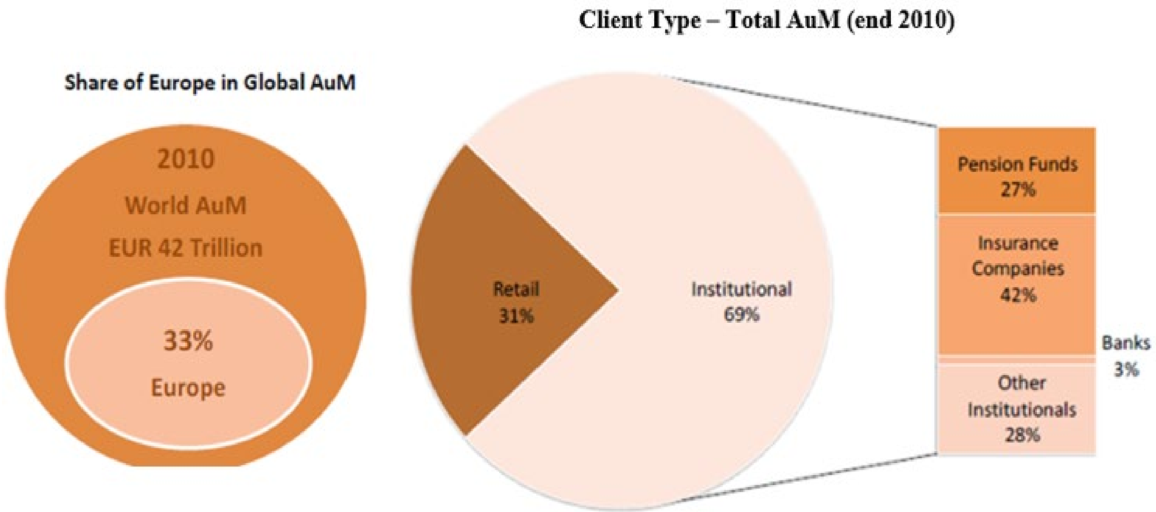


Figure 5.2: European Market Share and Global Client Type (end 2010)

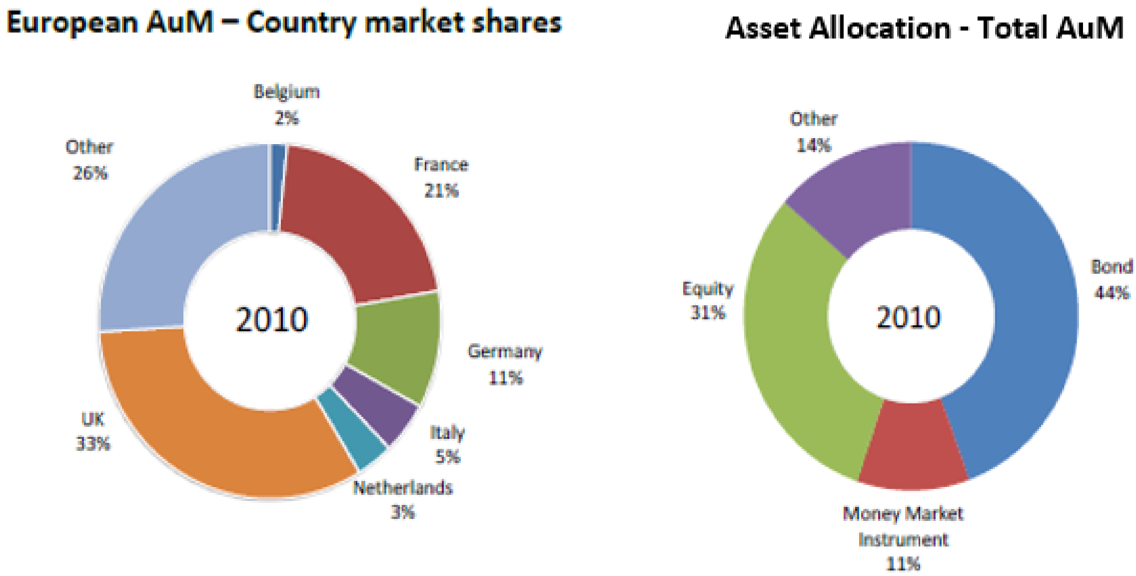


Figure 5.3: European Market Shares and Global Asset Allocation

Source: Figures 5.2 and 5.3 adapted from 'Asset Management in Europe, Facts and Figures, 5th Annual Review, May 2012', European Fund and Asset Management Industry (2012)

Used with the permission of the EFAMA Secretariat: European Fund and Asset Management Association, Brussels.

5.4.2 Sample Selections: Interview Participants and Questionnaire Respondents

5.4.2.1 Pilot Studies – Interviews and Questionnaires

A research method must be reliable in order for it to be valid (Creswell & Creswell, 2018; Bryman, 2016; Hair et al., 2014; Trochim, 2006; and Lincoln and Guba, 1985). Consequently, Chenail (2011) advocates ‘pilot testing’ as a way to enhance the validity and reliability of research. The term 'pilot’ study (also called 'feasibility' study) refers to a mini version of a full-scale study which in the context of this research project implied pre-testing the questionnaire research instrument and the interview guide. Nonetheless, conducting a pilot study does not guarantee success in the main study, but it does increase the likelihood of success. (Teijlingen & Vanora, 2002). Some of the functions performed by the pilot studies utilised in this research study are discussed in the next sections.

5.4.2.2 Pilot Study – Interviews

According to Crabtree and Miller (1999), the interview guide should be reviewed by third parties and pilot-interviews conducted before the actual interviews to enable the identification of problematic aspects.

Pilot testing of the interview guide was accomplished in the following ways: Firstly, the interview guide was sent to a selection of suitably qualified individuals in October 2015: two were senior asset management specialists and two were senior academics au-fait with the accounting and finance measures described in the pilot questionnaire. Specifically, the first two recipients of the Pilot Interview Guide were either members of the Board of the European Fund & Asset Management Association (EFAMA) or the Swedish Investment Fund Association, whereas the third and fourth individuals were my PhD supervisors. All four were asked to complete the questionnaire and provide their assessment on whether the research method was likely to measure what it claimed to measure (Chisnall, 2001).

The feedback from the two academics came first. They both flagged the length of the questionnaire as being of ‘major concern’ to them; they feared its ‘excessive length’ would create an unacceptable rate of attrition and nonresponse, i.e. that no information would be provided for one or more questionnaire items or even a whole part of the questionnaire. However, based on the feedback from the two senior practicing investment managers, it was decided to break from conventional academic wisdom, as reflected in the concerns of my supervisors among others in academia (for example Brown et al., 2014), and to proceed without cutting the length of the interview guide or its ultimate successor: the main survey questionnaire. Notably, although pilot study findings might offer some indication of the likely size of the response rate in the main survey, they cannot guarantee this because they are based on small numbers and thus lack the statistical foundation to make such claims. Nevertheless, the feedback from the pilot study served as the catalyst for making several modifications to the interview guide. Consequently, the researcher rewrote some questions, removed others that no longer seemed useful, changed the sequence of other questions, and generally adjusted the semi-structured design and layout of the interview guide and/or questionnaire.

To illustrate, alluding firstly to Part A of the interview guide [‘General Information’], the pilot study recipients were asked to judge whether they felt the opening demographic questions were likely to ease the respondents into the interview process, comment on whether the language used was ambiguous or unambiguous, and then to identify and highlight any potential problems relating to specific question items or their sequence. Interestingly, no specific changes and/or ameliorating guidance relating to Part A was proffered. Secondly, referring to Part B of the interview guide [‘Utility of Accounting and Finance Theories’], the pilot study recipients were asked to judge whether they felt the specific accounting and modern finance question items posited in Part B properly reflected the overarching research question driving those individual question items. Stated differently, using the language of structural equation modeling (SEM), the pilot study recipients were asked to consider whether they felt the specific accounting and finance question items posited in Part B would elicit the kind of responses needed to adequately measure the latent accounting and finance factor constructs driving those questions. As a result of their feedback, changes were made to the wording and order of several question items. The most notable accounting modification related to the Enterprise Value multiple (EV/EBITDA), i.e. their feedback highlighted its omission from the interview guide. The most notable finance modification related to the Consumption Capital Asset Pricing (CCAPM) Model, i.e. their feedback highlighted a spelling error. Thus, in this instance, the pilot study served to redress what otherwise could have been serious flaws in the questionnaire post-dissemination to the wider audience of investment management professionals.

Lastly, referring to Parts C, D and E of the interview guide [Part C – Utility of Sell-side Analysts' Reports; Part D - Utility of Analysts' Forecasts; and Part E – Utility of Sell-side Equity Research], the pilot study recipients were asked to judge whether they felt the questions asked were unambiguous and clearly written, and then to highlight any potential problems relating to specific question items or their sequence. In keeping with the feedback on Parts A and B, the range of responses received from the pilot study recipients resulted in a small number of ad-hoc changes being made to the interview guide/questionnaire. However, for the most part these were mainly cosmetic, comprising typographical and grammatical errors, and punctuation and spelling mistakes. In one instance an entire sentence was rewritten because its original meaning was shown to be obscure.

In conclusion, the interview guide helped to provide advance warning about where the main research project could fail, provided advice on whether proposed methods or instruments were inappropriate, helped to reduce the risk of failing to cover all of the topics that were important for addressing the research objectives, and helped to ensure that consistency would be applied across what otherwise could be a potentially problematic pan-European interview study. In the final analysis, zero difficulties were encountered during the administration of the main interview study.

5.4.2.3 Interview Collection [Current Research]

The interviews segment of the research was conducted during the months of October, November and December 2015. The inclusion criteria for the interviews were: any investment professional who identified him/herself as the Portfolio Manager, Chief Investment Officer (CIO), Managaing Director or equivalent, and whose daily decision-making encompassed the evaluation of ordinary shares.

The final interviewee sample comprised a cross-section of ten participants, from ten different investment management firms, in nine different EU member states. Firm size and geographic location were diverse: some were large, medium or small-sized firms, and they variously spanned Northern, Western, Eastern and Southern Europe. Specifically, the sample includes two large and well-known investment management firms in Germany, one large Greek investment and stockbroking firm espousing a contrarian approach to investment analysis, the branch of one very large international firm located in Portugal, two medium-sized firms in Switzerland and Sweden, one large firm in Denmark and one small firm in each of Spain, Bulgaria and Croatia. All ten organisations indicated their willingness to participate in the research project, which was described to them as being:

‘...designed to identify the decision-making processes used by portfolio managers, stockbrokers and investment analysts when recommending whether or not to buy, hold or sell shares in quoted companies.’

Although the UK and France are represented within the survey questionnaire findings, their absence from the interviews is unfortunate, even more so considering their relative rankings within some of the international 'assets under management' (AUM) studies. For example, the UK is ranked the second largest AUM hub in the world, behind Switzerland (Deloitte, 2008). Alternatively, in terms of size, EFAMA (2016) rank the UK (19.7%) the number one asset management industry in Europe, followed by Germany (17.4%) and France (15.1%). Motivated by these facts, the researcher made several attempts to coax the UK and France to participate in the study, but without success given the time constraints involved. In both instances, the asset management firms in question either did not reply to invitations to partake in the interviews, or else failed to respond before the cut-off date. Consequently, left without further available options, the researcher proceeded without them. Doubtlessly, the inclusion of the UK and France would have influenced the study's findings; although it seems unlikely, prima facie, that their combined influence would have materially altered the study's key conclusions and implications. Afterall, nothwithstanding the valued opinions of the rest of the interviewees, the study's outcomes reflect the views of Switzerland (ranked #1 in the world; Deloitte, 2008), Germany (ranked #2 in Europe; EFAMA, 2016), and some members of the 'The Great Minds of Investing' (Leber, 2015).

Therefore, although the sample of interviewees appears small – certainly smaller than the researcher would have welcomed – it nevertheless is consequential, given the difficulty that usually attaches to obtaining information from fund managers within the investment management industry. Moreover, the firms were sufficiently diverse in size and interest to suggest that a reasonable cross-section of investment appraisal techniques would be covered. Also, the respondents were not restricted in their responses, either by the nature of the questions asked or by the range of possible answers permitted. In this light, a definite, conscious attempt, was made not to lead the respondents in the course of the interviews.

When any prompting seemed necessary, it was kept to a minimum, being used only to develop ideas generated by the interviewees. Thus the mix of interviews provided a pool of data that was both rich in commentary and deeply insightful; in many ways richer than that provided by the questionnaire survey.

As noted earlier, some of the interviewees are profiled in “The Great Minds of Investing” (Leber, 2015). In light of the overarching importance attached to ‘credibility’, ‘dependability’ and ‘believability’ in qualitative research studies – which pertains to the ‘validity’, ‘reliability’ and ’objectivity’ criteria traditionally used in positivist quantitative research – we felt this was a notable scholarly achievement, not least because, being ‘Great Minds of Investing’, their opinions would enhance the soundness of the qualitative research findings, conclusions and recommendations (Adu, 2016; Morrow, 2008; Trochim, 2006; and Lincoln and Guba, 1985). Moreover, when triangulated, we expected their opinions would substantiate and otherwise inform our quantitative research findings, conclusions and recommendations.

5.4.2.4 Pilot Study – Questionnaires

The results of the semi-structured interviews were insightful for the researcher when designing the final version of the online survey questionnaire. For example, they highlighted areas where further research, with a statistically significant number of analysts, might shed light on the range and frequency of current investment management practices. Together with the theoretical framework provided by the literature review, the interviews thus helped to define the scope and structure of the questionnaire design that followed their completion. This is a commonly cited benefit associated with a mixed-method research strategy (Hamza, 2014; Qu and Dumay, 2011; Robson, 2014, 2002; and Arnold & Moizer, 1984).

For these reasons, conducting a separate pilot study for the questionnaires seemed unneceassry. Afterall, the final version of the semi-structured questionnaire was almost a mirror image of the final interview guide used to conduct the interview study. However, the pilot study used for the interviews was only tested on fund managers. Thus, there was a lingering unease that buy-side analysts and sell-side analysts might react differently to the same questions previously put the portfolio manager interviewees. To address these concerns, the full version of the semi-structured questionnaire was sent to five random analysts. Aside from what were mostly positive comments, no notable feedback was received. Those comments that were received were of only peripheral importance, i.e. the main questions did not change in advance of disseminationg the questionnaire to the target audience of one thousand investment managers on LinkedIn. Nevertheless, even though the pilot surveys were a carefully designed instrument, and incorporated the feedback received from professional investment managers and esteemed academics, it was always going to be impossible to be certain that the analysts and portfolio managers in the wider study would interpret every question the way the researcher intended. Ultimately however, the results of the two research methods served to provide some measure of triangulation and mutual reinforcement of the findings.

5.4.2.5 Questionnaire Collection [Current Research]

The questionnaire was distributed to 1,000 of the researcher's investment management 'connections' on Linkedin. In total, 339 responses were received, resulting in a response rate of 34%. All responses were usable. This response rate seemed favourable when compared to other surveys of this kind. For example, Carter and van Auken (1990) attained a US based response rate of 20% from financial analysts, while Wong and Cheung (1999) attained a Hong Kong-based response rate of 14%. Although some more recent studies, for example Wang et al. (2011), reported a response rate from financial analysts of 46%. Nonetheless, because the researcher was satisfied with the volume, breadth and completeness of the survey responses received (non-missingness), he did not feel compelled to issue follow-up reminders at intervals after the 1st (and only) questionnaire had been dissiminated on LinkedIn.

Notably, LinkedIn messages (in this case the questionnaire survey sent to LinkedIn 1st connections) tend to 'sit' in members' personal 'inbox' until opened. Until opened, the LinkedIn algorithm tends to send message reminders automatically until such time as the LinkedIn 1st connectee responds to the message, dismisses the message, or alternatively turns the reminder setting off. It was mostly out of respect for this LinkedIn social media norm that the researcher chose not to issue survey reminders. 'Spam', even the perception of spam, is frowned upon when using LinkedIn. Moreover, all the evidence available to the researcher indicated the sample was representative of the population being studied, and although bias is a problem of varying intensity in all self-report surveys, performing statistical tests to determine if there were differences between early, late or non-responders was not a viable option in this instance. Instead, we decided to focus our attention on what we considered were potentially more pertinent forms of bias that would require additional consideration, explanation and/or amelioration during the data analysis and statistical testing stages. In this vein, we anticipated undertaking missing data analysis (e.g Little's MCAR bias test), case and variable screening, skewness and kurtosis tests, data imputation tests, descriptive and inferential statistical test procedures in order to reduce or otherwise remove any bias present in our questionnaire-based data set. Furthermore, we planned to check the representativeness of the sample by conducting a series of chi-square tests on key variables in order to statistically check if those variables were significantly related (associated) with one another, or not, for example between institutional employer and respondents' job title. Further, we planned to statistically check whether common-method bias (CMB) was present in the questionnaire. Systematic response bias tends to either inflate or deflate respondents' answers. Several tests are available to determine if common method bias is present in the dataset. These include: Harman's Single Factor Test, Common Latent Factor Test, Marker Variable test, and the Zero and Equal Constraints Test, see Gaskin (2017). Additionally, we planned to run Scalar Invariance tests to check if one group (say, portfolio managers) found one question easier than another group (say, financial analysts). Notably, scalar invariance signals the variables in question are unbiased.

In conclusion, response bias can have a large impact on the validity of questionnaires or surveys. However, the literature appears overly concerned with performing chi-square tests on responders compared to non or late responders whilst seemingly ignoring other equally if not more imporant research-specific biases.

5.5 Research Designs: Interviews and Questionnaires

5.5.1 Review of the Prior Research Literature Relating to Interview Design

Generally speaking, interviewing is a research method readily accepted by most participants due to their familiarity with the technique and because it often helps them to clarify their thinking on a particular topic (King and Horrocks, 2010). Our review of the related prior investment management research literature examined the information sources and appraisal techniques used by institutional investors and investment analysts. It confirmed that interviews, together with questionnaires, were popular methods of research inquiry, data collection and analysis (Brown et al., 2015; Abhayawansa et al., 2015; Imam et al., 2008; Marston and Straker, 2001; Fouche and van Rensburg, 1999; Block, 1999; Barker, 1999b, 1999a and 1998; Bence et al., 1995; Wong and Cheung, 1999; Holland, 1998; Marston, 1999 and 1999b; Olbert, 1994; Pike et al., 1993; Choi and Levich, 1991; and Arnold and Moizer, 1984).

The philosophical orientation of interviews is largely constructivist, but depending on the nature of the questions put to the interviewees, whether closed or open, they may lean towards the positivistic. The former philosophical 'worldview' tends to restrict respondents from providing unique individual insights and thus largely defeats the primary goal that usually motivates a qualitative research undertaking. Nevertheless, most of the above academics affirmed that mixed-method research strategies potentially offer the optimal mix of the positive and non-positive research paradigms, and therefore potentially also the greatest insights. Even still, in keeping with the constructivists' philosophy, we are reminded in Mason (2004, p.63) that "interviews are a co-production ….involving the construction and reconstruction of knowledge more than the excavation of it".

King and Horrocks (2010) identified four steps in constructing and using interviews for qualitative research: defining the research questions; creating the interview guide; recruiting participants; and carrying out the interviews. However, Mason (2004, p.69-71), who advocated a 7-step approach to "planning and preparing for qualitative interviewing", was more persuasive.

In keeping with Mason (2004) and King and Horrocks (2010), most of the prior related investment management research seemed to follow a semi-structured approach in their interviews (Brown et al., 2015; Abhayawansa et al., 2015; Imam et al., 2008; Marston and Straker, 2001; Fouche and van Rensburg, 1999; Block, 1999; Barker, 1999b, 1999 and 1998; Bence et al., 1995; Wong and Cheung, 1999; Holland, 1998; Marston, 1999 and 1999b; Olbert, 1994; Pike et al., 1993; Choi and Levich, 1991; and Arnold and Moizer, 1984). A semi-structured format affords interviewees the freedom to answer questions freely, while the use of an interview guide reduces excessive deviation from the research questions and issues.

By following a semi-structured research approach to the interviews, the researcher can potentially achieve a deeper understanding of the relevant issues by asking probing questions, resulting in a richer and more complex picture (Marston, 1999a). Respondents also have the opportunity to seek clarification from the interviewer about certain questions and likewise the interviewer can clarify potentially ambiguous responses. The interviewer also has an opportunity to follow-up any interesting answers with more probing questions. This enables the research to develop as the interviews progress. Consequently, the researcher obtains a more sophisticated picture of the issues being studied (Clatworthy, 2005). However, the related prior research literature also warns researchers of the dangers associated with potential interviewer bias. This may arise as a result of, among other things, careless prompting, asking questions out of sequence, or coding and recording answers incorrectly (Oppenheim, 1992). Nevertheless, the adoption of a semi-structured interview approach with the use of an interview guide helps to reduce these effects and ensure questions are asked in the correct sequence and in a consistent manner. The use of a recording device is also advisable, helping to ensure the data is transcribed accurately and fully afterwards. The risk of substituting the respondent's words by paraphrasing and imposing the researcher's interpretation on the response is also avoided by recording the interviews (Seidman, 1991).

Relative to other data collection methods, there are some notable disadvantages associated interviews. For example, they can be expensive to administer and may incur ancillary costs (say, transcription or travel costs) and may be time-consuming to process and interpret the data afterwards (Oppenheim, 1992 and Seidman, 1991). Thus, while interviews frequently elicit richer and more insightful research findings, the data can be difficult to analyse and portray in a succinct yet comprehensive manner. Finally, interviews may be lengthy and require the researcher to commit significant personal time and resources to analyse and subsequently write-up his/her findings.

5.5.2 Interview Design Utilised in the Current Research

An interview guide containing four sections and fashioned on the questionnaire was used (see Appendices). A typical question asked the interviewee to describe the manner in which he or she went about pricing equities and/or valuing a company. A copy of the interview guide was sent to the respondents in advance, along with a letter which explained the background and objectives of the research. A semi-structured approach was adopted in order to mitigate the effects of interviewer bias and to help ensure the interviews proceeded in a logical fashion while remaining focussed on the research questions. This ensured all questions were asked and the interviewees' time was used effectively (Patton, 1990). In recognition of the largely non-linear, although at times also linear, nature of this semi-structured exercise, interviewees were encouraged to feel unconstrained in their responses (Adu, 2019). As a result, each participant was afforded ample flexibility and the leeway necessary to outline their answers in a rich and fulsome way. Moreover, in line with the recommendations in Saunders et al. (2009) every effort was made to adopt an interested tone during the interviews, while at the same time maintaining a neutral stance. Nonetheless, when questions seemed to be 'too open', a series of subsidiary 'open' questions were asked in order to guide interviewees to respond to themes that pertained to the overall research objectives. For example, interviewees were asked to describe the accounting procedures they tended to follow when appraising, pricing or otherwise valuing ordinary shares; likewise the finance procedures they tended to follow; and the technical analysis procedures they tended to follow. Similarly, interviewees were asked to describe the procedures they followed when appraising the risk in equities and/or companies. Additional subsidiary 'open' questions were then interjected into the discussions as the need arose or as indicated in the interview guide. A deliberate effort was made not to lead the respondents in the course of the interviews, nor to express surprise if opinions seemed atypical or the language used was grandiloquent. When any prompting seemed necessary, it was maintained to a minimum, and used only to develop ideas generated by the interviewees.

In the period leading up to the interviews, and again at the start of the interviews, participants were asked to confirm their consent to record the interviews, which the researcher subsequently did using a Windows Skype recording program. Our review of the related literature affirmed that audio recording is common practice in interview scenarios because it enables the interviewer to ensure full information capture, re-listen and evaluate statements made more effectively, and prevents mis-recording and mis-remembering of details. Using written note-taking is unlikely to capture the full conversation and is distracting for both interviewer and interviewee. Recording is also seen as an important means of establishing credibility in research methods of this kind as it allows interpretations made by the interviewer to be audited if necessary, or to be reused in other contexts by other researchers. Interestingly, Skype recording program companies usually offer an optional fee-paying transcription service. However, even though these companies claim to consistently achieve accuracy rates of circa 98%, it was deemed more appropriate to complete the time-consuming transcription tasks autogenously. In keeping with the recommendations of Saunders et al. (2009), all interviews were transcribed within twenty-four hours in order to further help retain accuracy. The transcripts were exact, and included speech disfluency such as non-lexical vocables, false starts and repaired utterances. Finally, participant and company names were changed in the transcripts to ensure confidentiality and anonymity was maintained for participants. Participants were assured that the recordings would be erased after the interviews had been fully transcribed and the research assessed.

5.5.3 Review of the Prior Research Literature Relating to Questionnaire Design

Questionnaires seem to represent the most popular quantitative instrument used by prior researchers to investigate the information sources and appraisal techniques used by institutional investors and investment analysts (Brown et al., 2015; Abhayawansa et al., 2015; Imam et al., 2008; Marston and Straker, 2001; Fouche and van Rensburg, 1999; Block, 1999; Barker, 1999b, 1999a and 1998; Wong and Cheung, 1999; Holland, 1998; Marton, 1998; Olbert, 1994; Vergoossen, 1993; Pike et al., 1993; Marston, 1993; Arnold and Moizer, 1984; Chang et al., 1983; and Benjamin and Stanga, 1977). The philosophical orientation of questionnaires is largely determined by the type of questions asked: closed or open-ended. The former restrict the respondent to a given response, while the latter permit varied responses and views. Closed questions can bring certain advantages to respondents. They are generally less time consuming to complete and unlike open questions, have lower risk of misinterpretation (Clatworthy, 2005). However, caution must be exercised to ensure that the questions are well-designed if they hope to elicit meaningful responses. In addition, the design and breadth of the questionnaire should align with the research objectives and stated survey purpose. Respondents should not feel restricted due to poor layout and available question choices. Although open-ended questions are an option, they permit detailed views to be expressed by the respondent, they typically are more difficult to analyse. Nonetheless, we avoided open-ended questions and instead we separately used interviews to extract more in-depth knowledge, which we then triangulated with the structured questionnaire findings. Problems also arise when questions are ambiguous, because subsequently responses may not be entirely comparable. Nevertheless, if the questionnaire is circulated to other experienced researchers beforehand in order to get feedback on the clarity of the questions, potentially adverse effects can be mitigated. A pilot study can also be conducted wherein a number of questionnaires are sent to a small sample of respondents along with an invitation to complete the questionnaire and provide comments on the appropriateness and understandability of the questions. This provides the opportunity to iron out any potential difficulties before the final questionnaire is disseminated (Clatworthy, 2005).

Low response rates can also be a problem with questionnaires (Hussey and Hussey, 1997). Response rates can be affected by various factors, including the population sampled, the length of the questionnaire and the relevance of the questions. If the questionnaire is excessively long or the questions irrelevant or inappropriate, this may materially reduce the number of responses (Hair et al., 2014). According to Schipper (1991) low response rates are not unusual when questioning investment managers because in addition to time pressures, some firms prevent their employees from responding to questionnaires. This in turn may lead to biased results if respondents and non-respondents have materially different views. Bias can also arise if some respondents do not answer certain questions because they view them to be 'sensitive' in some way. Gaskin (2017) also discusses how collecting data using a single (common) method, such as the online self-report questionnaire used in this research project, may be responsible for introducing systematic response bias that may either inflate or deflate respondents' answers. There are many potential sources of Common Method Bias (CMB), including: the manner in which items are presented to respondents; the position in which items on a questionnaire are placed; contextual influences (time, location and media); and/or only one researcher will interpret the survey's answers. Thus common method bias may be present in the dataset when something external to the measures (independent and dependent variables: IVs and DVs) has influenced participants' responses to the survey questions. The most worrisome example of CMB occurs when the data for both the predictor and criterion variable are obtained from the same person in the same measurement context using the same item context and similar item characteristics (Podsakoff et al., 2003). Several tests are available to determine if common method bias has affected the results, for example when testing the measurement model in factor analysis. These include: Harman's Single Factor Test, Common Latent Factor Test, Marker Variable test, and the Zero and Equal Constraints Test Gaskin (2017). These are discussed in more detail in Chapter 9. On top of that, there are a number of solutions available in the literature that deal with non-response bias (Wallace and Cooke, 1990). One of the most popular measures is to treat late respondents as non-respondents, and then to conduct statistical tests on the two samples in order to see if they differ significantly (Clatworthy, 2005**).** However, because we used 'LinkedIn' to disseminate the questionnaires randomly to investment managers located in myriad geographical locations, we did not run statistical significance tests of differential response rates. A more complete explanation is provided in Section 5.4.2.2, Questionnaire Collection [Current Research]. See also Marston and Straker (2001).

In conclusion, as a general rule survey data must be complete, useable, reliable and valid for testing causal theory. However, missing data is a common occurrence and can have a significant effect on the conclusions that can be drawn from the data (Hair et al., 2014). Frequently it occurs because of attrition and nonresponse, i.e. no information is provided for one or more items or for a whole factor construct (Gaskin, 2017). Generally, missingness is classified as either: missing completely at random (MCAR), missing at random (MAR) or missing not at random (MNAR). Notably, the impact of missingness on the reliability and validity of research conclusions varies depending on which one of these classifications the researcher assumes (McKnight et al., 2007).

5.5.4 Questionnaire Design Used in the Current Research

The questionnaire was designed after critically considering the prior research literature relating to the decision-making behaviour of fund managers and investment analysts, but modified to take account of the specific differences in this study. Specifically, the questionnaire design comprised 103 Likert-style categorical and ordinal questions. No interval or ratio style questions were used. Part A of the survey comprised 15 socio-demographic questions. Part A also related specifically to Research Objective #1 and asked respondents to describe an assortment of personal attributes, such as gender, age, education, nationality, employer, work experience (years), job title, professional qualification, level of education, field of study, preferred industries, investment management genre and investment management style. Parts B, C, D and E comprised an assortment of 17 multiple-choice accounting, finance and general investment questions that related specifically to Research Objectives #2 and #3. Conjointly, respondents were asked questions that pertained to the utility of accounting and modern finance theory in equity decision-making, plus the role and utility of sell-side equity research in buy-side equity decision-making. For the most part the questionnaire sought to find out which investment appraisal techniques fund managers and financial analysts preferred and used the most when pricing equites. In this light the respondents were requested to rate, on a scale of I to 5, those analysis techniques that our review of the related literature had shown were important theoretically and in practice. The survey also included various ad-hoc questions that covered sources of information used (perceived usefulness of the sources and frequency of use) and two final end of survey questions plus a section that asked respondents to indicate if they were prepared to participate in a follow-up interview.

As indicated earlier in sections 5.4.2.1, 5.4.2.2 and 5.4.2.4, before dissemenating the final version of the survey, the questionnaire was circulated for comments to family members, plus two academic colleagues and two senior investment management professionals.

5.6 Conclusion

In this chapter we have used a philosophical research framework to describe the research methodology used in the current research study. The objective was to develop a research strategy capable of uncovering deep and meaningful insights on the phenomenon described in the literature as the 'black-box' of investment management decision-making. To this end, we reviewed the related philosophical and methodological literature and then presented our arguments in favour of pursuing a mixed-methods research strategy to answer the research questions and otherwise satisfy our overall research objectives. Finally, Figure 5.4 introduces the 'research methods framework' (Latham, 2005), which highlights some of the more conspicuous elements of the research methodology (philosophy, methodology and methods) outlined in the chapter. As indicated, the foundations of the study were the research problem, research purpose and research questions. Although, it should be noted that the overall design process was not one-directional as implied in the diagram. Rather, as it was with the design of the theoretical and conceptual frameworks of the study, the philosophical and methodological design steps tended to be more interconnected, multi-directional and iterative in nature. As a result, in order to answer the research questions in a credible way that fulfilled the purpose of the research and added new insights to help us solve our chosen 'black-box' investment management research problems, the methodology was composed of five key pieces including: (a) a complete literature review (not shown); (b) the selection of an overall research approach; (c) the specific data collection methods and instruments; (d) the specific data analysis methods and procedures: and (e) drawing conclusions (Latham, 2014).

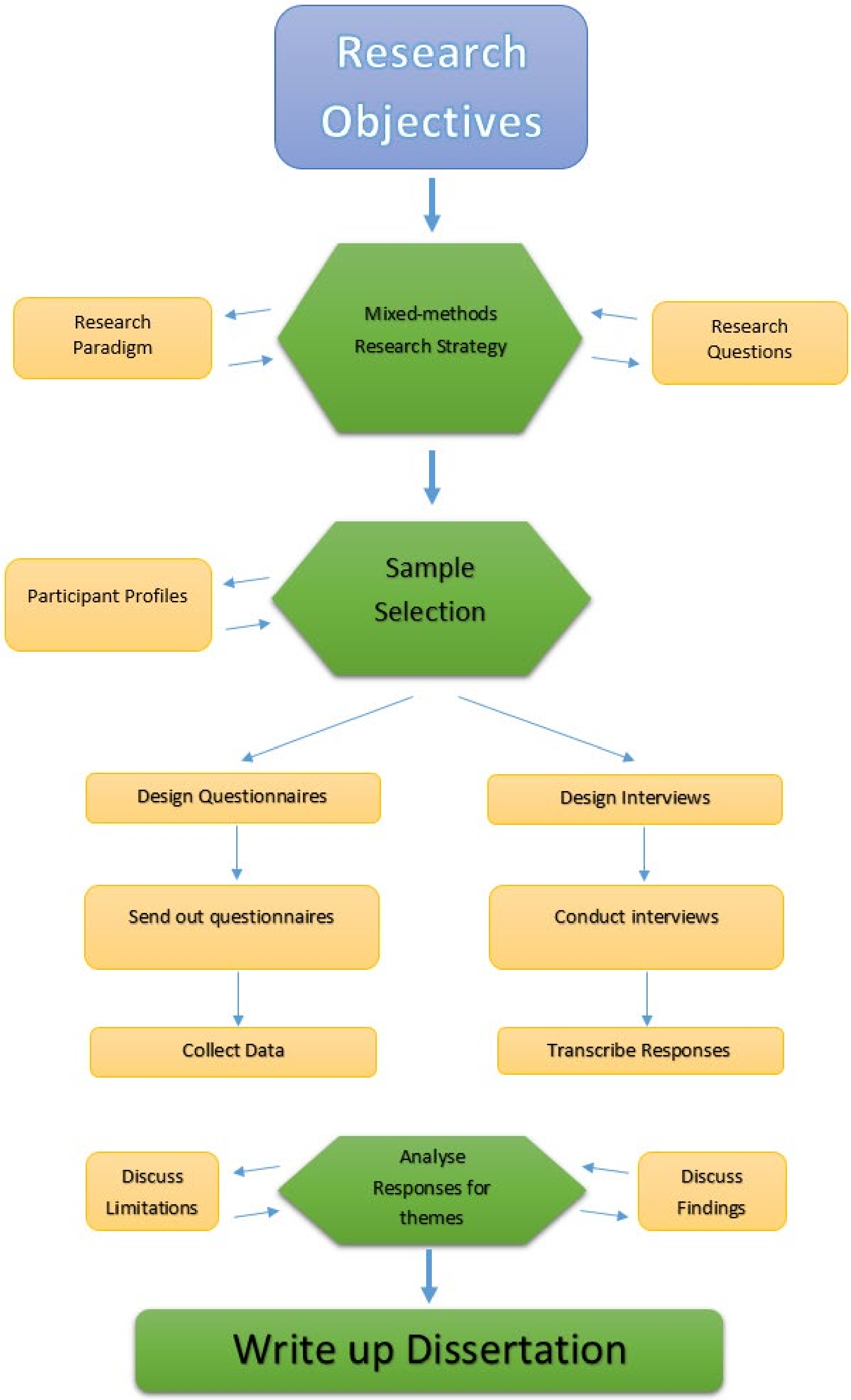


Figure 5.4: Research Methods Framework

Source: Developed by the author (Kelly, 2019)

Chapter 6

FUND MANAGERS INTERVIEW RESULTS

6.1 Introduction

The work undertaken so far has reviewed the capital markets literature on the investment management industry and equity analysis from three paradigmatic perspectives. Specifically, the investment *in-action* (practitioner) literature (Chapter 2), accounting valuation theory (Chapter 3), and modern finance theory (Chapter 4). Chapter 5 drew on these bodies of literature to motivate the mixed-methods research philosophy and methodology that permeates the entire study.

The purpose of this chapter is to present the descriptive thematic analysis of the semi-structured interview findings that arose from the online face-to-face Skype discussions with 10 high-ranking European fund managers in 2015. The chapter is organised as follows. Firstly, Section 6.2 describes how the interview evidence was collected and analysed to reflect the objectives and questions underpinning the research study, as well as the themes in the literature review. Secondly, Section 6.3 relates to Thesis Research Objective #1 and presents the personal characteristics and backgrounds of the fund managers. Thirdly, Section 6.4 relates to Research Objective #2 and presents the views of the participants on the utility of accounting and modern finance theory within the equity investment management industry in Europe. Fourthly, Section 6.5 relates to Research Objective #3 and presents that portion of the interviewee findings that relate to the role and utility of sell-side equity research in buy-side equity investment decision-making. Fifthly, Section 6.6 presents the views of the participants on the utility of technical analysis in equity decision-making. This section could arguably have been shown under Section 6.4 and in turn linked to Research Objective #2, however it was deemed that to do this might inadvertently blur the dividing paradigmatic line separating accounting and modern finance theory in equity decision-making. Finally, Section 6.7 concludes the chapter.

In addition to examining the homogeneity and heterogeneity of core accounting and finance valuation models, this chapter also provides insights on the latest innovations currently shaping the industry. Moreover, the chapter discusses additional contextually relevant choices facing individual fund managers in their daily decision-making. These include industry knowledge, management meetings, annual reports, analyst reports, and analyst rankings.

6.2 **Sample and Methods**

6.2.1 **Interview Collection**

All interviewees were senior decision-makers in their respective firms. Section 5.4.2.1 contains a detailed description of the sample.

6.2.2 **Interview Guide**

The interviews proceeded in a semi-structured fashion, whilst at the same time the researcher adhered to the previously prepared 'Interview Guide' to help with the administration and management of the interviews. The guide's semi-structured design was an adaptation of the structured questionnaire design utilised to administer the online survey. Part A of the interview guide comprised 15 socio-demographic questions, while Parts B, C, D and E comprised an assortment of 17 multiple-choice accounting, finance and general investment questions, see Appendix A.11. Moreover, additional questions were posed during the interviews as conversations evolved and specific themes were explored by the researcher and elaborated upon by the interviewees. Fortunately, the conversations tended to proceed along similar paths, largely because they tended to follow the same general order outlined in the interview guide.

6.2.3 **How the Interview Evidence Was Analysed**

Unlike statistical quantitative data analysis, where the findings can be replicated by two or more researchers working independently with the same numeric data, qualitative data analysis tends to be more judgmental than measurable and thus the findings are frequently influenced by the background, biases and beliefs of the individual researcher who conducts the study. Thus, it is unlikely that two independent qualitative researchers will perform the data analysis (coding, categorisation, thematic analysis) in the same way. For this reason, several leading authors recommend that researchers should explain how the data analysis process was carried out (Adu, 2019; Creswell & Creswell, 2018; Bryman, 2016; Saldaña, 2013; Hani, 2009; Morrow, 2005; and Lincoln and Guba 1985). Otherwise, they assert that the results may lack analytical transparency, which in turn may cause the reader to doubt the credibility of the findings. Considering these recommendations, this chapter includes sections that explain how the data was coded, catergorised and analysed into themes.

Whilst there is no one way of presenting qualitative findings, Adu (2019, 2016) presents three common ways of doing so: the linear method, the non-linear method and the synthesised method, see Figure 6.1.

Figure 6.1: Presenting Qualitative Findings

Source: Adu (2016)
Used with the permission of the author: Philip Adu, Ph.D. The Chicago School of Professional Psychology.

The 'linear' method firstly presents the research question and secondly the theme(s) that are addressing the research question are introduced. A brief explanation of the meaning of the theme is provided, which is then followed by the evidence from the data to answer the research question. Because the study adopted a mixed-methods research strategy, the empirical evidence from the data was used to expound on the themes that were derived from the review of literature. For each subsequent theme the cycle of 'theme-meaning-evidence' is repeated. The 'non-linear' method also begins with the research question but from there tends to proceed directly to the evidence, discussing themes and meanings as appropriate. Mixed-methodologies often adopt 'linear' and 'non-linear' approaches to qualitative data analysis, which are the formats adopted in this study. The 'synthesised' method 'mixes-things-up' and tends to be found in studies that adopt a grounded theory approach when the researcher is searching for a theory or model to explain his/her findings (Adu, 2019, 2016).

Unlike Chapters 7, 8 and 9, which utilise various statistical measures of validity and reliability to judge the soundness of the quantitative findings obtained from the online questionnaire survey, this chapter uses the four criteria specified in Lincoln and Guba (1985) in order to assess the soundness ('validity' and 'reliability') of the qualitative interview research findings. These criteria together with their 'analogous' quantitative criteria are listed in Table 6.1. As shown, the four criteria for judging the soundness of qualitative research run parallel to the validity, reliability and objectivity criteria traditionally used in post-positivistic quantitative research studies to assess rigor (Lincoln and Guba, 2000). However, they should not be viewed as simple extensions of their parallel quantitative paradigms. That is, these correspondences should not be taken to mean that these parallel criteria accomplish exactly the same goals as their corresponding standards of rigor in quantitative research. As Morrow (2004) explains, qualitative research leads to different kinds of knowledge claims than those resulting from the use of quantitative methods. Furthermore, according to Morrow & Smith (2004), "qualitative research is idiographic and emic (focusing on one or a very few individuals, finding categories of meaning from the individuals studied) as opposed to nomothetic and etic (focusing on standardized methods of obtaining knowledge from large samples of individuals, using categories taken from existing theory and operationalized by the researcher)", cited in Morrow (2004, p.252). Moreover, Morrow (2004, p.252) cautions that "Despite the long tradition of using parallel criteria, in particular to make qualitative research more acceptable to conventional audiences, this approach has been widely criticized". Nonetheless, these parallel criteria can arguably enhance communication and comprehension of qualitative research results across a wider audience, not least for those unfamiliar with research methods other than the traditional (positivistic) quantitative approaches. With the foregoing qualifications in mind, the four qualitative criteria in Table 6.1 are explained further as follows:

Credibility (vs. internal validity) refers to the idea of internal consistency, where the core issue is "how we ensure rigor in the research process and how we communicate to others that we have done so" (Gasson, 2004, p. 95). According to Geertz, (1973, 1983) it is enhanced by a thorough description of the source data and the fit between the data and the emerging analysis as well as by 'thick descriptions. In the opinion of Trochim (2006) 'credibility' in qualitative research involves establishing that the results – in this case the interview findings – are credible or 'believable' from the perspective of the participant in the research. Since from this perspective, the purpose of qualitative research is to describe or understand the phenomena of interest through the participant's eyes, the participants are the only ones who can legitimately judge the credibility of the results. According to Lincoln and Guba (1985) and Creswell (2015), one way of establishing the 'believability' of the interview findings in this study was to examine the 'quality' (integrity, experience and reputation) of the individuals who participated in the study. Thus in keeping with this advice, Section 6.3.3 contains summary bio-data on each candidate so that the 'believability' of the findings can be judged. In the case of quantitative research, the concept of validity typically refers to the "best available approximation to the truth or falsity of propositions." (Cook and Campbell, 1979, p.37). However 'internal validity' refers to truth about claims made regarding the relationship between two variables (Morrow, 2004). And one of the things that's most difficult to grasp about internal validity is that it is only relevant to the specific study in question. Thus internal validity has zero 'generalizability' (Trochim (2006). On the other hand, 'external validity' refers to the extent to which we can generalise findings. That said, different ideas and definitions are evident across different publications (Cohen and Crabtree, 2008). More generally, the concept of 'validity' in qualitative research means 'appropriateness' of the tools, processes, and data. In turn, this necessitates checking if the research question is valid for the desired outcome, the choice of methodology is appropriate for answering the research question, the design is valid for the methodology, the sampling and data analysis is appropriate, and finally the results and conclusions are valid for the sample and context (Leung, 2015). For the purposes of this study, the definition in Guba and Lincoln (1994, p.114), who describe 'internal validity' as "isomorphism of findings with reality", is adopted. Thus, it is notable that "understanding the concept of validity requires understanding beliefs about the nature of reality" (Cohen and Crabtree, 2008, p.334), which in turn invoke further discussions on ontology and epistemology – but while undoubtedly interesting are beyond the scope of the current study. Nonetheless, it is in this sense that credibility in qualitative research is said to correspond to internal validity in quantitative approaches.

Transferability (vs. external validity or generalisability) in qualitative research relates to whether the results have applicability or can be generalised or transferred to other contexts or settings (Lincoln & Guba, 1985). From a qualitative perspective transferability is primarily the responsibility of the one doing the generalizing. The qualitative researcher can enhance transferability by doing a thorough job of describing the research context and the assumptions that were central to the research. The person who wishes to transfer the results to a different context is then responsible for making the judgment of how sensible the transfer is (Trochim, 2006). Nonetheless, given that this qualitative study is based on a small sample size and is absent of statistical analyses, the results should not be viewed as generalisable in the conventional sense, say to other populations or settings (Morrow, 2008).

Dependability (vs. reliability) in qualitative research emphasizes that "the way in which a study is conducted should be consistent across time, researchers, and analysis techniques" (Gasson, 2004, p.94). The traditional quantitative view of 'reliability' is based on the assumption of 'replicability' or 'repeatability' (Trochim, 2006). When the term is used in everyday language it may refer to how 'dependable' or 'trustworthy' a machine is, for example, 'I have a reliable car'. Or, a news report might talk about a 'reliable source'. In both cases, the word reliable usually means ‘dependable’ or ‘trustworthy’. In research, the term ‘reliable’ also means ‘dependable’ in a general sense, but that's not a precise enough definition. A ‘dependable’ measure or observation in a research context implies one that is both ‘reliable’ and ‘valid’. Thus, the process through which findings are derived should be explicit and repeatable as much as possible. “This is accomplished through carefully tracking the emerging research design and through keeping an audit trail, that is, a detailed chronology of research activities and processes; influences on the data collection and analysis; emerging themes, categories, or models; and analytic memos. The audit trail may then be examined by peer researchers, a student’s advisor, or colleagues in the field.” (Morrow, 2008, p.252).

Confirmability (vs. objectivity) in qualitative research refers to the degree to which the researcher has taken steps to ensure as far as possible that the findings are the result of the experiences and ideas of the interviewees and the participants, rather than the characteristics and preferences of the researcher. Furthermore this helps to remove bias from the findings obtained (Pandey and Patnaik, 2014). While it addresses the core issue that the “findings should represent, as far as is (humanly) possible, the situation being researched rather than the beliefs, pet theories, or biases of the researcher” (Gasson, 2004, p.93), it nevertheless recognises that each researcher brings a unique perspective to the study (Trochim, 2006). Thus ‘confirmability’ in qualitative research acknowledges that research is never truly ‘objective’ (Morrow, 2005). As Morrow (2005) further explains, it assumes the ‘integrity’ of the findings lies in the data and that the researcher must adequately tie together the data, analytic processes, and findings in such a way that the ‘adequacy’ of the findings can be assessed by others. In essence, ‘confirmability’ refers to the degree to which the results can be confirmed or corroborated by others (Trochim, 2006). “Many of the procedures used to accomplish the goal of ‘dependability’ are also applicable here, particularly accountability through an audit trail, and the management of subjectivity is essential" (Morrow, 2005, p.252).

Table 6.1: Four Criteria for Judging the Soundness of Qualitative Research

Traditional Criteria for Judging **Quantitative** Research	**Alternative Criteria** for Judging **Qualitative** Research
Internal validity	Credibility
External validity	Transferability
Reliability	Dependability
Objectivity	Confirmability

Source: Trochim (2006)

Used with the permission of the author: William M.K. Trochim, Social Research methods – Knowledge Base.

In conclusion, the preceding guidance was carefully considered before analysing (performing the coding, categorisation and thematic analysis steps) and then presenting the ensuing research findings.

6.2.4 **Nvivo 11 Pro Coding Strategy**

Qualitative data analysis is about reducing data without losing its meaning, otherwise the volume of information collected in a study such as this would likely overwhelm the reader (Adu, 2013). Additionally, the method of data analysis chosen should reflect the connection between the research question(s), the data collected, and the findings. Adu (2016), Saldana (2013) and Hani (2009) caution that if not, the findings may lack transparency, clear purpose and credibility. Notably, the process of qualitative data analysis begins with 'coding'.

Nvivo 11 Pro was utilised to gather selected pieces of evidence from the interview transcripts into 'nodes' (themes) so that the ancillary and broader overarching research questions that drive the project could later be answered in concordance with the study's four primary research objectives. A selection of these ancillary research questions, together with the study's three overarching research questions, are summarised in Appendix 6, Section A6.2.4.

In principle, Nvivo 11 Pro is no different to other software packages that are capable of classifying data in multivariate ways and across multiple themes. For example, in this research study SPSS and Excel were used to classify survey response data by numerical question type and quantitative analysis theme. Both of these software packages could have been chosen to perform the same qualitative thematic analysis tasks as Nvivo 11 Pro. However, Nvivo 11 Pro's powerful CAQDAS is particularly suited to the task of building complex interactive thematic hierarchies that lend themselves (in the hands of an experienced user) to the kind of detailed qualitative data analysis evident later in this chapter.

6.2.4.1 The Essence of Coding

A code is a word, phrase, or sentence that represents some feature of the data or captures the essence of the data. Essentially, the process of coding is all about assigning labels to 'data', which in the context of this research study involved identifying and labelling selected pieces of information in the interview transcripts and assigning them to 'thematic buckets' or 'nodes' within the Nvivo 11 Pro workspace. Saldana's (2013) 'Coding Manual for Qualitative Researchers' contains about 32 coding strategies to choose from.

Hani (2009) and Saldana (2013) assert that the process of coding is important because it helps the researcher to:

1. Reduce data without losing the meaning of the data.
2. Capture significant ideas or issues.

3. Understand phenomena.
4. Develop constructs or conceptual variables based on important statements or themes.
5. Develop Theory [Only applicable when the methodology in question is 'Grounded Theory']. Thus, it is not applicable in this mixed-methods research study.

Adu (2013) also advises that qualitative researchers should reflect on their personal background and how this may have influenced their choice of research topic and selection of research questions, and then to consider its potential to affect the future qualitative data anlysis process and findings to emerge from it. By doing this, the researcher's approach to the data analysis process will be less likely to suffer from researcher bias, i.e. 'bracketing' the researcher's pre-conceived notions about the data and the topics it represents. Exercising this level of personal self-control serves to enhance the 'objectivity' and the 'richness' of the results. That is, the researcher will be less inclined to label data that is important to him personally and more inclined to code the data that helps to address the research questions (Saldana, 2013).

6.2.4.2 The Coding Process – The 'story' of how the evidence was coded into themes and then linked to the research questions and objectives.

The coding process started during data collection, i.e. when first conducting the interviews. Specifically, the researcher began to notice, and look for, patterns of meaning and issues of potential interest in the data. These were written down, as were ideas about potential coding/analysis schemes. This habit continued right through the entire coding/analysis process. Moreover, the researcher refashioned the interview guide to create the initial 'coding frame' or 'code book' of labels, themes and codes that would later be used conduct the first round of iterative coding, see Figure 6.2. Items in the survey questionnaire later provided additional concepts and themes to add to the 'code book'. And because the researcher had engaged early with the relevant accounting, finance and investment management literature, extra interesting concepts and themes were added to the 'code book' using these sources as well.

6.2.4.2.1 The Data Familiarisation Stage

Working with verbal data, such as interviews, requires the data to be transcribed into written form in order to conduct a thematic analysis. At face value, transcription tends to be time-consuming, frustrating, and at times boring; thus, it can be tempting to engage the services of a transcription company. But this may be short-sighted. That is, by manually performing the transcriptions tasks himself, the researcher gained excellent familiarity with the data, which in turn prepared him greatly for the coding phase.

To familiarise himself further with the data, the entire transcripts were read through several times; essentially the researcher immersed himself in the data until he had satisfied himself that he was fully familiar with its depth and breadth. This involved repeatedly reading the transcripts, not in a passive way but in an active way, i.e. actively searching for meanings, patterns and so on. This reading and re-reading of data was a time-consuming process. Nevertheless, because this phase involved taking notes, marking-out ideas for future coding and identifying possible patterns in the transcripts, it marked the beginning of the coding process.

6.2.4.2.2 Code Generation

Figure 6.2 presents an excerpt of the Nvivo Pro 11 workspace that was used to match the thematic nodes, themes and sub-themes to the interview data.

Nodes

Name	Sources	Referen
1. RQ1 (Anchor Code) - Do the Personal Characteristics of Investment Professionals Bias their Beliefs & I	0	0
2. RQ2 (Anchor Code) - Utility of Accounting & Finance Theory	8	21
Academic Literature - Utility of Accounting Theory	9	17
Academic Literature - Utility of Modern Finance Theory	9	21
3. RQ3 (Anchor Code) - Utility of Sell-side Broker Research [Analyst Recomendations_Reports_Forecasts]	10	31
4. RQ4 (Anchor Code) - Investment Practice -v- Investment Theory	10	46
Buy-side Decision-making Processes	0	0
Capital Markets -	6	13
Cost of Capital - CAPM_WACC	7	10
Diversification	0	0
Fund Manager	0	0
Human Intelligence -v- Machine Intelligence	0	0
Industry Knowledge	0	0
Information Sources	0	0
Momentum Investor	0	0
Risk Management	0	0
Timing	0	0
Transaction Costs	0	0
Valuation	0	0
Value Investor	0	0
Memos or Miscellaenous Notes	3	3
Quotes	9	95
Suggestion Box!	3	5
The Questionnaire_Interview Guide	1	1

Figure 6.2: Extract from Nvivo 11 Pro 'Coding Frame', 'Code Book', 'Node Hierarchy'

Source: Kelly (2019)
Developed by the author using Nvivo 11 Pro.

As shown, the themes are arranged under three separate hierarchies. At the pinnacle of each hierarchy is one of the three overarching research question driving the study, or in this instance driving the coding process. Coding was accomplished by tagging and naming selections of text within each transcript and then matching these 'coding stripes' to the pre-existing 'coding frame' of nodes, sub-themes and master themes – based on what was in the data, what appeared interesting, and what the researcher was trying to find out, see Figure 6.3.

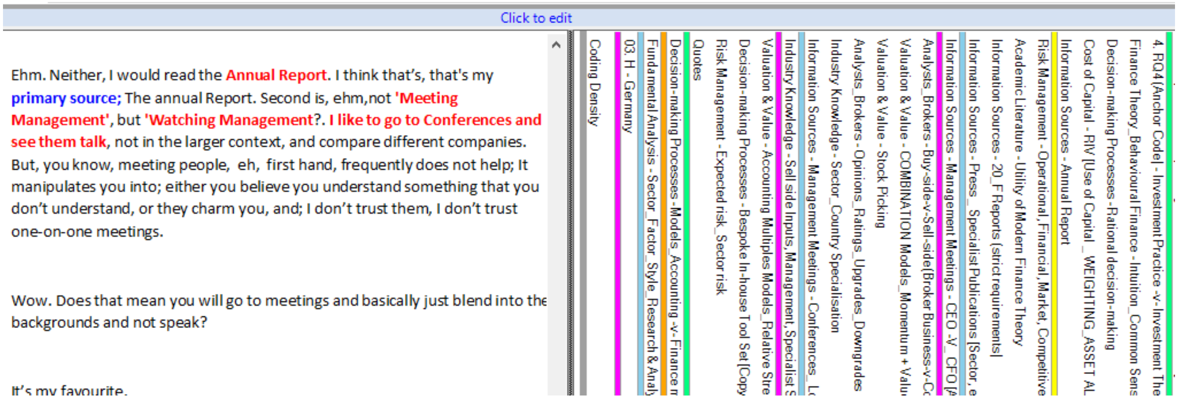


Figure 6.3: Illustration of Coding Stripes

Source: Kelly (2019)

Developed by the author using Nvivo 11 Pro

Notably, this is the nub of the coding process, i.e. working systematically and tirelessly through the entire data set, giving full and equal attention to each data item in order to identify interesting patterns (repeated themes) in the data set. Although, as the related literature remarks, researchers can never code data in an epistemological vacuum (Braun and Clarke, 2006). In this light, sometimes the selection of specific 'coding stripes' was more 'data-driven', than 'theory-driven'. In the former instance, the coding of data to the 'coding frame' (node hierarchy) depended on the data, which at first glance did not always make an easy fit with the themes derived from the review of the related literature or the researchers theoretical interest in the area or topic. Even so, the selected piece of text invariably related to one of the overarching research questions, otherwise it would have been ignored or discarded at that point. Also, sometimes selected pieces of text were assigned to themes/nodes because they related to a question(s) that arose earlier in the researcher's mind during the transcription phase. Nonetheless, it was mainly the latter and contrasting 'theory-driven' approach that encompassed the bulk of the coding process.

Notwithstanding these motivations, the objective was always to code the data to as many potential themes/patterns as possible (time permitting) – systematically working through each interview transcript until the entire data set was coded, while not always knowing what might prove interesting later. Additionally, on different occasions, individual extracts of data were coded and matched to several different themes. As a consequence, data extracts were sometimes left uncoded, coded once, or coded many times, as relevant. There were also times when selected pieces of data appeared contradictory, highlighted some tension or was inconsistent with other data items, but these were never ignored during coding process because on each occasion the extract usually had something of interest to add to the story.

After the initial coding phase ended, the process of thematic interpretation began. This was when the researcher began thinking about the relationship between codes, between themes, and between different levels of themes, for example main overarching themes and sub-themes within them. This resulted in some initial codes being formed into main themes, while other codes were formed into sub-themes. Also, this sorting process resulted in some codes being discarded. That said, there remained a set of codes that did not seem to belong anywhere, and as the related literature advises, the researcher created several miscellaneous 'themes' to temporarily store theses selected pieces of coded data – the 'Memos or Miscellaneous Notes', 'Quotes' and 'Suggestion Box' nodes are an illustration of these, see Figure 6.2 above. This phase ended when all extracts of coded data had been assigned to a provisional collection of candidate themes and sub-themes.

The next step required re-focussing the analysis at the broader level of themes, rather than collating and sorting the different coded data extracts into potential themes. It was at this juncture that the researcher also engaged with some of the mapping tools and features that are available within Nvivo 11 Pro. It was felt that engaging these visual representation tools might help with the task of analysing and sorting different codes into sub-themes, themes and overarching themes. By way of illustration, these included Mind Maps, Project Maps, Concept Maps, Hierarchy Charts, plus the 'Explore Diagram', 'Comparison Diagram' and 'Cluster Analysis' options contained in Nvivo 11 Pro. However, after experimenting with these features for what was not an inconsiderable amount of time, it was decided that none of these tools really eased the often-mundane task of manually searching for, and sorting, themes and coded extracts to form the completed 'thematic node table' (node hierarchy or coding frame) shown in Figure 6.2. At this point, the researcher sensed he understood the significance of each individual theme.

The last steps in the coding process involved re-reading all of the collated extracts for each theme, considering whether they appeared to form a coherent pattern, and then combining, refining, discarding and otherwise fixing all last remaining coded extracts and themes. The final conclusion reached was that, given the theoretical and analytic framework adopted by the researcher, the final thematic table/map represented an accurate reflection of the meanings evident in the data set as a whole.

Thus began the final phase of the qualitative thematic data analysis of the interviews, and the writing-up of the report. Figure 6.4 shows an excerpt from the final thematic analysis of the interviews. Appendix 6 provides the full details. Notably however, during this phase, the units of analysis (the themes) that were developed during the coding process were further examined and interpreted in relation to the phenomena they represented and in accordance with their capacity to shed light on the arguments of interest to the researcher and the overall research objectives. In this sense, which is also a word of warning, coding data and generating themes can potentially go on ad infinitum, so it is impossible for the researcher to say when it actually ended for him. However, when the 'coding frame' appeared to work, appeared to fit the data well, he recognised it was time to stop!

Table A6.1: Fund Managers Views on the Usefulness of Fundamental Analysis

Theme	Selected Evidence
Fundamental Analysis	*Many **alternative ways of conducting fundamental analysis** are documented in the accounting and finance literature. How useful is Fundamental analysis in equity decision-making?*
	Yeah, when doing **stock picking**, actually I run a long short fund on Iberian Stocks, so it's a very focused and niche market, so it's a **very in-depth research... on each company** in Portugal and Spain. So, when we do that and when I manage with my team that fund, we follow a fully **fundamental analysis**, so we analyse the **balance sheets,** the **cash flows**, we like to **speak with the management of the companies** since our target universe of companies is just some 50...60 companies, so since it's a very **focused fund**, we take the time to analyse each one in

Figure 6.4: Extract from Appendix 6 - Final Thematic Analysis of the Interviews

Source: Kelly (2019)
Developed by the author using Office Word 2016

6.3 Fund Managers' Characteristics and Backgrounds

Research has shown that fund performance is related to a number of fund manager characteristics (Brown et al., 2015; Fang and Wang, 2015; Clatworthy and Lee, 2014; Groysberg and Healy, 2013; Litterman and Sullivan, 2012; Bradshaw, 2011; Loh and Stulz, 2009; Ramnath et al., 2008; Kothari, 2001; Brown, 1993; Zmijewski, 1993; Schipper, 1991; Arnold and Moizer, 1984; and Moizer and Arnold, 1984). For example, Fang and Wang (2015) show that gender balance influences investment management practices that can lead to stronger returns. More recently, a Financial Times article dated 22.03.2018 cited Financial Times fund management research ('FTfm') by the UK Diversity Project (2017)[12] which found a correlation between gender diversity and sales. Specifically, the study provided empirical evidence that mixed gender teams lure greater investor inflows, that is funds managed by mixed gender teams attracted 6 per cent more inflows than those run solely by men or women over the past 3 years. This example highlights the evident fact that a fund

[12] Of which the CFA, UK was a board member

managers' background, personal characteristics and proclivities can potentially influence his/her asset management behaviour.

6.3.1 **Case (Fund Manager) Classifications**

Nvivo 11 Pro was used to classify the participants by reference to the following key demographic traits ('Parent Nodes'): employment type; job title; experience (years); age; education; national identity; gender identity; professional identity; country living and working identity; preferred industries; preferred stock markets; investment genre and self-ascribed investment style. That is, the 13 demographic traits were used to code or classify selected pieces of evidence from the 10 interviewee ('case') transcripts. These 'Parent Nodes' were further classified into 'Child Nodes' (sub-themes) when deeper qualitative data analysis was required.

To illustrate, Figure 6.5 displays a partial graphical presentation of the node hierarchy used to store the participants' bio-data inside selected 'thematic buckets', which were then further classified and re-classified as the analysis work evolved, for example see 'Work Experience' and Educational Background' sub-nodes shown in Figure 6.5.

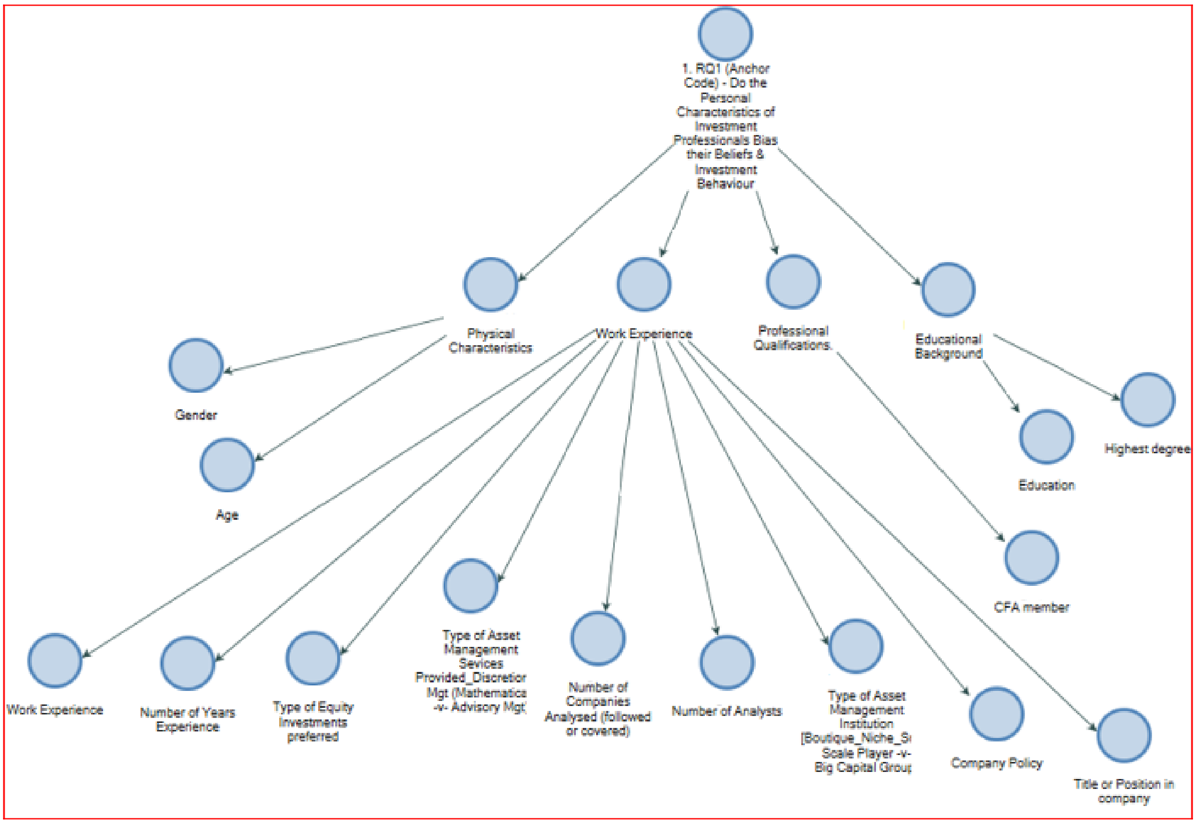


Figure 6.5: Nvivo 11 Pro Case Classifications

Source: Kelly (2019)
Developed by the author using Nvivo 11 Pro

6.3.2 **Synopsis of Participants' Bio-data**

The bio-data pertaining to the 10 interviewee case classifications is summarised in Figure 6.6 below. As indicated, the pool of interviewees comprised 10 Portfolio Managers whose specific job titles alternated between President, Chief Executive Officer (CEO), Owner, Managing Director (MD) and Chief Investment Officer (CIO). Additionally, two of the participants hold PhD degrees; one was an accounting and finance professor and the other was a lecturer in international finance and banking. Between them, the 10 interviewees had more than 400 years' experience working in the equity investment management industry in Europe. Alternatively, the participants had, on-average, 30 years work experience each. The qualitative literature indicates that when the interviewee 'case' participants' reputations, skill and experience are 'proven' to match or exceed 'acceptable standards', it follows that the credibility, transferability, dependability and confirmability (Trochim, 2006) – but ultimately the believability (Creswell & Creswell, 2018) – of the research evidence and findings should be enhanced, see also Bryman (2016) Adu (2016), Creswell (2015), Saldana et al. (2013), Morrow (2005), Cook and Campbell (1979) and Lincoln & Guba (1985). Therefore, it is both notable and relevant that two of the interviewee participants are profiled in 'The Great Minds of Investing' (Leber, 2015). Finally, every effort was made to present this data without compromising the anonymity and/or confidentiality of the participants (Bryman, 2017).

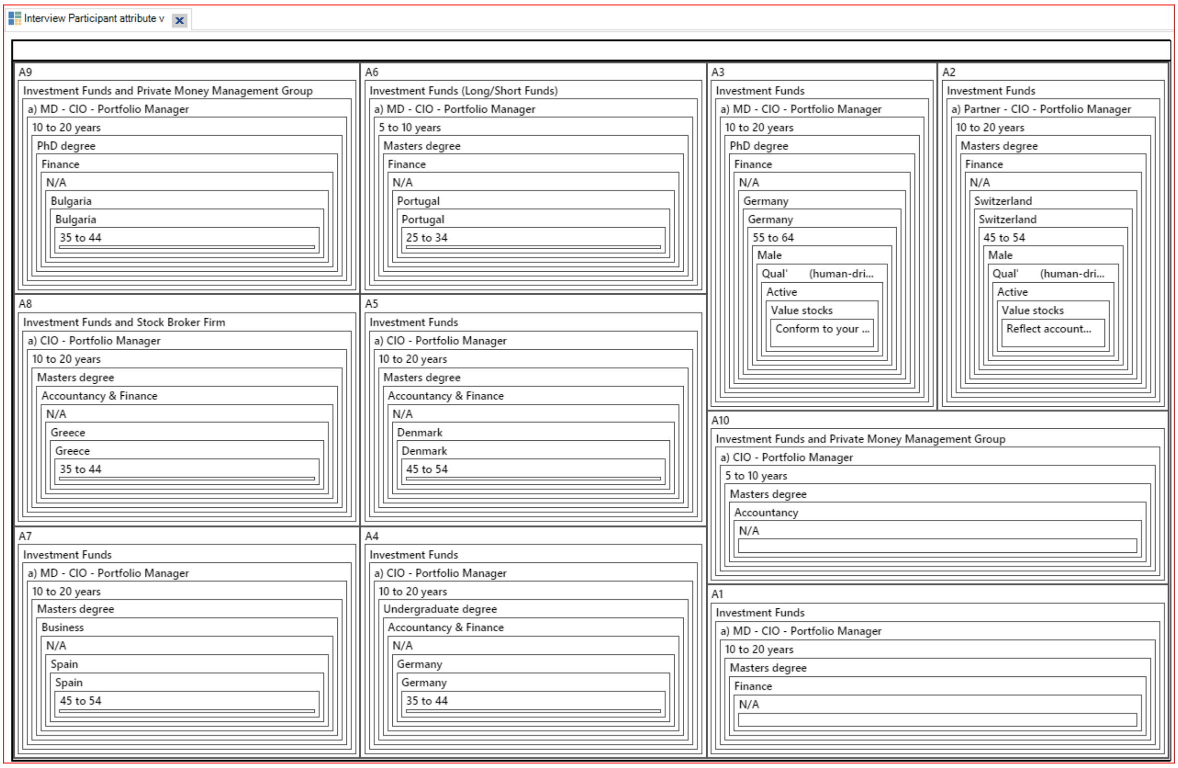


Figure 6.6: Synopsis of Participants' Bio-data

Source: Kelly (2019)
Developed by the author using Nvivo 11 Pro

6.3.3 **Closer Examination of Interviewee Profiles**

The bio-data for each fund manager who participated in the interview segment is summarised in Appendix 6, Section A6.3. Hence, the 'believability' of the findings can be independently assessed in concordance with the 'quality' of each participants 'profile' information. Notably, according to the literature, for example Creswell & Creswell (2018), Bryman & Bell (2015) and Lincoln and Guba (1985), the credibility, transferability, dependability and confirmability of the findings arising from the interviews depend on the 'profiles' of the individuals who participated in the study.

6.4 **Utility of Accounting Theory and Modern Finance Theory within the Equity Investment Management Industry in Europe**

The literature reviewed in Chapter 3 described various accounting appraisal methods that conventionally tend to be grouped under one of two academic classifications: absolute or relative accounting methods. Likewise, the literature reviewed in Chapter 4 described various financial appraisal methods that conventionally also tend to be grouped under one of two academic classifications: single-factor or multi-factor beta methods. However, as shown below, practitioners appear to be more familiar with the generic accounting term; 'Fundamental Analysis', when describing the range of techniques known to them.

6.4.1 **Utility of Accounting Theory**

This section begins by presenting fund managers' views on the meaning and usefulness of 'fundamental analysis' when applied to equity decision-making.

6.4.1.1 **Utility of Fundamental Analysis when used for Valuation and Equity Decision-making Purposes**

Table A6.1 gives some examples of the interviewee responses to the question on the usefulness of fundamental analysis in equity decision making. The table shows twelve themes and we note that, overall, fundamental analysis is pervasive in the industry. However, the interviews also reveal that fund managers seek supplementary, non-quantitative information. For example, interviewee #07, emphasised the potential to "add value" by "knowing really well the companies" and "Getting a feeling of what the management strategy is".

In keeping with the analyst literature reviewed in Chapter 2, the interview evidence has confirmed that Annual Reports, Analyst Reports and Management Meetings are important sources of company information and all have a role to play in fundamental analysis. Furthermore the evidence makes it clear that the relevance, or usefulness, of each source will vary according to the context of the analysis and the needs of the user. That said, it is notable that the 'contribution' attributed to these sources by the participants often differed sharply to what it says in the accounting and finance literature. These observations are expanded upon in some detail below, summarised, and then compared to what is said in the academic literature.

The majority of the interviewees regarded the Annual Report as their primary source of qualitative and quantitative financial information about a company. However, interviewee #6 also remarked that while "accounting is not everything", it is "the basics". In other words, Annual Reports provide a good starting point from which to conduct broad spectrum fundamental analysis of a target company. Whether a fund manager utilises intrinsic or relative accounting models or both as an aid to the fundamental analysis of a company seems to be a matter of personal preference, his familiarity with a specific accounting technique and the nature of the analysis work to be carried out. As interviewee #07 stated, "…. I wouldn't say that there's one better than the other… It's definitely one better than the other for one specific company, sector, company maturity. So, it depends on the stage that they're in, in terms of their own life… how you could value it". Nevertheless, interviewee # 06 also cautioned that it is unadvisable to just take accounting numbers at face value, that is "you cannot just stay analysing the P&L, you have to cross it with the balance sheet, you have to… double check it with the cash flow statement". He cited the importance of double-checking important facts and figures using for example alternative figures in Annual Reports, similar companies within the same sector, examining industry trends, and talking to competitors and to companies that are upstream or downstream the supply chain of the company. Only then, when everything financial and in the field makes sense, can you believe that the numbers available for decision-making are correct.

The majority of the interviewees agreed that the sell-side could potentially play an important role in fundamental analysis. In fact, the interview evidence clearly suggests that it is the sell side analysts' specialist knowledge of an industry that mattered the most to buy side decision-makers. Thus, contrary to what the literature has asserted in the recent past, it is not the forecast opinions, institutional ranking, or the buy or sell recommendations of sell side analysts that matter most to portfolio managers, but rather it is their specialist knowledge of a company, industry or sector that is most relevant for equity decision-making purposes. Interviewee #09 articulates this sentiment as follows: "I'm not reading specific reports to invest in specific company, but just to get a better idea of the sector. And I read reports of several companies within the same sector". Furthermore, interviewee #07 emphasised the same point this way: "… the sell side… the good thing that many of these guys have is that they do have specialized analysts into some specific sectors. And because of that, they can really become quite knowledgeable about each industry, and they typically subscribe to the specialty magazines and publications from the sector, which tend to be quite extensive by the way. And so that's where we extract most of the pure sectorial data and any information… it's really the fact that each one of them is specialising to one industry… So, the fact that I'm looking at … probably in any given year… 60 companies, which are quite broad in the industries that they're in… I mean I can't be an expert in all of those sectors, obviously. And that's why it's so important that I can gain access to these guys, which only look at say… probably in the range of 5 to 15 companies within the same sector. And so that allows them to be on top of every piece of news, every rumour, every little bit of information that's out there for that sector, or each company within it. And can really plug into his numbers and make a quick comment upon the changes that are implied, and that's relevant".

Management meetings were seen as a useful way to progress deeper into fundamental analysis in order to gather further quantitative and qualitative information about a company and/or the sector within which it operates. They also represent a useful way to compare and cross-check the numbers. Interviewee #3 echoed this sentiment in an intriguing way when he remarked that it was "not 'meeting' management but 'watching' management" that mattered most to him. He liked to "go to conferences and see them talk… and compare different companies". He felt that "meeting people… first-hand frequently does not help; it manipulates you into either you believe you understand something that you don't understand, or they charm you… I don't trust them, I don't trust one-on-one meetings" … That said he acknowledged that his "colleagues like the one-on-one discussions with management".

The interview evidence also speaks of the phenomena known as value, momentum and growth. In fact these so-called fundamental company profiles and stock market characteristics are pervasively spoken about in both the accounting and finance literature, albeit as discussed in Chapters 3 and 4 they are sometimes prone to inconsistent characterisation in the literature, even among prominent academics, e.g. Penman (2011) and Penman and Reggiani (2009) versus Fama and French (1992, 1993, 1996). Interviewee #4 provides a useful description of these phenomena from the perspective of the academic literature as well as the investment management practitioner, which is worthwhile emphasising here: “I think... in most of research papers… when we make empirical studies, we have value and growth portfolios. Growth is perhaps not the best word. The value portfolio is the ‘cheap’ portfolio of course. And growth portfolio is I would say the 'expensive' [portfolio] … Because if you have a company with high price to book, it doesn't mean that the company must have a high growth rate, it's just an expensive company… I think there is another important relationship there in the area of momentum and value… Value and Momentum factors are negatively correlated. That means if you have a value portfolio, normally these stocks have a low momentum. If you have a momentum portfolio, normally you have growth stocks or expensive stocks over-weighted. So this is a negative correlation… and this has some important implications for our future, because if you are a value investor and you invest only according to value indicators, you have a portfolio with low momentum stocks. We know low momentum stocks has a high possibility of an under-valuation and high volatility. So, if he invests only in… undervalued companies with a higher or above average momentum, perhaps we can exclude some pitfalls, some negative signals. That's one important idea behind the combination of value and momentum. And also when you come from a momentum perspective it's the same way. If you have a momentum portfolio, you have the majority in growth stocks… or expensive stocks. Expensive stocks lead to under-performance and high volatility. If a momentum investor would exclude in our momentum portfolio, over-valued company, then perhaps I can exclude some poor signals.... So it works from both perspectives”[13].

In a nutshell interviewee #4 has clarified that ‘growth’ is perhaps not the best word to describe what are ostensibly ‘expensive’ companies and/or portfolios of stocks. Likewise,

[13] This is an important research finding that appears to have significant upside implications for both the investment management industry and academia. The researcher was only able to locate about ten research papers that have examined the correlational effects of value, growth and momentum in combination.

‘cheap’ companies are perhaps a more apt description of ‘value’ companies and/or portfolios of stocks. ‘Momentum’, while it can be seen to correlate with growth companies, is perhaps best thought about in the context of price movement. Thus, the three phenomena (value, growth and momentum) have thus been better defined for the purposes of investment decision-making. And as interviewee #07 so pragmatically puts it, “We'll be… shifting between one and the other according to the time of the markets we're in”.

To summarise, the interview evidence demonstrates that the fundamental analysis of a company is far reaching, spanning not only the accounting numbers but also a company’s relative market share position, the threats posed by competitors, and its dependency or otherwise on the price of commodities. While individual approaches to fundamental analysis clearly varied among the participants, there nevertheless was an underlying consistency in their approaches which united all but one of them, i.e. interviewee #08 who was the quantitative investment aficionado. Thus, there is broad agreement that fundamental analysis is an active and not a passive endeavour that takes a lot of time to do properly, and which requires in-depth research on a target company together with focussed analysis of the information gathered. It necessitates the collection of both quantitative and qualitative information from multiple diverse sources that includes the company’s annual reports, speaking with the management of the companies over the telephone or on-site, participating in conference calls, speaking to specialist sell side analysts with specialised knowledge of an industry or company, and reading their reports. Accounting information is important but is not the totality of fundamental analysis, although it does provide a useful starting point. The profit and loss (P&L), balance sheet and cash flow statement are obvious points of reference within a company’s annual report. But off-balance sheet events of a strategic, managerial or operational nature are of no less importance. Likewise, the notes to the accounts are important sources of information that often disclose information about off-balance sheet debts or planned financing activities. Discounted cash flow techniques are frequently used to provide useful 'fair' company valuations. Likewise, 'multiples' modelling techniques facilitate company comparisons within sectors, and are frequently used to double-check or verify key accounting numbers and performance indicators. The evidence indicated that it would be rare if intrinsic or relative accounting techniques were used as the sole means of making investment decisions. In short, fundamental analysis encompasses anything that affects the business. It is also clear from the interview evidence that the terms 'fundamental analysis' and 'industry knowledge' were viewed as equivalent in the eyes of the participants. Ultimately fundamental analysis is seen as useful because (ceteris paribus) it enhances investors' reaction speeds and can potentially "create value" for investors.

Next, a discussion of what the academic literature says about the investment management themes discussed above might be useful. To begin with, it may be beneficial to recall the assertions of Litterman and Sullivan (2012) and Ellis (2011). Firstly, Litterman and Sullivan (2012, p.4) assert that any research that serves to capture the very best practical investment industry insights has the potential to constitute a valuable contribution to the literature. Furthermore, they make a more general call for research papers to include in future editions of the 'Financial Analyst Journal' (FAJ) that will better serve investors' understanding of investment portfolios, the capital markets and the workings of the analyst profession generally. As Ellis (2011, p.11) so eloquently explains "For all its amazing complexity, the field of investment management really has only two major parts. One is the profession—doing what is best for investment clients—and the other is the business— doing what is best for investment managers". With these assertions in mind the interview evidence presented above affirms that the sell side analysts' contemporary role within the investment management industry is much narrower in its scope than what was previously indicated in the academic literature. Put plainly, all of the interview evidence demonstrates that as far as the sell side are concerned, ‘nothing else matters’ to investment managers other than their specialised knowledge of a company, industry or sector! Indeed Bradshaw (2011) observes that the annual Institutional Investor (II) ranking of analysts indicates that the most important trait valued by institutional investors is industry knowledge. Likewise when Brown et al. (2015) investigated the inside of the ‘black box’ of sell-side financial analysts they too found that industry knowledge was the single most important determinant of their compensation and the most important input to both their earnings forecasts and stock recommendations. Additionally, Clatworthy and Lee (2014) assert that the existing literature on financial analysts, which focuses primarily on sell-side equity analysts, pays too much attention to the properties of earnings forecasts. Furthermore, Fridson (2014) reports that institutional money managers do not appear to put much faith in the ‘favourite stock’ opinions of star analysts. Alternatively, Groysberg and Healy (2013) assert that there is no generally accepted empirical evidence available to show that the performance of top-ranked analysts’ recommendations are superior to those of a random walk process.

In summary, the interview evidence presented here even transcends Bradshaw’s (2011, p.39) assertion that the academic literature´s disproportionately large emphasis on earnings forecasting research amounts to nothing less than “a gross mischaracterization of the analyst’s job function, and hence his/her incentives”. That is, the interview evidence makes it abundantly clear that their forecast opinions, institutional ranking, or their buy or sell recommendations are irrelevant to portfolio managers for equity decision-making purposes.

Finally it is interesting to note that several prominent academics, extending as far back as Kothari (2001), Brown (1993), Zmijewski (1993) and Schipper (1991), have repeatedly called upon researchers to move beyond the largely defunct research activity that examines the time-series properties of earnings forecasts in favour of a more useful research agenda that seeks to examine the broader reality and context within which analysts and investors make their decisions. It seems [backed by the interview evidence] that the sell side ought to focus on 'creating value' for asset managers by delivering their specialist 'industry knowledge' in more interesting and useful ways than what has been on offer to the buy side hitherto. Perhaps the evident advances in machine learning could be brought to bear in such an endeavour also.

6.4.1.2 **Utility of Intrinsic Accounting Methods of Analysis and Valuation in Equity Decision-making**

This section presents a selection of the European fund managers' views on the usefulness of intrinsic accounting methods of investment appraisal (absolute models) when used as part of a scheme of fundamental analysis, 'fair' valuation and equity decision-making.

Table A6.2 gives some examples of the interviewee responses to the question on the usefulness of intrinsic accounting methods of analysis and valuation in equity decision making. We discuss three themes and note that overall, discounted cash flow (DCF) methods are pervasive within the investment management industry. However, the interviews also reveal that fund managers did not always agree on which valuation method was most useful. Nonetheless in keeping with the previous section, the interviewees demonstrated they were aware that company valuations must be anchored on the fundamentals, see Penman (2002).

Before proceeding to examine the thematic intrinsic interview evidence in more detail it is worthwhile mentioning that the extant accounting literature is already awash with research on discounted cash flow techniques, much of which is repetitive or contemporaneously out of date. Thus, it was deemed preferable not to adopt not to adopt a copyist analysis of the topic. Nevertheless, Chapter 3 presents a comprehensive review of all of the accounting methods described in this chapter. In this vein, the literature shows that discounted cash flow methods (intrinsic valuation techniques) have for many years enjoyed wide empirical support amongst prominent academics and investment practitioners alike (Penman, 2011; Deegan and Unerman, 2006; Damodaran, 2006; Demirakos et al., 2004; Kothari, 2001; Copeland et al., 2000; Block, 1999; Barker, 1999a, 1999b, 1998; Fouche and van Rensburg, 1999; Pike et al., 1993; Beaver and Morse, 1978; Ball and Brown, 1968 and notably Arnold and Moizer, 1984). In fact, the majority of these academics viewed them as theoretically superior to all other accounting valuation techniques. However, as the evidence presented in Table A6.2 indicates, not all investment management practitioners agreed with that assertion. For example, participant #03 was a notable exception who stood out from the rest of the interviewee cohort. He asserted he distrusted discounted cash flow models and in particular dividend discount models and the capital asset pricing model (CAPM). Specifically, he stated "I don't trust… the dividend discount model, I mean, it's useless… In the end they're all the same if you do the right calculations… NPV doesn't really calculate the real investment of capital… Discounted Cash Flow, same problem… And Capital Asset Pricing Model… I used to do that some 25 years ago, until I realized that it doesn't make sense". That said, the overall view of the interviewees regarding the usefulness of DCF methods was generally a positive one. Most participants agreed that DCF methods are useful for estimating 'fair' values or when evaluating the potential of a stock, say using scenario or sensitivity models. For example, interviewee #06 affirmed the usefulness of DCF methods this way: "you have a view of the potential of the stock, you have a view of the fair value that the stock should be trading at, and then you make a decision if the upside is worth the risk…" Notwithstanding the broadly positive attitude towards DCF methods, the interview evidence also indicated that their usefulness will always be predicated on the context and needs of the user, plus a variety of other subjective factors, such as: the specific requirements of the user, the industry classification of the company (e.g. financial services industry versus retail industry), the user's input (variable) assumptions, whether the CAPM or some alternative guideline (e.g. cut off benchmark interest rate of 10%) has been used to derive the discount rate, or stability of cash flows. In short, DCF techniques are a best guess valuation estimate. And as such they will always be prone to the same bias and error as other forecasts. Consequently, the evidence demonstrates that they are seldom used in isolation when making investment decisions.

The dividend discount model (DDM) has historically enjoyed broad theoretical support in the accounting literature but provides little practical value. As discussed in chapter 3 the DDM was originally developed by Gordon (1956). It paved the way for the development of NPV and DCF methods in popular use today. However, as interviewee #03 indicated, a company that does not pay dividends is worth nothing in the dividend discount model. Other problems include the model's hyper-sensitivity to the cost of equity capital and the assumed future dividend growth rate. Therefore, it was unsurprising to observe that the majority of the participants did not find the DDM useful in any real practical valuation sense. However, interviewee #07 alluded to its potential usefulness when used to value financial service companies. Although it was felt this is a somewhat spurious assertion.

Turning next to the twin themes of the Residual Income Valuation (RIV) and EVA models. Table A6.2 reveals that aside from two notable exceptions the majority of the interviewees presented only lack-lustre enthusiasm for residual income valuation (RIV) models. This was a surprising finding for several reasons. Firstly, it was shown in Chapter 3 that the residual income valuation (RIV) model receives strong support from several renowned academics, see for example: Penman (2011), Kothari (2001), Ohlson (1995), Peasnell (1982) and Edwards & Bell (1961). Secondly, there is ample evidence in the literature, e.g. Lundholm and O'Keefe (2001, p.693), to show that given the right assumptions "the value estimates from a residual income model and a discounted cash flow model should yield identical results". Thirdly and perhaps most importantly from a practitioners perspective (opinion of someone who has done this before), it is remarkably easier to derive 'fair' value estimates using the RIV approach than it is to derive the same intrinsic number using a traditional DCF approach. This is because any practical attempt to value a firm using the traditional DCF approach is a time-consuming exercise that begins with forecasting future financial statements - earnings and book values at a minimum — to which additional fundamental estimates of interest must be added. Alternatively, it is simply much easier to use the most recent P&L and balance sheet figures in the Annual Report plus an appropriate equity discount rate or cost of capital to derive the 'fair' valuation of the target company using the RIV approach. Fourthly, as discussed in the previous section, good accounting has a substantial role to play in valuation, and since good forecasts rely on an accurate understanding of the past, it makes sense to use the existing (presumably audited and hence more accurate numbers in the annual report) to derive the easier RIV based 'fair' valuation. And as Penman (2002, p.25) emphasises, "Earnings and book values matter in company valuation". Fifthly, RIV can be used to measure incremental returns from incremental capital. For example, participant #03 asserted that he preferred to use one particular version of the RIV model, specifically he stated "… we use one specific model… it's by Professor Stephen Penman of Columbia" … "… to get the use of capital right I have to measure incremental returns from incremental capital, and the residual income model does that". Sixth and lastly, in all practical probability (backed by the interview evidence) it is likely that several alternative intrinsic valuation models will be employed in any analysis scheme before settling on a final 'fair' company value. Thus, the unique perspective offered by the RIV model makes it an obvious candidate for inclusion in the investment manager's valuation toolkit.

Finally, it is intriguing that all but two of the interviewees should appear indifferent to the inherently useful advantages of the RIV model. It was surmised that educational background may have had something to do with the findings. While interviewee #03 favoured the

Penman version of the RIV model it is notable that aside from his current position as managing director of a multi-billion-euro fund business, he also holds a PhD in accounting and was previously a full-time university professor. Similarly, while interviewee #01 favoured the EVA version of the RIV model it is notable that aside from his current position as managing director of a multi-billion-euro fund business, he was received a Fulbright scholarship to complete a Master's degree in finance in the USA. Thus, these two interviewees may well have been introduced to the merits of RIV and EVA in valuation much earlier in their careers.

In summary, the interview evidence presented here confirms that the role of intrinsic accounting valuation and analysis techniques within the investment management industry continues to remain an important one. It was evident speaking to the participants that recent advances in machine learning have enhanced their relevance and usefulness, for example when conducting scenario and sensitivity analysis or as a means of monitoring portfolio weights or making asset allocation decisions. However, it remains unclear why residual income valuation models have not been adopted more pervasively within the industry. Perhaps, this may be associated with a gap in the education and/or training of actors. However, RIV's numerous practical advantages are plainly evident. Automation only makes this point more self-evident.

6.4.1.3 **Utility of Relative Accounting Methods of Analysis and Valuation in Equity Decision-making**

This section provides a selection of the European fund managers' views on the usefulness of relative accounting methods of analysis (multiples models) when used for the purposes of fundamental analysis, equity valuation or investment decision-making.

In a similar vein to the previous section, the extant academic literature contains an abundance of research on accounting multiples. Chapter 3 contains a detailed account of all the accounting methods described in this chapter. As a corollary, it was easy to surmise before conducting this analysis that for many users of relative accounting methods, accounting multiples represent nothing more than a convenient framework to engage in the erroneous practice of stock market heuristics. However, in spite of this known behavioural tendency (Barberis & Thaler, 2003; and Wurgler and Zhuravskaya, 2002), the interview evidence presented here demonstrates that in the hands of the experienced investor they can potentially offer an enhanced level of usefulness that is beyond what some commentators indicate. Thus, because much of the interview evidence collected on this topic is already widely known, it was deemed unwise to simply add to this already burgeoning research database without firstly having something new to offer. Consequently, when the interview evidence appeared repetitive it was excluded from the presentation of this chapter. Nevertheless Table A6.3 reveals some useful examples of the interviewees' responses to selected questions on the multiples topic.

We discuss three themes and note that overall, accounting multiples methods are pervasive within the investment management industry. However, the study's practitioners indicated they usually used them as part of a broader framework of company valuations that will (of necessity) be anchored on the fundamentals. In general, the interview evidence indicated that 'multiples' modelling techniques are useful for making company comparisons within sectors, and are frequently used to double-check or verify key accounting numbers or company performance indicators. The three most useful multiples methods indicated were the P/E, P/B and EV/EBITDA ratios. Although it was also indicated that the relative importance of any one ratio will depend on the specific context of the analysis, the company sector in question, and the needs of the user. For example, interviewee #07 stated; "book is something quite important for financials for instance… P/E… and the profile of the P/E… is definitely relevant for… growth stories and not to get caught into a value trap or something like that". Nonetheless the cohort of interviewees signalled that caution was advisable when using accounting multiples. Interviewee #05 articulated this warning message as follows; "One has to accept that it is probably the most divisive valuation method in the markets. Therefore, you can't just reject it, even though… one has the opinion … it's have a lot of... you say.... weakness…. Yes, I mean you shouldn't rely on one, that's my point. You should try to COMBINE them and take the best out of everything, and that's how I view it… and if you can tick the box in more than one then you might have a pretty good case [Investment Case]". Alternatively, interviewee #01 warns; "… there's high P/E stocks that we think are the most dangerous thing you can own on earth because you can lose a lot of money. There are some where we're so convinced of the business model and the future growth prospects, so will we buy at multiples that we normally wouldn't, but it in this [investment] case we will make an exception". Cleary the salient take-away message here is to use these accounting heuristics judiciously. Common-sense tells you they are awash with bias and inherently prone to error. That said, interviewee #01 conceded that "we still go back to the P/E ratio and things like that" as needed, even though we realise they are flawed or "pretty rough".

Turning to the asset allocation function, the interview evidence confirms that this is a notably important decision-making activity for portfolio managers, which the accounting and finance literature reviewed in chapters 3 and 4 also validates. Not only do asset allocation and portfolio weighting decisions directly impact the performance of a fund, they also represent the most pervasive yardstick by which the remuneration of the fund manager is judged. The interview evidence demonstrates how combinations of accounting multiples are utilised to inform portfolio weighting and asset allocation decisions. For example, as interviewee #03 demonstrated; “I can show you a screenshot if you’d like. Let me see... OK, can you see the red bars? Basically, it says “how are different valuation models working at the moment”. So, price to book, book to equity, to market equity, has a negative performance, negative out-performance. Operating cash flow yield has negative performance. Enterprise value to EBIT is positive at the moment, earnings to price is negative, pay-out yield is negative, and dividend yield is negative… But the other sectors that are doing well, for example: profitability X3 comes from the xx model, EBIT to total assets is a very positive indicator. So, what we do is, we pick those factors that work at the current… at this current moment. And if they work right now, we use a higher weighting. So it goes into our … weighting decision. But we measure it. So right here we can see which of our companies in our portfolios fall into this category…. We have… Mitsubishi Corporation, Trinity industries… which belong into this category. So right now we should have a lower weighting on these stocks”. The skill and expertise shown by this portfolio manager as he guided the interviewer patiently around his office while he demonstrated the asset allocation process in-action was truly remarkable. In subsequent sections additional evidence is presented to show how the interviewees use multiples models to construct multi-factor asset pricing models, inform their portfolio optimisation models and evaluate their asset allocation decisions.

In summary, the interview evidence presented here confirms that the role of relative accounting valuation and analysis techniques within the investment management industry continues to remain an important one. And as concluded in the previous section, it was evident from speaking to the participants that recent advances in machine learning and automation have markedly enhanced their relevance and usefulness across both the buy and sell-sides of the investment management industry. ‘AlphaSense’ is one notable example, but many more are coming to the market. In this regard SPSS and NVIVO both offer users early training potential.

6.4.2 **Utility of Modern Finance Theory**

6.4.2.1 **Assumptions Underpinning Modern Finance Theory**

The single and multi-factor asset pricing models that collectively comprise modern finance theory were built on a number of key theoretical assumptions. Whether asset managers find these assumptions believable or not will in turn influence their feelings regarding the usefulness of capital markets theory in equity decision making. Table A6.4 presents a selection of the fund managers' views on the usefulness of some of the more ubiquitous theoretical assumptions implicit in the finance models that have emerged over the last 70 years.

Before beginning the analysis of Table A6.4, a brief contextual review of the current state of the modern finance literature is presented. Firstly, it was not until Fama (1965, 1970) published the efficient markets hypothesis (EMH) that efficient markets theory (Bachelier, 1900) became popularly accepted theory. Subsequently the EMH signalled the beginning of a new era in positive theoretical research science, spearheaded for example by such notable accounting academics as Ball and Brown (1968), Beaver (1968) and Watts and Zimmerman (1986). Likewise, its effect on neo-classical finance theory has been profound, as seen for example in the subsequent development of the capital asset pricing model (Sharpe, 1964). Since then, market efficiency has been tested exhaustively in finance, economics and accounting, in fact to such an extent that the size of the combined extant literature on the topic is now huge (Kothari, 2001). Chapters 3 (Accounting Theory) and 4 (Finance Theory) discuss the implications of these developments for capital markets research in accounting and finance at some length.

Secondly, the notion of 'rational economic man' is pervasive throughout all of classical finance theory. But it makes no sense, at least not in any kind of broad general sense of the word. We know intuitively from common sense awareness of world events that chaos abounds and human beings exhibit behaviours that are far from rational all of the time. In fact, they behave in distinctly irrational ways in almost every walk of life. These observations are not intended to denigrate the numerous contributions of the many neo-classical protagonists within academic finance, both past and present. To recap, 'rational theories' have led to for example: modern portfolio theory, capital asset pricing theory and the efficient markets hypothesis. However in recent years, scholars and investment professionals have started to investigate an alternative theory of finance known as Behavioural Finance Theory (BFT). This emerging field represents a refreshing new approach to the study of financial markets. Essentially BFT argues that some financial phenomena can be better understood using models in which agents are assumed to be *´irrational´,* rather than 'rational' (Shiller, 2014, 2013; Barberis & Thaler, 2003; Ricciardi & Simon, 2000; Gul, 1991; Bell, 1982; Loomes and Sugden, 1982; Kahneman and Tversky, 1974; and Festinger, 1957). The theory of behavioural finance attempts to improve people's awareness of the emotional biases and psychological processes affecting individuals and entities that invest in financial markets. Its inherent appeal relates to its inter-disciplinary research approach to the broad spectrum of phenomena that influence the decision-making choices and diverse behaviours of investment managers in action. Academic support of the BFT paradigm has grown very rapidly in recent years.

In the meantime the interview evidence reveals some confirming and contrasting views vis what it says in the literature. These are discussed using the five themes indicated in Table A6.4.

The interview evidence presented Table A6.4 demonstrates that the majority of fund managers disagree with the neo-classical assumption that economic man is rational. For example, as interviewee #01 stated somewhat magniloquently: "… rational economic man, that we always take rational-economic decisions…I mean, I've been around when we've all been ******** our pants because we think the world's going under, and we don't dare to invest when we should, and I'm sure we've been greedy, so just there that goes away". An alternative but equally dismissive perspective was provided by interviewee #04 as follows; "When we look at some big case in history we had a lot of fund managers who invested based on their own expectations about markets or sectors or companies, and we know when we look at forecast errors and the success of these strategies, that it is nearly impossible to identify the right markets or right companies and I think a lot of investors realized this".

The interview evidence was not quite so emphatic on the subject of the efficient markets hypothesis (EMH). Common sense tells one that the 'strong' form of informational efficiency is unrealistic. There is simply no available evidence to support it. For example, as interviewee #01 stated; "… I mean this can't be perfectly efficient, there's no way". Its polar opposite, the 'weak' form of efficiency, received wider support from the interviewees. For example, as interviewee #02 stated; "I do believe in a weak form of the efficient markets hypothesis, otherwise value investing wouldn't work". The third level of market efficiency, the 'semi-strong' form, has proved more contentious over the years than the other two forms, both in academia and among practitioners. For example, as interviewee #04 stated; "I'm not really sure… Perhaps the market will become a little bit more professional, a little bit more efficient because a lot of strategies in the last years were story-driven or theme-driven. And I think a lot of new quantitative approaches will lead to smaller inefficiencies". Interviewee #01 was more emphatic; "No, no, no... I can tell you why… I like this active/passive debate… a lot of articles… if I remember correctly… talk about information efficiency. That doesn't exist”. Furthermore, the interview evidence presented in the previous sections indicated that interviewee #01 was a highly successful fund manager with a long standing, empirically proven, track record of consistently beating the market. Thus, as evidenced in the following comment he was more than a little cynical on the topic of semi-strong efficiency; “… talk to some of the academics… they say "Well, there's always one lucky one". And then I normally say, “in that case it's better investing with the lucky one than the unlucky one, right”. Alternatively, interviewee #04 offers an arguably more reasonable interpretation of the semi-strong form which is somewhat subtle but no less true. That is he acknowledges the existence of the pre-condition that published information must firstly be widely disseminated before one can accept the existence of the semi-strong market form. He states; “We have some broker, researchers which are focused more on relationships. Take JP Morgan for example: they have a very good fundamental research, they publish a lot of research about relationships between value and momentum and stock returns, and this is useful for us, and I like reading this, and discussing this research, but … there are two sides of the coins. Of course, I like it. The other side is that if a lot of people, eh, are doing research in this area, the inefficiencies will get smaller”. Finally, it is apparent from the interviewee evidence that the level of informational efficiency in the financial markets is largely weak and only mildly semi-strong. Interviewee #04 affirmed this consensus view as follows: “… I think it will get more difficult for all investors to make an alpha on the markets, because more and more capital is allocated in a more… in a better way like in the past and this is also relevant for private investors. Though if a private investor is just looking on headlines, I know some of them are doing so, and try to get companies based on news flows, or something like this, I think this will get more difficult to get an alpha, but it was also difficult in the past to get an alpha on such a strategy. I think only a few strategies are, on the long term, able to generate real alpha returns, and some of these concepts are value strategies, some others are momentum strategies. I think these two areas are very interesting, although in the future... if private investors have the possibility to get the right data to find undervalued stocks, I think they will also be able to generate alpha in the future. But how many private investors are able to get on Bloomberg or Bourse data".

Turning to 'modern portfolio theory', which is the next modern finance theme listed in Table A6.4. The tenet of 'Portfolio Selection Theory' (PST) is diversification of assets to minimize risk. Markowitz (1952, p.77) provided the mathematical proof that "there is a diversified portfolio which is preferable to all non-diversified portfolios". He did this by invoking the maxim that investor behaviour "does (or should) consider expected return a desirable thing and variance of return an undesirable thing". When published, the paper sparked a radical re-think amongst all of the financial paradigms prevailing in economics at that time. It successfully demonstrated that there was much more to the process of 'spreading risk' across assets than had previously been understood by academics and/or industry practitioners. It showed that when securities are combined together in a portfolio, part of the risk (volatility, variation or standard deviation of returns) associated with any individual security is eliminated because of the effect of the covariability of returns between pairs of securities. In essence, the risk of a portfolio is less than the weighted sum of the risk of the individual securities; but the expected return of a portfolio is equal to the weighted sum of the expected return of the individual securities. It was this phenomenon that Markowitz (1952) called portfolio diversification.

In keeping with the finance literature reviewed in Chapter 4, the interview evidence has confirmed that for the majority of investment managers diversification is an important consideration in portfolio optimisation and allocation decisions. While portfolio managers may wish – according to portfolio theory - to maximise returns for any given level of risk, and vice versa, they also realise that many additional real-world behavioural factors invariably tend to influence these decisions. And as discussed above, the Markowitz (1952) assumption that investors are rational and risk-averse and will only choose from the most optimal combinations of securities (what he termed 'Efficient Share Portfolios') is an unrealistic assumption. Furthermore, it is notable that Markowitz (1952) was unable to provide specific guidance as to how a rational risk-averse investor should go about identifying the '*optimal*' investment portfolio that was best suited to his/her personal risk-return preferences. Later however, both Tobin (1958) and Sharpe (1964) would solve this 'optimisation problem', albeit their approaches were very different. In the meantime, the interview evidence does tend to confirm modern portfolio theory's assertion that diversification tends to improve portfolio performance vis return/risk outcomes. For example, interviewee #09 articulated this sentiment as follows "… when I make the diversification, I'm not looking for the highest possible return. I look for the reduction of the risk, improvement of the liquidity of the portfolio and catching some other markets that are going to perform better than my domestic market. From my specific experience I had many portfolios that where invested in… specific sectors… market… in specific countries that did not do well in the years after the crisis… the period 2010-2014. And other portfolios with broad diversification had performed better. And those who provided better liquidity, that's the reason that I agree with this one. This is from my own experience, risks were reduced, yes. Returns higher… of course this is when you talk about the risk and return ratio. When you talk about pure returns [maximising returns], it's not working". In short, the majority of the interviewees agreed that diversification is important and can potentially reduce an assortment of portfolio risks.

Finally, the assumption that investors can borrow/lend money at the risk-free rate of interest (Tobin, 1958; and Sharpe, 1970) is unrealistic. Unsurprisingly this assumption was rejected by all of the interviewees. As interviewee # 01 commented; "… it doesn't cost money to short stock! Well if you try to lend stock from a bank, it has never been free for us, and even the underlying, there's underlying things to the theory for it to work, as I remember it, but it's 30 years ago soon, that, not even that underlying things are working. They're not true!" Likewise, most of the academic literature rejects the notion that investors can borrow at risk-free rate of interest. For example, short-sale constraints often disrupt the arbitrage process. A constraint refers to anything that makes it less attractive to establish a short position than a long one. "The simplest such constraint is the fee charged for borrowing a stock. In general, these fees are small – D'Avolio (2002) finds that for most stocks, they range between 10 and 15 basis points – but they can be much larger; in some cases arbitrageurs may not be able to find shares to borrow at any price" (Barberis & Thaler, 2003, p.1057).

In summary, the interview evidence presented here confirms that the majority of the interviewees have difficulty in fully accepting the key assumptions under-pinning modern finance theory. Nevertheless, this lack of support for any specific assumption does not diminish the contribution that these assumptions or the theories to which they relate have made towards improving and modernising fundamental analysis plus investment decision-making. In fact, the interview evidence demonstrates that many of the recent advances in machine learning and automation would not have occurred had the advances in modern finance theory not transpired.

6.4.2.2 **Utility of Single-factor Finance Models in Equity Decision-making**

Table A6.5 presents a selection of the European fund managers' views on the usefulness of single-factor asset pricing models when used as part of a scheme of fundamental analysis, equity valuation and/or decision-making.

The majority of the interviewees agreed that CAPM was useful in practice. The interviewee evidence demonstrated that CAPM was frequently used to calculate the return on equity or the implied cost of equity capital for the purposes of conducting fundamental accounting analysis or when stock picking. Additionally, the interviewee evidence demonstrated that CAPM was often a key factor when conducting quantitative financial analysis or when making portfolio optimisation and asset allocation decisions. However, in keeping with the accounting and modern finance literature reviewed in chapters 2, 3 and 4, the interview evidence indicated that its most ubiquitous use was computing the implied cost of equity capital, i.e. the discount rate used in a range of DCF models, such as net present value models, residual income valuation models, plus a wide variety of multi-factor finance and accounting models, e.g. Fama & French 3-factor models, arbitrage pricing models, and momentum models. To illustrate, interviewee #06 explained he used the CAPM "… to compute the cost of equity… to discount the cash flows usually you do it the easy way, which is via the CAPM, via the beta, the market risk premium. For the stock picking the CAPM is more for computing the cost of equity and putting it into your DCF". Similarly, interviewee #05 stated he used CAPM "When we're doing the NPV of a company, we of course have to calculate the Discount Factor… the Cost of Equity, or the WACC". Likewise, interviewee #10 stated; "We just use it as the cost of capital… for cost of equity". Notwithstanding the overall level of support shown by the participants towards CAPM, there was one interviewee that was vehemently opposed to it. He voiced his disdain as follows; "… I used to do that [CAPM] some 25 years ago until I realized that it doesn't make sense". He preferred to select his own discount rate based on his personal knowledge of the risks attaching to a specific investment, prevailing market rates or some other measure of the opportunity cost of investing in the business sector in question. He indicated that this approach offered him a number of advantages over the CAPM, for example he stated it; "… moves me into risk areas… it forces me to take unusual decisions".

In conclusion, CAPM is widely used by senior investment managers to calculate the implied cost of equity capital. Nonetheless some portfolio managers question the validity of its role in fundamental analysis and for making investment decisions. For example, interviewee 07 pointed to a potential weakness of the model that relates its unique 'single-factor' structure, i.e. CAPM is 100% dependent on the accuracy or reliability of the value attaching to beta. Specifically, he stated; "if we do believe the inputs that we plug into the model, giving us access to a meaningful beta, then you'll be quite relaxed about using the number, you know. So what I'm mean is, for instance… we are very careful about the length of the history that you take to derive the regression, right. So, we do manage that quite actively in terms of, you're not using all the time, one year or three years or whatever as the theory says, that it's meaningful. We'll be using one which is… which makes sense to the recent history of each company. So, if the company has changed, say two years ago, in the business model/volume/performance that they have, so it makes no sense to use a history larger than that to derive your betas". Of course, other limitations of the model may be more obvious, for example its implied measure of the opportunity cost of incremental capital allocated to the investment. Some investors prefer to use a dividend valuation model, such as Gordon's growth model, to calculate the implied cost of equity capital. However as indicated previously in this chapter, the DDM has arguably more weaknesses attaching to it than the CAPM. Chapters 3 and 4 contain further reading on this topic.

6.4.2.3 **Utility of Multi-factor Finance Models in Equity Decision-making**

Table A6.6 presents a selection of the European fund managers' views on the usefulness of multi-factor asset pricing models when used as part of a scheme of fundamental analysis, equity valuation and/or decision-making.

As discussed in the two earlier section (6.4.2.1 and 6.4.2.2), the single and multi-factor asset pricing models that collectively comprise modern finance theory were built on a number of key theoretical assumptions that the majority of the interviewees did not find all that credible or useful in practice. Thus it is advisable to be mindful of the evidence presented in the two previous sections whilst studying the additional evidence presented in this section on the usefulness of multi-factor models in investment management. From the outset of the interviews it was notable that the same scepticism witnessed in the two earlier sections was also reflected in the interviewees responses to the questions posited in this section. For example, as interviewee #1 exclaimed when asked about the usefulness of modern finance theory; “Oh, no, no, they're all wrong. So we think… sometimes when we're a little bit rude, we say the financial theory must be the worst theory ever made-up, because nothing is correct. We won’t use them at all…” As indicated in Table A6.6, while the majority of the interviewees exhibited an uncomfortable attitude towards the subject of financial theory, not all of them were quite so vociferous and/or as entrenched in their beliefs as interviewee # 03 so evidently was. For example, interviewee # 03 demonstrated a genuine respect for Breiman’s version of the regression-based machine learning prediction technique known as ‘Random Forest’ (Breiman, 2001). He asserted; “They are now becoming quite common. We have used them for about 10 years now. It's… a “Late-Leader tool"... like Regression, only… more robust”). Relatively new (late 90’s/ early-noughties), the RF algorithm utilises a multitude of uncorrelated decision trees with controlled variance to improve the predictive accuracy of outcomes whilst controlling for over-fitting, which is a common problem with machine learning models. (Breiman, 2001; Kleinberg, 2000; and Ho, 1995, 1998). Compared to the ‘older’ and largely outdated value premium methodologies of Fama and French (1992, 1993, 1995), ‘Random Forests’ typify the kind of machine-based analysis, evaluation and decision-making techniques to have gained traction within the last 5 years. For example, as interviewee # 07 explained; “Kevin, if you now look at the recently established funds, contrary to what used to take place, say like in the 90s, you no longer have many funds calling themselves as value whatever, or growth whatever. They tend to have less obvious names leading to some sort of 'style identification', you know”. In a similar vein interviewee

04 commented on the Fama and French (1992, 1993) investment styles as follows; "… if you look at the value factor strategies at the moment, a lot of value factor strategies invest in large caps. We know that in the large cap area there is nearly no value premium over the last 10-20 years". As interviewee # 04 further explained; "So I think an investor won't get any value premium in the large caps segment in a standard market like the US. So investors who… try to capture a value premium I think won't get this. There are more reasons for this, for example a lot of value strategies and back-tests are equal-weighted. A lot of ETF's are market weighted. Value strategies in academic research like Fama & French do not have sector or country restrictions, most of the ETF's have. So, there are a lot of factors which will reduce the value premium". Similarly, the contemporaneous literature demonstrates that the FF model frequently does not explain the variation in stock returns due to the so called 'size-effect'. Many commentators assert that Carhart's momentum model provides better estimates of the cost of capital than the FF model that preceded it. For example, Nartea et al. (2009) show how portfolio managers can increase returns by investing in small and high book to market (BM) firms that are recent winners, i.e. performance evaluation should consider the size, BM, and momentum effects. It is notable that a large portion of the interview evidence also indicates the "momentum effect" seems to represent a more useful factor for capturing excess returns. For example, as interviewee # 04 asserted; "We try to use the 'momentum effect', so we know that companies which had an above average performance over the last 6 to 12 months, tend to outperform their benchmarks over the next year… 6 to 12 months. So we try to find companies with a strong momentum, and when we measure momentum, we can use performance that I think are widest accepted way of the momentum criteria… we use… relative strength … That means actual price divided by an average price of the last 6 months or 12 months, something like this, and so we get stocks which outperform… We look at the lately [recent] relative strength… We try to find stocks with an outperformance over the last 6 to 12 months, and underperformance over the last 5

to 3 years. The stocks with long-term decline in the price, but with a positive momentum in the short term and an undervaluation. With this kind of stocks are… we like". Likewise, interviewee # 03 voiced his approval of momentum phenomena this way; "Yeah, it's as easy as 1, 2, and 3. One is of course 'Stock Price Movement'. Second one is, I don't know if you call it Momentum, but it's... 'Volatility'… "what weighting decision". Third one, which is very important, is 'Analysts' Revision Models'. It's a model that we buy. If analysts move their revisions up… it's a pretty good indicator. So… you know, the stock is bottomed-out, it may take two years until the analysts re-evaluate that stock. But when they do, the stock usually moves". An alternative, albeit less convincing argument, was proffered by interviewee #09 as follows; "Well, when I check the momentum model, I thought a bit just like using momentum traits… more like a technical analysis, sometimes. So, I see how much market is overbought or oversold. Some technical indicators are suggesting good breaking points, something like this encourages me to make… to use the momentum and make the trade". Notwithstanding the reliable nature of this evidence, we noted earlier in this chapter that there is also compelling (new) evidence available to show that superior multi-factor returns are achievable when value meets momentum. As interviewee # 04 further explained; "We combine value indicators with momentum indicators. I think this is a very innovative way. A lot of investors, value investors, only focus on value. They say 'value' is all that counts, I do not look at 'momentum'. Momentum investors are the opposite and usually do not focus on value criteria. They say all information is reflected in price movement so it's not necessary to look at valuation. As a consequence a lot of value investors invest too early. We … also in the last years [recent years]… realized it was a disadvantage. They invest too early … and value stock can decline a very long time". Furthermore, given the notable profile and track record of interviewee # 04, the following comment from him seems worthy of conspicuous attention; "If you look at value alone, you get hundreds of academic research. Momentum alone, hundreds of academic research. If you look at the combination of two effects, you have about 5 studies"! Chapter 4 contains additional information on these models.

In summary it is apparent from this brief examination of the interview evidence that investors no longer put much faith in the traditional, but limited, multi-factor models originally popularised by such renowned academics as Fama and French (1992, 1993) and Carhart (1997). Nowadays investors want more factors and require greater sophistication if they're to achieve a worthwhile alpha for their stakeholders. Thus, the interview evidence again points to the important space that big data, machine learning (e.g. AlphaSense, Random Forest, SPSS, and NVIVO), together with more modern applications of accounting and financial analysis techniques, are increasingly occupying within the newly forming investment decision making framework that is rapidly taking shape within the industry at the moment. The potential for interesting new research in these areas is enormous. For example, Interviewee # 03 helps to further contextualise this viewpoint as follows; "We've tested about 1 million factors and come up with about 80 that are useful. There are unusual factors, for example the stability of income changes over time … we aren't academics, we simply look at them; do they work, or don't they work? We tested everything that we could get our hands on". Clearly to perform investment management at this level requires a solid grounding in accounting and finance coupled with big data and machine learning knowhow. In short, a multi-disciplinary approach, and training.

6.4.3 Utility of Accounting and Finance Theory for Managing Investment Risk

Table A6.7 presents a selection of the European fund managers' views on the usefulness of accounting and finance theory for managing the investment risk inherent in all equity decision making. Afterwards, we discuss five broad thematic classifications of risk and note that overall, risk management is a pervasive function within the investment management industry. However, the interviews also reveal that fund managers did not always agree on which accounting or finance method was most useful for managing risk. Nonetheless, in keeping with the previous section, the interviewees demonstrated that effective risk management went hand-in-hand with their effective management of the accounting and finance fundamentals of the investment, see Penman (2011). Thus, it is impossible to completely compartmentalise the frequently over-lapping fiduciary responsibilities involved.

6.5 Utility of Sell-side Research in Equity Decision-making

Table A6.8 presents a selection of the European fund managers' views on the usefulness of sell-side equity research in buy-side equity decision-making. By design it addresses Thesis Research Objective #3.

The table gives some examples of the interviewee responses to the question on the usefulness of sell-side equity research in buy-side equity decision-making. We discuss thirteen themes and note that overall - except for 'specialist sell-side industry knowledge'- sell-side research is largely not fit for purpose. On the face of it this assertion may be hard to accept, not least because it is generally evident that sell-side research, and in particular Analyst Reports, are pervasive across the investment management industry. Nonetheless, the interview evidence presented below indicates that the usefulness of the sell-side business model - as it is currently framed – has been called into question on several fronts (which includes the ubiquitous Analyst Report). Typical examples of unwanted sell-side research services include; valuation reports, EPS forecasts, buy/sell stock recommendations, and advice about winners and losers. Also, the majority of buy-side investment managers did not regard the numbers in Analysts' Reports to be all that useful for investment decision-making purposes, and frequently distrusted their obvious bias and unreliability. Furthermore, the study's high-ranking cohort of investor interviewees indicated that the sell-side was not bereft of many conflicts of interest. However it is also shown that there is a positive side to the story told here. The interview evidence demonstrates that the sell-side are strong on 'industry knowledge', but it must be 'specialist sell-side industry knowledge' if it aspires to be categorised as valuable on the buy-side. In essence 'specialist sell-side industry knowledge' comprises any item of data that can potentially influence an investment manager's decision-making on a company, industry, stock price and/or market. It can include fundamental accounting information, fundamental financial information, psychological or behavioural factors, associated risk factors (accounting, financial, economic, technical, operational, competitive, market, global, macro, short-term, long-term). It only becomes 'specialist' knowledge, in the sense described above, when it is either unobtainable or not readily available to the buy-side. Some practical examples of 'specialist sell-side industry knowledge' include; when fund managers haven't the time to read the 'Metal Bulletin'; when fund managers need to know what's happening in Beijing and can only access the requisite information through a trusted sell-side contact; when fund managers want up to date information on a new production line being installed in one of their target companies and can only access the requisite information through a trusted sell-side contact. In short, anything that is new, rare, insightful, 'specialist' in nature, is likely to be viewed as 'valuable' information and thus a tradeable 'commodity' in the eyes of the buy-side. Finally, the research evidence presented in Table A6.8 demonstrates that sell-side organisations need to dramatically change their current research focus if they wish to remain relevant as the new era of technology-driven research, machine learning, big data, and technology-driven buy-side decision-making unfolds and gathers momentum.

The introduction to Table A6.8 reveals fund managers had mixed feelings towards the utility of sell-side Analysts' Reports in equity decision-making. For example, in response to the question *"How useful are Analyst's Reports in buy-side decision making?"* interviewee #04 asserted; "[Not useful] … Because, I think, two reasons: One is a lot of research is made by the broker industry and they want to sell their business, and I think that's the one important reason. The other important reason is that a lot of people think that if they do research about companies or about sectors or countries, they are able to predict the future and that can help in the investment decision. And, I think that's normally not true". On the other hand, interviewee #03 asserted; "[Quite useful] … Yeah. They're quite useful, in, ehm, let me see... if some company details, which I, you know, for example, the 'Product Mix' of the company, which I usually don't see anywhere else, and it comes out of Analyst Reports... 'Competitive situation'; you know what is 'cooking', 'who's competing', ehm, so this is on the plus side." And then interviewee #09 presented a perspective that lay somewhere between these two viewpoints, i.e. he asserted; "[Sometimes useful] …Some of them, if I find something interesting, something that I didn't know, and this would be influential". Next, when the interview participants were asked the follow–up question "*Why do many Fund Managers 'bin' Analysts Reports as soon as they receive them"*, the majority of responses were largely negative. For example, interviewee #01 asserted; "[Not useful]… Yeah... We have that discussion with them all the time... a lot of them are very focused on, and also evaluated on, you know, how close they were to the quarterly EPS. That's not very interesting". Later, in order to achieve a better understanding of the degree of inter-dependency between the buy and sell-side perspectives, the interview participants were asked the following question; *"What does the sell-side analyst do that the buy-side analyst doesn't. Is it simply just to help you crunch the numbers or does it go beyond that?* The responses proved insightful. For example, interviewee #01 answered; "[We have] … one [buy-side analyst] in that micro-cap team and he's truly dedicated to finding... interesting alternatives within that sector… maybe you don't just do the number-crunching yourself… you have to sort-of work with... you do some numbers yourself but the basics you take from sell-side". Likewise, interviewee #07 responded; "Ultimately, it's of course our decision, and it's our own numbers that count. Now we will [be] relying a lot on all those external resources, to eh, derive our initial models. So we'll not be doing historical models and that sort of thing, so we'll just ask one of these guys, typically brokers, to provide us with their own models, upon which we will be making our own changes and assumptions and making them.... you know, how do you call it…eh... improving and make them all according to the same standards, you know what I mean… with the same assumptions, and so on. Uniform in a sense". In a similar vein interviewee #06 answered as follows: "It goes beyond just crunching the numbers, it's… another 'head' thinking, it's another head challenging you. So, we are this team of 5 people working on this specific fund for instance. We have a lot of support from the sell side, to get us the information. Basically when you do stock picking, what you do is you trade on information. Your raw material is information. Is not only the information, and also the perception of information that the rest of the market has. So, it's a matter of positioning. So if everybody knows that results will be very good, if everybody is very happy with some results, you know that if they are just in line, it will be a deception, there is no marginal bias. It's important; that information that comes from the outside sources is important not only to ring you some bells sometimes, but for you to understand what the positioning of the market is, what the average [head] is thinking about that company, about that earnings season, about whatever. Then you have your <u>buy side analyst</u> that apprehend all that information and build their own evaluation of the companies. And we work very, very close, the five of us in this case... although the decision making is taken by me and the other co-manager, but it's a very collaborative process of analysing the companies. Because of course in this you are never 100% right, as we mentioned in the beginning of our conversation. The accounting is the way to start, but we know there is a lot of limitation in everything that is accounting, the creativity or something like that… The buy side analysts are very important for you to have an independent and aligned with your interests/opinions, because sometimes the sell side opinion is not aligned with your opinion”. This was followed by a different kind of response from interviewee #06, who gave an answer grounded in logic as a rationale for using sell-side numbers in buy-side decision-making. He stated; “Well let me put it this way: Right now we have, well let’s say that the all of us are 6 making sort of portfolio management and research internally here. But at the same time, we’re gaining access to 7 research teams… which totals something like 50 analysts, alright? So, it’s a little bit like asking: “Would you rather have 7 utility analysts or just one”, you know what I mean. So of course, in the end, because the ultimate decision of course is ours, the ultimate 'opinion' will be from each and every one of us, or if that was the case to our own internal utility analyst. I mean, the input from all these guys is certainly going to help… And so that’s a value which it's difficult to ascertain but definitely is there, you know. So, I mean... it’s difficult for me to say if that’s for the better or for the worse as the Management Company”.

Overall, if even only based on these introductory remarks, it would appear there is some kind of lacuna – some kind of disconnect – separating buy-side expectations from what the sell-side are accustomed to reporting. Thus one felt compelled to dig deeper into this so called “black box’ of conflicting investment-decision-making processes in order to derive the kind of insights the literature has been calling for (‘loudly’) for such a long time, see for example Brown et al. (2015), Bradshaw (2011), Ramnath et al. (2008) and Arnold and Moizer (1984). With this research objective in mind, each of the thirteen themes listed in Table A6.8 was examined, one by one, with a view to obtaining a better understanding of the factors that have led to this apparent ‘disconnection’ between the buy and sell-sides since at least the time of Arnold and Moizer (1984). Moreover, the literature reviewed in Chapter 2 illustrates several examples of dysfunctional sell-side patterns of investment decision-making behaviour.

The next theme presented in Table A6.8 indicated that the majority of the interview participants viewed the valuations in Analysts' Reports to be largely useless for equity decision-making purposes. For example, interviewee #03 stated; "I don't care about the valuation at all. Ehm. And when I see them, they usually want to sell something to me, so I can use the stuff, eh, but, ehm, but as an indicator of when to buy or when to sell, No!" Similarly, interviewee #01 stated; "They're poor at valuation… they will just typically… value the stocks sort of from where they are in the market today, you know".

The next theme listed in Table A6.8 refers to the utility of sell-side Analysts' forecasts. Overall, the interview evidence revealed that Analysts' forecasts were of only limited usefulness for buy-side decision-making purposes. Most notably they were viewed as generally unreliable or biased. For example, interviewee #07 stated; "They do good models, but they don't forecast that good, they typically follow what the company says, and they don't really make much of a judgment towards what the company says, and that's my feeling". Likewise interviewee #04 noted, "… a lot of people think that if they do research about companies or about sectors or countries, they are able to predict the future and that can help in the investment decision. And I think that's normally not true. If you look at forecast errors… I think it's a shocking result. If you calculate fair values or discounted cash flow models and you have a forecast error of perhaps 1 and 2% at the long-term earnings growth, you get a significant impact on the fair valuation level and we have forecast errors of about 30% for earnings in the next year. If you use this error in discounted cash flow models, you can justify every price level for every stock! And we also looked at stock market predictions: Very big forecast errors". Furthermore, the interview evidence indicated that the 'time horizons' in Analysts' forecasts also tended to be flawed. For example, interviewee #02 stated; “I think analyst’s time horizon tends not to be long enough. Sell side time horizons are not long enough to really worry about that question [i.e. the usefulness of analysts’ forecasts] because they normally are sticking with the next 12 months”. Finally, when asked to comment on whether forecast accuracy and reliability were related to the Age and Experience of the sell-side analyst, most of the interviewees indicated that it was. In contrast to these views, the interview evidence also indicated that Analysts’ forecasts were useful for double-checking or cross-referencing buy-side assumptions, estimates, and forecasts. That said, the buy-side preferred to rely on their own forecast numbers. For example, interviewee #02 commented; “Well we use them to check… as a reference point, to see if maybe we’ve made a mistake… time series… estimates of earnings and cash flows. OK, so when we forecast sales and earnings, we'll check that against the consensus, or maybe there's an analyst report where we think it's interesting, and we'll see if there's something we’re missing, is there a factor we’re missing, and so it’s just… it's a way for us to make sure that we're, elm, to test our own assumptions and thoughts”. Likewise, interviewee #09 commented; “I usually make my own forecasts, but if I have some companies I'm not able to do it, for reasons such as the sector of these companies are operating in is not a sector I know very much, then I may use other forecasts, just to check whether my way of thinking is right or not, but I don't rely on other forecasts. Yes, just to get an idea whether I'm thinking something very differently, and that's how we do it”. In the same vein the interview evidence indicated that analysts’ forecasts can be quite useful for highlighting factors that are influencing the current price of a stock. For example, interviewee #02 commented; “… they can be quite good, I mean they'll point out, you know, what factors are weighing down the stock, or helping… there's nothing wrong with that… you know, the operational side: they tend to have a good handle on it”.

The next theme listed in Table A6.8 related to the ‘Buy' or 'Sell' Ratings that are ubiquitous in almost all sell-side Analysts’ Reports. Unsurprisingly, given the unfavourable verdict regarding analysts’ forecasts and valuations, the interview evidence indicated that Analysts’ ‘Buy' or 'Sell' Ratings were also largely ‘useless’. To illustrate, interviewee #01 commented as follows; “stockbroker’s recommendation... those we totally disregard. They are useless”. Likewise interviewee #09 asserted; “Their specific ratings, the ratings that they give to specific stock, are not influential”. In the same vein interviewee #07 provided a more in-depth analysis of why analysts’ stock recommendations are largely useless. He asserts; “If a company is rated Buy or Sell... I mean the fact that a certain broker which we really do like and which we value a lot, ehm, values the company or rates the company 'Buy' or 'Sell', is pretty much meaningless to us. Of course I will be quite interested in knowing the reason why they may change recommendations. Of course, that's important. The reason why they did change their recommendation. But apart from that on a day to day basis, the fact that there are ten buys and one sell in one company, means nothing to me. So… what you need really to do is to understand the numbers, talk to the guy and derive your own conclusion on what he says, rather than the tag that he put on the survey or the research… Because they tend to be quite experienced, quite seasoned inclusively [i.e. specialised] in a lot of cases”. In a similar vein interviewee # 06 stated; “What… I want to receive from them, the information... not their opinions, I don't care if they say it's a buy or sell, or if the price target is 10 or 5. What I want… what I value in the brokers is the depth of their analysis… is them calling me saying ‘OK, I've discovered that this retail company in Poland… that the retail sales are coming down and they're doing something different…’. I appreciate all the information that I can put on my DCF to have a better quality for my cash flows. So that's information... what I value most is not the conclusion of their work, but their input, their field work…” Finally, interviewee #04 provided this perspective on whether Analysts’ buy, hold or sell ratings were useful for buy-side decision-making purposes; [Not useful]… “We looked at buy and sell recommendations, if they out-or-under-perform, and the results… sell recommendations generate an under-performance over the next 12 months… but in the majority before the sell recommendations is published. So some insiders' trade and the stock is declining. But the majority of the readers of the research won't be able to participate on this. And we also looked at buy recommendations and we found that the underperformance is bigger than the sell recommendations. So it makes no sense to read such research, especially sell side research".

The next theme listed in Table A6.8 related to whether sell-side Analysts were good at generating business or investment ideas that potentially could add value to buy-side decision-making. Overall, coupled with the previous themes, the interview evidence indicated the buy-side did not think the sell-side were particularly good in this area of investment activity. For example, as interviewee #01 explained; "We find the sell-side is constantly poor at a few things, and one where they're not very good is at idea generation, so we don't get much help from there". This is a surprising finding, not least because sell-side analysts are engaged in what is overtly a fiercely competitive business, and therefore one would have expected that sell-side analysts would have been rated higher at 'selling useful investment ideas' to their buy-side customers. Useful sell-side investment ideas might encompass; presenting buy-side investment managers with novel or innovative 'investment cases', offering solutions to what potentially can go wrong with an 'investment story', making investment suggestions based on new and emerging technologies, articulating profitable trading strategies backed by useful sensitivity and 'what-if' analyses. Moreover, the earlier interview evidence variously called for more sell-side research on relationships and risk management involving quantitative financial analysis techniques. That said, this type of 'sales and marketing behaviour' is common practice in all walks of business. So it is surprising to note that the sell-side business model has scored so poorly on what is a fundamentally important area of normal business activity. Maybe it is because as Ellis (2011) so eloquently asserts; ‘When business dominates, it is not the friend of the investment profession’. That is the interview evidence in this chapter has demonstrated that investors have for a long time regarded the bulk of sell-side informational outputs as amounting to nothing more than tools to sell shares. In conclusion, while the question posed may initially have appeared innocuous, it arguably has nevertheless drawn attention to evidence of further weakness in the utility of the sell-side business model in equity decision-making.

The next theme listed in Table A6.8 related to whether sell-side Analysts tended to be biased and/or suffered from conflicts of interest. The Portfolio Managers’ responses to this question carry potentially far reaching implications. This is because it is difficult to separate the answers they give to this question from the rest of their responses to any other question. Furthermore, it is notable that there is already a substantial amount of evidence on this topic available in the extant analyst literature, see Chapter 2 for example. Overall, the interview evidence collected in this study has served to confirm the consensus view in the literature on this topic, ergo no broker is really independent. For example, interviewee # 07 asserted; "Of course… the fact that almost no broker is really independent in their ratings on companies, ehm, says a lot. Analysts are quite good, so you know it would be ridiculous to say that they don't bring in any real sort of value. You just have to play them the right way. It's not that you follow the top line, you just have to see, you know, the numbers”. Interestingly, interviewee #04 provided a response that gets to the heart of the issue in a profoundly thought-provoking way, as follows; “You have in a broker company a lot of interest conflict. You have clients which hold stocks you cannot give sell recommendations, sometimes, in such cases. The next thing is, as a broker research analyst, you have to get in good contact to the company. You won’t get any contact if you publish a sell recommendation of the company. So the broker research analyst that some days ago, it’s very difficult if you cover some companies to make bad reports. And sometimes you have an in-house view. And some US companies have problems too with sell recommendations of US companies. A lot of political conflicts and interests, and that in combination with the main difficulty to predict the future, makes this research in my view very senseless".

The next theme listed in Table A6.8 asked the interview participants for their views on whether the scope of risk analysis in Analysts' Reports was useful. Notably, there is only sparse coverage of this topic available in the extant analyst literature, see Chapter 2 for further reading. Overall, the interview evidence indicates that analysts are largely poor at modelling the kind of equity risks that buy-side decision makers find useful. For example, interviewee #01 commented; [Risk analysis] "I think that they're pretty poor there too. What we rely on with them is if we wanted to know how this engineering company is doing right now in China, or things like that". Later, interviewee #01 also asserted; "Well, they tend to… do a poor job… but this isn't true for all of them, but sort of on the whole… they are not very good at modelling balance sheet risks. I mean credit analysts are good at this, but equity analysts aren't because it's a different focus, but they're not great at looking at whether or not something will go bust, could go bust, or under what circumstances it might go bust. But of course, they do it, it's not that they don't pay attention… And I just find the cash flow estimates can be somewhat superficial..." Similarly, interviewee # 02 asserted; "Well… do you mean on a... sort of on a long-term fall in value or a medium-term fall in value? A short-term fall in value would be just volatility... and you'll always have that. And then volatility, is anyone good at predicting volatility ex ante? I don't know. It doesn't seem like it. It doesn't seem that consistent. And then… risk that the company stays down for a long time? And I think analysts' time horizon tends not to be long enough. Sell-side time horizons are not long enough to really worry about that question because they normally are sticking with the next 12 months. And they can be quite good, I mean they'll point out, you know, what factors are weighing down the stock or helping… there's nothing wrong with that… you know, the operational side: they tend to have a good handle on it". In contrast interviewee #09's response was different to the rest of the interviewee cohort, albeit his opinion was an un-generalised view of the quality of risk analysis in Analysts' Reports. Specifically, he asserted; "I believe they have good risk analysis about the downsides and the potential losses, so I think those that I'm using have some risk analysis. I'm talking about the Business Risk. I'm interested in the business risk of the companies I'm researching". It is apparent that this analyst was effectively vetting analysts' reports based on their quality and the scope of the risk analysis contained within them before deciding whether to use them. Therefore, by default his response places him in the same camp as the rest of the interview participants, i.e. Analysts Reports are of questionable usefulness to buy side decision-makers when the depth of their risk analysis is poor. Finally, while interviewee #07 agreed that Analysts' Reports generally lacked adequate risk analysis, he also indicated that there were signs that the recent upsurge in new SEC regulations had begun to improve risk reporting [i.e. the quality of risk analysis in Analysts' Reports]. For example, he asserted that; "… [Inadequate risk analysis in Analysts' Reports] is still pretty much true, although recently a lot of effort has been made into changing that I would say. People now are more… probably because of… IPO's, where the SEC's of the world ask the companies to put in every sort of risk there is… trying to bring in a measure to the risk that each company faces. Yeah… I wouldn't say that there's one specific [risk measure] … I just like to see, to re-assess, what the overall risks are and where they lie mostly, if its regulation…whatever… that… might be an issue for each company".

Turning to the next theme in Table A6.8, that of the usefulness of the 'Institutional Investor Rankings', either Europe or America. Firstly, the review of the financial analyst literature in Chapter 2 provided mixed evidence that some investment managers regarded the annual

‘Institutional Investor Rankings’ as an important source of information about whether an analyst was ‘good’ or ‘bad’ at his/her job, while other evidence in the financial analyst literature tended to contradict this view. To illustrate, Loh and Stulz (2009) infer that an analyst who is highly ranked in the *Institutional Investor*’s All-America Research Team survey may be the factor - other than the content of analysts` reports - to explain why the recommendations of some financial analysts are more influential than other analysts. On the other hand, Groysberg and Healy (2013) assert that there is no generally accepted empirical evidence available to show that the performance of top-ranked analysts’ recommendations are superior to those of a random walk process. Fridson (2014) also reports that institutional money managers do not appear to put much faith in the ‘favourite stock’ opinions of star analysts. When asked to comment, the majority of the interview participants also agreed with this latter view. Specifically the question posited to them was as follows; “How useful are Institutional Investor Rankings. Do higher ranked ‘star’ analysts tend to outperform lower ranked ‘ordinary’ analysts, for example when picking stocks?” As indicated in Table A6.8, the majority of the interview participants agreed that the Institutional Investor Rankings were not that useful for equity decision-making purposes. To illustrate, interviewee #07 asserted; “I’m not sure, I don’t know. I don’t tend to really pay much attention on the seniority of one [sell-side analyst] versus the other… We deal with them quite frequently, so we can have our own feeling, views, about how much each one of them is really worth… so it doesn’t make much difference”. Furthermore interviewee #07 added; “I don’t necessarily disagree… they might outperform. The thing is that, I mean… they don’t take into account a lot of other constraints that we do when planning a proper portfolio… their portfolio doesn’t really comply with the rules that we have to comply with, so it’s not a fair comparison. But, eh… they might … outperform, but… typically I would say that… in a lot of… trend changes in the market they will miss it 100% of the time”. In contrast, interview #03 was of the opinion that there was a measurable distinction in analyst ability. That is, he asserted he utilised an alternative analyst ranking system to distinguish between ‘good’ and ‘bad’ sell-side analysts. To illustrate, he used ‘StarMine’ for this purpose as follows: “StarMine are our data source and they have … an 'Expected Surprise Model' based on good analyst vs. bad analyst, so… the good analyst has an opinion, then the bad analyst will follow after a while.”

Industry knowledge was the next theme discussed in Table A6.8. Firstly, the review of the financial analyst literature in Chapter 2 demonstrated that in most cases investment managers regarded ‘industry knowledge’ as an important source of information for equity decision-making. To illustrate, Fridson (2014) asserts that ‘certain analysts acquire the power to move the market for a stock over the very short run, not because they can identify outperformers, but because they earn high *Institutional Investor* rankings by demonstrating ‘industry knowledge’. Likewise, Bradshaw (2011) observes that the annual Institutional Investor (II) ranking of analysts indicate that the most important trait institutional investors’ value is industry knowledge. When Brown et al. (2015) investigated the inside of the ‘black box’ of sell-side financial analysts they too found that industry knowledge was the single most important determinant of their compensation and the most important input to both their earnings forecasts and stock recommendations. In keeping with the literature, it is notable that the interview evidence likewise demonstrates the importance of ‘industry knowledge’ for equity decision-making purposes. Interestingly, the subject matter tends to portray the sell-side in a more favourable light than has been evident hitherto fore in this chapter. To illustrate, when interview #06 was asked to indicate what his most important source of industry knowledge is, he responded: “It’s mostly from the sell side analysts, it comes mostly from the sell side analysts… and from the companies themselves… Most of the focus will be on knowing the drivers of the industry, then actually the figures… to have a view of the sector and see what the levers [the DRIVERS] are, what are the tendencies, what are the trends... And doing that… you are able to have a better view of your industry”. Participant

#06 went on to explain why he didn't perform these tasks himself: "Of course, I would love to be able to read all the publications from the specialist publications for each sector, but I don't have time for that. I cannot read the 'Metals Bulletin' every week. Now, that's impossible, impossible… it's really hard work... [to] try to get… much information and try to make sensible decisions". Similarly, interview #07 commented: "We may, you know, ask one of our favourite [Sell-side] analysts for one of the companies we are interested in at that point in time. We may ask him could you just make sure to have an updated view on this company: you might want to call these guys up and just check the latest, whatever, news, and give us the feedback… [i.e.] if we are not quiet enough to do it on our own, you know". Alternatively, Interview #02 described the usefulness of the sell-side in this way: "Sometimes we embarrass them [Sell-side] with a question and then they feel obliged to go do some research and come back with an answer. We do spend money on information. Not necessarily from the sell-side though. We will pay other consultants... expert networks or industry consultants, like with McKenzie on the Minerals. They sell published reports, we buy that". However, while accepting the premise that 'industry knowledge' is a valuable resource, the interview evidence demonstrated that it was mainly sell-side 'specialist knowledge' of an industry, sector or company that represented, when seen through the eyes of the buy-side, their most valuable (saleable) 'commodity'. For example, as interviewee #01 explained; "Well, the good thing with them [sell-side analysts], the good thing with some of them, not all, but some of them, are… they know a lot about the company. You know, they have very detailed knowledge about the company they follow… and that's where we like to... you know [to understand]… [for example] *how are they doing in China* [and whether]… *they have a really good manager there?... [or] They're doing great'*, da-da, da-da". Interviewee #07 offered a more insightful description of sell-side 'specialist industry knowledge' as follows: "… the good thing that many of these guys have is that they do have 'specialised' analysts into some specific sectors. And because of that, they can really become quite knowledgeable about each industry. And they typically subscribe to the specialty magazines and publications from the sector, which tend to be quite extensive by the way. And so that's where we extract most of the pure sectorial data and any information. Because you know, we are still relatively small, so to have that sort of extensive specific resources is something which, right now, we wouldn't consider… It's really the fact that each one of them is '*specialising'* to one industry, or not. So the fact that I'm looking at say, as we said before, probably in any given year looking at 60 companies, [and] which are quite broad in the industries that they're from, that they're in. I mean, I can't be an expert in all of those sectors, obviously. And that's why it's so important that I can gain access to these guys, which only look at say… probably in the range of 5 to 15 companies within the same sector. And so that allows them to be on top of every piece of news, every rumour, every little bit of information that's out there, for that sector, or each company within it. And can really plug into his numbers and make a quick comment upon the changes that are implied, and that's relevant". However, interviewee #08 presented this qualification: "I understand … that sometimes they are more *'generalists'*, because if you're talking about, you know, if you're talking to a 'generalist' European portfolio manager, the level of detail he's looking for is different from a guy that just does Portugal and Spain. So they have to adjust, they are a commercial orientated business, so they have to adjust to their clients. But on my side, what I value most is not the conclusion of their work, but their input, their field work… their field work, which is the ones I value most". These interviewee comments seem to infer that should the sell-side falter in their willingness or ability to deliver the kind of service that their buy-side customers want and expect (e.g. valuable bespoke information; specialist knowledge of an industry, sector or company), then they will run the risk of losing their relevance. After all, the sin of omission has always been accompanied by a heavy price in business, as elsewhere in life. An interesting alternative perspective on the foregoing truism was presented by interviewee #08, who asserted: "The way we purchase is not exactly as others are doing…

On the asset management side… we have, eh, cooperation with… custodial banks. So by paying them, by actually… *sending them clients*… and we kind of... *get a lot of things out of them [in exchange]*. I mean, *by sending them clients, they give us access to their research*. If I wasn't sending them clients, I wouldn't get access to their research. So, when I call them to make a cooperation, I tell them that because I will bring you clients, you will give us access to the research through your web. I can go and search whatever I want, and stuff like that". As an aside, this seems to represent an interesting and novel, mutually rewarding, 'quid pro quo' arrangement between customer (buy-side) and supplier (sell-side).

Finally, the large amount of interview evidence presented in this chapter - together with the empirical evidence available in the extant analyst literature – has served to confirm the pre-eminent importance of 'industry knowledge' in buy-side investment decision-making. Nonetheless, it would be helpful to understand why the sell-side seem reluctant to turn away from what appears to be a flawed sell-side business model. That is, the sell-side seem focussed on disseminating unwanted earnings forecasts, unreliable valuations and stock recommendations, instead of delivering what the majority of investors and buy-side investment managers have indicated they want; 'specialised industry knowledge' being but one example. It was felt that this may be because, as alluded to in Fridson (2014), brokerage houses tend not to think of research as a service that is bought and sold within the market-place for sell-side equity research (i.e. the market-place for trading in security analysis). Instead, it tends to be viewed rather more ambitiously as a means to sell securities. In the meantime, the interview evidence indicates the sell-side continue to lose business. As interviewee #07 stated; "… we tend to pay, hopefully not overpay that much, but we pay what we think is right for the service that we get. Of course, if there ever comes to a point where we don't get the service, either because they've just became, you know, less professional about what they do, or people moved around, or whatever, we will be trading less with them. We'll not lower fees, we will simply execute less. So obviously paying less overall, which might take us to a point, which with our periodic revisions of the service we get, to potentially take them out of our...the list of the brokers we use". Likewise, interviewee #01 stated; "We have a research budget, and then… at the end of every quarter we do an evaluation on the research received. And that's how we allocate the money. So, they don't know how much we'll pay them in advance… if we perceive them having given us a good service, then they'll get paid more". Notably, interviewee #06 echoed this sentiment as follows; "I want sell side analysts that are able to look beyond what actually the 'Investor Relations' tells them. I want them to go much beyond that and I value that. So I value specialist sell side brokers. I value specialist". Sometimes buy-side investors can be quite prolific in their requirements. For example, interviewee #03 asserted that he bought "lots of stuff" from the sell-side. Specifically, he stated "Well, we need extra material, we buy lots of stuff, we buy Compustat data, we buy StarMine condensed, Analyst's opinions, we buy Footnoted research on balance sheets, we buy, let me see… AlphaSense… sometimes… rarely use an outside researcher to do some industry research. So these are the main sources. The brokerage stuff we get for free. There's lots of it, but we buy lots of numerical data. Let me show you on my screen; let me see… this is StarMine for example. Then I use footnoted.com to look if there is anything strange in the Annual Reports. I use AlphaSense to find stuff in the written report… So, these are some standard tools that I'm using. And they're very, very good to me".

There is a related problem facing the sell side that is potentially even more serious than all of the other threats to the sell-side combined. And it relates to the new European regulations that propose changing how sell-side research costs and brokerage trading commissions are disclosed in the accounts of the buy-side. Up to now these payments have been reported in form of one composite sell-side cost. The EU argue that new legislation will promote transparency and improve institutional governance. Nevertheless, the interview evidence makes it clear that despite these good intentions the effects of these changes are potentially catastrophic for the sell-side, unless they initiate appropriate remedial actions quickly. This chapter shines a light on many potentially corrective actions. The following examples from the interview evidence support the foregoing arguments. When asked if fund managers might find it more difficult to justify expenditure on sell-side research in the future [post implantation of new EU regulations] interviewee #04 stated; “Yes, it’s a real problem. I’ve spoken to a broker some days ago, and he said the clients are not willing to pay any fees for research, and their business model is getting more and more difficult. And I think it’s not the worst development, because… I think a lot of persons waste their time by trying to predict things you cannot predict”. Likewise, interviewee #07 stated; “Of course for the brokers, typically it will be a challenge because the same way I’m putting from my point of view that I will have to decide whether I am going to pay out to external managers or I mean 'Research Houses', or I’ll do it internally. If everyone decides to do it internally then there will no longer be a place or a budget for the current full-service brokers to still exist because all of them will be 'executing brokers'.” Additionally, interviewee #06 stated; “I mean, I think it’s going to really revolution everything. Because, of course, if the regulator comes to me and says: “OK, from the say 15 basis points you pay these guys you must accept that part of that is due to the access to the research team, ok. So let’s split what’s being paid because of the research from what’s the market practice in terms of discount brokers to just pure execution, right. So let’s say that they came and say: “Okay, we don’t accept over 5 basis points for execution”. So the management of the company has to pay for the 10 basis points which are currently paying through the executions still. So right now, it’s the clients in the end that are paying for your access to the research teams. So that no longer can be the case and so you will have to pay it yourselves. So it will be… it will reach a point where you’ll be asking yourself: “Do I rather increase the number of my analysts internal, internal analysts, and use that budget for that purpose or will I really be paying external research with that same amount?" And of course it will change a lot of the old industry. And, I think that it will be a huge issue if that ever comes to be the way that I just mentioned”.

6.6 Utility of Technical Analysis within the Equity Investment Management Industry in Europe

Table A6.9 presents a selection of the European fund managers’ views on the usefulness of Technical Analysis in equity decision-making. Afterwards, the evidence is discussed in light of the evidence in the thesis, and the literature relating to the topic. Overall, the majority of the interviewees agreed that Technical Analysis was not that useful for the purposes of equity decision-making, at least not in the ‘fundamental’ sense described in this chapter.

6.7 Chapter Summary and Conclusion

This chapter has discussed the interview evidence in light of the research project’s three overarching objectives: 1) the personal characteristics and backgrounds of the fund managers; 2) the utility of accounting and modern finance theory in equity decision-making; and 3) the role and utility of sell-side equity research in buy-side equity decision-making. Very briefly, the evidence has demonstrated that the fundamental analysis of a company is far reaching, spanning not only the accounting and finance numbers but many additional qualitative and quantitative factors also, such as a company’s relative market share position, the threats posed by competitors, and its dependency or otherwise on the price of commodities. Accounting and modern finance theory both have important roles to play in investment management decision-making. For instance, intrinsic accounting methods of valuation and analysis are indispensable to value investors, as are accounting multiples techniques. While the majority of the interviewees had difficulty fully accepting the key assumptions under-pinning modern finance theory, they nevertheless acknowledged its rising importance amongst investment management decision-makers, not least within the quantitative accounting and finance paradigms. For example, the interview evidence pointed to the ubiquitous use of CAPM for computing the implied cost of equity capital, i.e. the discount rate used in a range of DCF models, such as net present value models, residual income valuation models, plus a wide variety of multi-factor finance and accounting models. Similarly, the interview evidence indicated that multi-factor finance models were an important component in quantitative investment management systems, although nowadays investors seem to want more factors and require greater sophistication in order to achieve a worthwhile alpha for their stakeholders. In short, as far as research objective #2 is concerned, the evidence demonstrates the essential multi-disciplinary role of accounting and finance decision-making, coupled with big data and machine learning knowhow, within contemporary investment management practice in Europe. Additionally, the interview evidence demonstrated that effective investment risk management is rooted in the thorough fundamental analysis of companies, sectors and the wider macro economy. In the same vein, a large amount of interview evidence served to confirm the pre-eminent importance of 'industry knowledge' in buy-side decision making, most notably 'specialist industry knowledge'.

Turning to research objective #3, the interview evidence has demonstrated that the sell-side business model (as currently described in the literature and this thesis) seems seriously flawed and largely unfit for purpose. For example, sell-side financial analysts waste too much effort disseminating unwanted and often unreliable valuation reports, earnings (EPS) forecasts and stock recommendations. It was suggested that this may be because, as alluded to in Fridson (2014), brokerage houses tend not to think of research as a service that is bought and sold within the market-place for sell-side equity research (i.e. the market-place for trading in security analysis). Instead, it tends to be viewed rather more ambitiously as a means to sell securities. Thus, the interview evidence demonstrated that Analysts' Reports were of only limited equity decision-making usefulness to buy-side analysts and investors. Frequently they are viewed as representing nothing more than clever sell-side marketing aimed at selling unwanted services to buy-side investors. Furthermore, the evidence indicated that the sell-side was not bereft of many conflicts of interest. However, there was also a positive side to the story. The interview evidence demonstrated that the sell-side were strong on 'industry knowledge', most especially 'specialist industry knowledge'. But it was felt the sell-side seemed largely unaware of its strategic competitive significance. This concludes the analysis of the interview evidence, and this chapter.

Chapter 7

DESCRIPTIVE ANALYSIS:

RESPONDENT CHARACTERISTICS

7.1 Introduction

Academic and non-academic research has shown that differing personal attributes and attitudes among investment management professionals affect the quality of investment decision-making across the entire industry, which in turn has implications for the lives and experiences of financial advisors, investment managers and investors alike, see for example Bai, et al. (2018), Chongsoo et al. (2017), Cicekli (2016), Low et al. (2016), Rana and Phillips (2016), Oztekin (2016), Cueva and Rustichini (2015), Brown et al. (2015), Coleman (2015), Fang and Wang (2015), Rebello and Kelsey (2014), Gerding (2014), Clatworthy and Lee (2014), Lee et al. (2014), Fang and Yasuda (2013), Loh and Stulz (2013), Groysberg and Healy (2013), Low et al. (2013), Litterman and Sullivan (2012), Ellis (2011), Bradshaw (2011), Elze (2010), Cohen et al. (2010), Bui and Porter (2010), Marshall et al. (2010), Greenwood and Nagel (2009), Kumar (2009), Clifton et al. (2009), Loh and Stulz (2009), Ramnath et al. (2008), Kavanagh and Drennan (2008), Mehran and Stulz (2007), Anand (2007), Fabozzi et al. (2007), Cheng et al. (2006), Kacperczyk et al. (2005), Cooper et al. (2001), Kothari (2001), Kuo and Satchell (2001), Chevalier and Ellison (1999), Mikhail et al. (1997), La Porta et al. (1997), Golec (1996), Lamont (1995), Brown (1993), Zmijewski (1993), Athanassakos (1992), Schipper (1991), Moizer & Arnold (1984), Arnold and Moizer (1984) and Olson and Becker (1983). However, little is known about the industry's key players, either individually, as interdependent cohorts or as disparate groups. While the literature sometimes refers to the evident schism that separates buy and sell-side perspectives (Rebello and Kelsey, 2014; and Cheng et al., 2006), the depth of coverage is often superficial. Additionally, it is known empirically that portfolio managers represent a relatively small but disproportionally important cohort of key investment management decision-makers (Coleman, 2015; Anand, 2007; and Kacperczyk et al., 2005), yet surprisingly even less is known or written about them in the academic literature. Moreover, aside from the aforementioned literature, the interview analysis undertaken in Chapter 6 demonstrated how, why and where portfolio managers have differing opinions to sell-side analysts regarding the usefulness of analysts' reports, stock recommendations, earnings forecasts, valuations, and industry knowledge.

Notably, the previous chapter presented the interview evidence and discussed the qualitative interview findings. This chapter, and the next, complement that study by presenting the questionnaire survey evidence, accompanied by a descriptive statistical analysis and discussion of the quantitative findings. The structure of this chapter is as follows: Section 7.2 describes the sample set and the methods chosen to examine the dataset. Section 7.3 describes a selection of respondent characteristics, behaviours and beliefs that are contemporaneous in the investment management literature and/or feature frequently in the media and/or trade association publications. Section 7.4 describes the study findings that were indicative of statistically-significant associations between certain key variables in the sample. It comprises three sub-sections that separately examine the respondents' job title, employer, age and experience. Section 7.5 describes the non-statistically-significant study findings that indicated certain sample results occurred by chance or were the result of sampling error. It comprises three sub-sections that separately examine the respondents' gender identity, type of education and type of university undergraduate/postgraduate course of study undertaken. Section 7.6 describes some foundational descriptive results that pertain to the respondents' wider investment decision-making beliefs and preferences. It comprises five sub-sections that separately examine the respondents' investment management style, investment management genre, preferred equity investment typology, preferred industry typology, and some key motivational factors known to influence their investment management behaviour. Section 7.7 concludes the chapter.

7.2 Sample and Methods

The survey segment of this research study employed a questionnaire design that comprised 103 categorical and ordinal questions; the latter being measured on a Likert scale. No interval or ratio style questions were used.

The structure of the questionnaire was as follows: Part A of the survey comprised 15 socio-demographic questions. Parts B, C, D and E comprised an assortment of 17 multiple-choice accounting, finance and general investment questions.

The questions were derived from a range of sources; some were previously developed and validated questions, tested scales and instruments; while other questions were developed by the researcher based on his reading of the extant accounting, finance and investment management survey literature, see for example Nyborg and Mukhlynina (2016), Demirakos et al. (2004), Fouche and van Rensburg (1999), Pike et al. (1993), Arnold & Moizer (1984), Moizer and Arnold (1984), and Richards (1979). The full questionnaire is given in Appendix 11.

The inclusion criteria for the survey were any investment professional who identified as a portfolio manager, buy-side analyst or sell-side analyst. The survey also attracted responses from academics and other investment management professionals, which were classified as 'Other'.

In total 339 questionnaires were returned by respondents. All 339 responses were included in the sample used to conduct the descriptive statistical analysis. Survey responses were received from North America, Europe, Africa, South America, Antarctica, Asia and Australia. However, Europe - the primary focus of the study - was the most representative continental region in the sample. It comprised circa 75% of all data collected, while the remaining one-quarter (circa 25%; n=86) were nationals of more than 40 other countries, which included respondents of Australian, Brazilian, U.S., Canadian, Chinese, Chilean, Egyptian, Israeli, Indonesian, Lebanese, Nigerian, Moroccan, Russian, Peruvian, and South African nationality. To our knowledge no previously published survey related to equity valuation methods and decision-making has achieved such global diversity. Figure 7.1 (below) displays the top eight countries represented in the sample, while Figure A7.2 in the appendix presents a cartographic view of the global reach of the survey. Additionally, Table A7.2 shows the global frequency distribution of the respondents' nationalities.

The profile breakdown of the sample included job title, employment type, experience (years), age, education, national identity, gender identity, professional identity, country living and working identity, preferred industries, preferred stock markets, investment management genre and self-ascribed investment management style.

As recommended by Gravetter et al. (2018), Contingency Tables (also called cross-tabulation tables) and Pearson Chi-square Tests of Association and/or Independence were the two main non-parametric descriptive and inferential procedures utilised to analyse both the categorical and ordinal response variables in the Questionnaire. Angell (2012) recommends a two-step process. Firstly, run the crosstab function in SPSS and interpret the results. Secondly, run Chi-square Tests to see if differences between groups of categorical variables are significant. Afterwards, use Phi or Cramer's V Tests to measure effect sizes when outcomes are significant.

The sample size varied from question to question in line with the listwise and pairwise deletion procedures inherent in SPSS v.24. This approach to handling 'missing data' is justified on the basis that 'smoothing' of the data occurs when expectations, means, medians, modes and frequencies form the basis of the descriptive and inferential techniques used by the researcher, i.e. Contingency Tables, Chi square Tests of Association and/or Independence, Phi and Cramer's V Tests.

Results have statistical validity subject to the following key assumptions:

- data comes from a random sample;
- sample size is adequate, usually 30 to 50 cases (minimum);
- adequate expected cell counts (minimum of 5 observations or cases per cell).

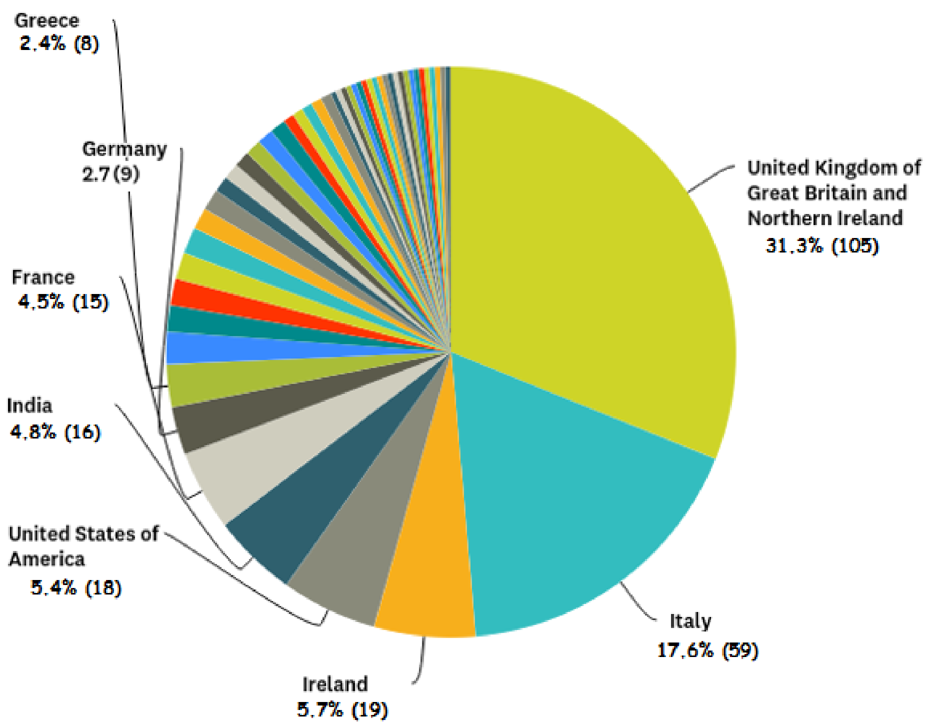


Figure 7.1: Nationalities of the top eight countries in the sample

Source: Kelly (2019)

Developed by the author using SurveyMonkey

7.3 Significance of Respondent Characteristics, Behaviours and Beliefs

As indicated in Section 7.1 (Introduction) the research literature on market participants and anomalies affirms investment management performance is related to a number of fund manager and analyst characteristics, such as age, experience, employer, education, gender, investment management style, investment management genre, equity investment typology (value, growth and/or momentum stocks, ETFs, and Index funds), industry typology, plus a range of motivational factors known to influence investment behaviour. However, the literature predominantly focuses on sell-side practitioners, and often examines traits and propensities separately.

Significantly, this chapter describes and analyses (separately and jointly) certain key investment manager characteristics that relate to portfolio managers, buy-side analysts and sell-side analysts. As a corollary we uncover unique evidence of what motivates investment managers to make the decisions they do.

For example, the results highlight the potential importance of increased gender diversity in asset management. Specifically, a recent Financial Times article dated 22.03.2018 cited Financial Times fund management research ('FTfm') by the UK Diversity Project (2017) that found a correlation between gender diversity and sales. The study provided empirical evidence that mixed gender teams lure greater investor inflows, i.e. funds managed by mixed gender teams attracted 6 per cent more inflows than those run solely by men or women.

Alternatively, we considered what fraction of institutional money is controlled by young investment managers vis their older colleagues. The differences between age groups were statistically significant. The findings were in turn linked (jointly and separately) to the respondents' institutional employer, level of work experience and job title.

We also considered how much variation there was across different investor types, different geographies, different educational backgrounds, different management styles, and different asset classes. For example, we uncovered unique evidence and features peculiar to investment manager strategies characterised by value, growth, and momentum. Empirical academic studies have consistently found that value stocks (with or without the inclusion of a momentum factor) outperform glamour stocks and the market as a whole (Elze, 2010). Moreover, in the rare case in which value and momentum are studied outside of U.S. equities, they are typically studied in isolation—separate from each other and separate from other market participants (Asness et al., 2013). Notably, we extend prevailing research on existing value anomalies by examining them jointly and separately based on the data collected from nationals of more than 40 countries – which included respondents from the United States, the United Kingdom, continental Europe, Asia, continental Africa, and South America. Also, as elaborated upon in Chapter 6, our findings reflect the evident fact that studying value and momentum jointly is more powerful than examining each in isolation. Specifically, the negative correlation between value and momentum strategies and their high positive expected returns implies that a simple combination of the two is much closer to the efficient frontier than either strategy taken alone (Asness et al., 2013).

Overall, the multifarious investment manager characteristics, behaviours and beliefs discussed in this chapter were not analysed in isolation. That is, the mixed-methods approach to shedding light on the research questions provided unique evidence and insights on what this chapter demonstrates are evidently pervasive market phenomena. In turn we trust the findings derived from our unusual dataset have served to expand the literature in interesting and useful ways.

The remainder of the chapter examines each of the key investment manager traits, attitudes and beliefs that were represented in the questionnaire dataset.

7.4 Statistically Significant Findings

7.4.1 Job Title and Employer

Survey respondents' job title and type of institutional employer are shown in Panels A and B of Table 7.1. In total, 338 respondents completed the questions.

Panel A relates to institutional employer. The investment funds sector was the largest employer, comprising 41.9% (n=141) of the sample. The second and third largest cohorts worked in the Multinational Bank (18.6%; n=63) and the Private Money Management Group (17.7%; n=60) sectors, respectively. The next biggest cohorts were Stockbrokers (13.9%; n=47), Pension funds (2.7%; n=9), and Life Assurance Companies (0.6%; n=2). Finally, 'Other' financial institutions represented (4.7%; n=16) of the sample.

Panel B relates to job title. The sample was unevenly split between portfolio managers (44.1%; n=149), buy-side analysts (29.6%; n=100), sell-side analysts (20.1%; n=68) and 'Other' (6.2%; n=21).

Overall, the survey was dominated by investment fund companies and portfolio managers. Nonetheless, buy-side analysts and sell-side analysts together made-up 50% of the respondents in the sample; who in addition to working for investment fund firms, were employed by multinational banks, stockbroker firms and private money management groups.

Table 7.1: Employer and Job Title

Panel A: Institution		
	Frequency	Valid Percent
Multinational Bank	63	18.6
Pension Fund	9	2.7
Stockbroker Firm	47	13.9
Investment Funds	141	41.9
Life Assurance Company	2	0.6
Private Money Management Group	60	17.7
Other Miscellaneous Institution	16	4.7
Total	338	100.0

Panel B: Job Title		
	Frequency	Valid Percent
Portfolio manager	149	44.1
Buy-side analyst	100	29.6
Sell-side analyst	68	20.1
Other	21	6.2
Total	338	100.0

7.4.1.1 Cross Tabulation (Job Title * Employer)

Table 7.2 presents the distribution of employers across participant job titles. As shown, the majority of portfolio managers (blue shading; 48.3%; n=72) work in the investment funds sector. Likewise, the majority of buy-side analysts (green shading; 60.0%; n=60) work in the investment funds sector. As evidenced in the preceeding chapter (Chapter 6: Interviews), this was an expected result since portfolio managers and buy-side analysts usually work in collaborative teams. Next in descending order for both groups respectively were: private money management groups (26.8%; n=40 and 17.0%; n=17) and multinational banks (14.8%; n=22 and 16.0%; n=16). On the sell-side, the top three employers in descending order were (pink shading): stock broker firms (55.9%; n=38), multinational banks (30.9%; n=21) and investment funds (10.3%; n=7).

Overall, the evidence presented suggests job title says quite a bit about type of employer; knowing the former helps a lot in predicting the latter, and vice versa. This truism is as valid today as it was when Moizer and Arnold (1984, p.341) first observed that the role of sell-side investment analysts "was the provision of information to other investment analysts and individuals who manage portfolios. For such information to be of value to portfolio managers, it must either be the product of a more detailed form of analysis than could be undertaken by the managers themselves or have been obtained from information sources not available to the managers. As a result, information intermediaries [sell-side analysts] may be expected to be more specialist in both their acquisition and their analysis of information than are portfolio managers". Consequently, as shown in Table 7.2, it was not a surprise to find the majority of sell-side analysts [information intermediaries] should tend to work for stockbroker firms. In a similar vein it was also not surprising the results should demonstrate that the majority of portfolio managers and buy-side analysts should tend to work for investment fund companies.

However, although useful, this is a very descriptive result. Therefore, the next sub-section describes how the Pearson Chi-Square Test of Independence was used to determine whether or not the association between the two categorical variables in the sample (employer and job title) was real or if it had merely occurred by chance.

Notably, developing an understanding of the variation in attributes and behaviours across participant job titles was a key objective of this research study.

Table 7.2: Cross-tabulations (Job Title * Employer)

Institution		1 Portfolio manager	2 Buy-side analyst	3 Sell-side analyst	4 Other	Total
		Title				
1 Multinational Bank	Count	22	16	21	4	63
	Expected Count	27.8	18.6	12.7	3.9	63.0
	% within b_ Title	14.8%	16.0%	30.9%	19.0%	18.6%
2 Pension Fund	Count	5	4	0	0	9
	Expected Count	4.0	2.7	1.8	0.6	9.0
	% within b_ Title	3.4%	4.0%	0.0%	0.0%	2.7%
3 Stockbroker Firm	Count	7	2	38	0	47
	Expected Count	20.7	13.9	9.5	2.9	47.0
	% within b_ Title	4.7%	2.0%	55.9%	0.0%	13.9%
4 Investment Funds	Count	72	60	7	2	141
	Expected Count	62.2	41.7	28.4	8.8	141.0
	% within b_ Title	48.3%	60.0%	10.3%	9.5%	41.7%
5 Life Assurance Company	Count	2	0	0	0	2
	Expected Count	0.9	0.6	0.4	0.1	2.0
	% within b_ Title	1.3%	0.0%	0.0%	0.0%	0.6%
6 Private Money Management Grp	Count	40	17	2	1	60
	Expected Count	26.4	17.8	12.1	3.7	60.0
	% within b_ Title	26.8%	17.0%	2.9%	4.8%	17.8%
7 Other Institution	Count	1	1	0	14	16
	Expected Count	7.1	4.7	3.2	1.0	16.0
	% within b Title	0.7%	1.0%	0.0%	66.7%	4.7%
Total Count		149	100	68	21	338
Expected Count		149.0	100.0	68.0	21.0	338.0
		100.%	100.%	100.%	100.%	100.%

7.4.1.2 Pearson Chi-Square Test of Independence

The literature contains certain pre-requisites that must be satisfied before performing Pearson Chi-Square Tests of Association, otherwise the results are invalidated. These include: adequate sample sizes, randomly selected participants, and at least 5 counts in each expected category.

To perform the tests described below, expected counts were compared to the observed (actual) counts. The expected count is what we would expect if there was no relationship between the two variables (job title * employer). If the Pearson Chi-Square Test of Independence is significant, then it signals that the actual count has departed from the expected count.

The null and alternative hypotheses were as follows:

H_o: There is no association between job title and employer

H_1: There is an association between job title and employer

The Pearson Chi-Square Test of Association results [χ^2=351.033 (df=18, n=338) and p<.001] - which were based on all 7x4 categories listed in Table 7.2 - could not be relied upon because 14 cells (50%) had expected counts of less than 5. To fix the 'problem', the researcher carried out a simple data reduction procedure that encompassed removing the 'Other' column plus three rows (Life Assurance Company, Pension Funds and 'Other Institution') from the original contingency table (n=338) shown above. Table 7.3 contains the amended cross-tabulation results. Subsequently, as shown in Table 7.4, the revised Pearson Chi-square Test of Independence statistics [χ^2=140.168 (df=6, n=304) and p<.001] provided evidence that there was a significant association between the respondents' job title and choice of employer. The other statistics, namely the Likelihood Ratio Test (133.01) and the Linear by Linear Test of Association (34.13), were also significant at the 1% level, suggesting that a rejection of the null hypothesis of 'no association' was valid.

The Pearson Chi-square Test of Independence not only measures if there is a relationship between two variables or not, it is also a test of the homogeneity of proportions, i.e. whether the percentages are statistically equal. For example, Table 7.3 revealed that 51.1% of the portfolio managers versus 10.3% of the sell-side analysts worked for investment funds companies, and because the Chi-Square Test statistic is significant these two percentages are significantly different to one another. That is, as far as the population of investment managers is concerned, there are significantly more portfolio managers than sell-side analysts that work for investment fund companies.

Furthermore, Table 7.3 indicates that the number of sell side analysts working for stock broker firms was 38 versus an expectation of 10.5. Conversely, the number of sell side analysts working in the investments funds sector was 7 versus an expectation of 31.1. Consequently, it would appear that stock broker firms are better placed to exert greater influence over the decision-making behaviour of sell side analysts in practice than any of the other investment management institutions considered in the study. On the other hand, the results also indicate that stock broker firms hold significantly less sway over the decision-making behaviour of buy-side analysts and portfolio managers in practice.

7.4.1.3 Chi-square and Cramer's V Tests (Job Title * Employer)

While the Chi-square Test statistic shown in Table 7.4. indicates job title is significantly associated with type of employer, it nevertheless is an asymptotic or non-directional two-sided test statistic, which means that the extent to which one group behaves statistically different to another group remains unknown. However, the strength of the association (effect size) between the two categorical variables (job title * employer) can be measured using the Cramer's V Test statistic, also shown in Table 7.4.

Table 7.3. Cross-tabulations (Job Title * Employer)

		Title			
Institution		1 Portfolio manager	2 Buy-side analyst	3 Sell-side analyst	Total
1 Multinational Bank	Count	22	16	21	59
	Expected Count	27.4	18.4	13.2	59.0
	% within b_ Title	15.6%	16.8%	30.9%	19.4%
3 Stockbroker Firm	Count	7	2	38	47
	Expected Count	21.8	14.7	10.5	47.0
	% within b_ Title	5.0%	2.1%	55.9%	15.5%
4 Investment Funds	Count	72	60	7	139
	Expected Count	64.5	43.4	31.1	139.0
	% within b_ Title	51.1%	63.2%	10.3%	45.7%
6 Private Money Management Group	Count	40	17	2	59
	Expected Count	27.4	18.4	13.2	59.0
	% within b_ Title	28.4%	17.9%	2.9%	19.4%
Total Count		141	95	68	304
Expected Count		141.0	95.0	68.0	304.0

Table 7.4. Chi-square and Cramer’s V Test Statistics (Job Title * Employer)

Chi-square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	140.168[a]	6	.000
Likelihood Ratio	133.003	6	.000
Linear-by-Linear Association	34.129	1	.000
N of Valid Cases	304		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.51.			

Symmetric Measures					
		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Nominal by Nominal	Phi	0.679			0.000
	Cramer's V	0.480			0.000
Interval by Interval	Pearson's R	-0.336	0.051	-6.192	.000[c]
Ordinal by Ordinal	Spearman Correlation	-0.389	0.052	-7.334	.000[c]
N of Valid Cases	304				
a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis. c. Based on normal approximation.					

7.4.1.4 Interpretation of Cramer's V Test Results

Cohen (1988) proposed the following standards for interpreting Cramer’s V:

- DF=1 (0.10 = small effect) (0.30 = medium effect) (0.50 = large effect)
- DF=2 (0.07 = small effect) (0.21 = medium effect) (0.35 = large effect)
- DF=3 (0.06 = small effect) (0.17 = medium effect) (0.29 = large effect)

These effect sizes only apply when the following conditions are met:

Gravetter and Wallnau (2013, P.615) cite Cohen (1988) to explain that DF for Cramer's V should be calculated differently to the DF for a Chi-square analysis. That is, DF for the Chi-Square test are defined as DF = (R-1)*(C-1). Whereas for Cramer's V, DF are defined as (R-1) or (C-1), whichever is the smallest.

Thus, since a Cramer's V of .480 for df=2 is indicative of a large effect size, there is evidence of a strong statistically-significant association between job title and employer within the investment management population generally.

In conclusion, type of employer, i.e. investment management firm, potentially exerts a strong influence over the decision-making behaviour of portfolio managers, buy-side analysts and sell-side analysts. Furthermore, the findings confirm that the lacunae separating buy and sell side decision-making behaviour are both distinctive and wide.

7.4.2 Experience

Work experience is known to influence the decision-making behaviour of investment managers. Thus in keeping with the evident calls in the literature, coupled with the study's primary research objectives, the respondents were asked to indicate their level of work experience, in years. In total, 338 respondents completed the question.

As shown in Table 7.5, more than half of the respondents in the sample (59.5%; n=201) reported having less than 5 years' work experience within the investment management industry; almost one-fifth (19.5%; n=66) reported having between 5 and 10 years' work experience; nearly 16% (15.7%; n=53) indicated they had between 10 and 20 years' work experience, while the remainder (5.3%; n=18) reported having more than 20 years' work experience.

Table 7.5: Work Experience (years)

		Frequency	Valid Percent
Valid	1. Less than 5 years	201	59.5
	2. 5 to 10 years	66	19.5
	3. 10 to 20 years	53	15.7
	4. More than 20 years	18	5.3
	Total	338	100.0

7.4.2.1 Job Title * Work Experience

Table 7.6 presents the results of a contingency analysis of the two characteristics: job title and work experience.

The results indicate that portfolio managers tend to be more experienced in terms of years served in the investment management industry when compared to the other cohorts in the study. They had a higher proportion of their group in the 'more than 20 years' experience category (10.1%; n=15) compared to the rest of the cohorts combined. They were also the most experienced group in the '10 to 20 years' experience bracket (21.5%; n=32) when compared to the other groups. However, they were roughly equivalent to the other cohorts in the '5 to 10 years' experience bracket (18.8%; n=28). Conversely, they had the lowest proportion of their members (49.7%; n=74) in the category with the least experience, i.e. the 'less than 5 years' experience bracket.

As it was with 'job title and employer' (Section 7.4.1.1), these results likewise appear to have largely stood the test of time. That is, 35 years ago Moizer and Arnold (1984, p.344) presented results that demonstrated "portfolio managers had more experience as practitioners of investment analysis (e.g. 62.9% of managers had over 10 years' experience compared to 48.2% of information intermediaries" [sell-side analysts]). For the most part the literature tends to equate portfolio manager 'experience' with knowledge acquired during their careers in the mutual fund industry, i.e. in a learning by-doing fashion (Cici et al., 2016). Moreover, the evidence in the extant literature (e.g., Kempf et al., 2017; Greenwood and Nagel, 2009; Chevalier and Ellison 1999; and Golec 1996) mostly showcases industry and/or work experience to be positively correlated to investment performance, i.e. affords fund managers a clear investment advantage.

Although intriguingly Cici et al. (2016, p.3821) remarks that the "investment value of industry experience is unaffected by whether or not the manager with such experience is in a team".

Notably, 4 cells (25.0%) in Table 7.6 had expected counts of less than 5. Thus, in order to perform a valid Pearson Chi-Square Test of Association, the following adjustments were made to the contingency table: column 4 ('Other') was removed, and row 4 ('more than 20 years') was merged with row 3 ('10 to 20 years') to create a new category ('more than 10 years').

The subsequent Pearson Chi-Square Test of Association statistic (not shown) indicated there was evidence of a significant relationship between years of work experience and job title: χ^2=28.404 (df=4, n=317) and p<.001. The Likelihood Ratio Test statistic (34.26) and the Linear by Linear Test of Association statistic (5.59) were also significant at the 1% level. As a corollary, the null hypothesis of 'no association' was rejected. Moreover, the Cramer's V Test statistic [.212 for df=2] was indicative of a medium effect size.

Overall, the results are indicative of a medium to strong association between job title and experience within the investment management population generally.

Table 7.6: Cross-tabulations_ Job Title * Work Experience (years)

		Title				
Institution		1 Portfolio manager	2 Buy-side analyst	3 Sell-side analyst	4 Other	Total
Less than 5 years	Count	74	75	39	13	201
	Expected Count	88.6	59.5	40.4	12.5	201.0
	% within b_ Title	49.7%	75.0%	57.4%	61.9%	59.5%
5 to 10 years	Count	28	21	13	4	66
	Expected Count	29.1	19.5	13.3	4.1	66.0
	% within b_ Title	18.8%	21.0%	19.1%	19.0%	19.5%
10 to 20 years	Count	32	3	14	4	53
	Expected Count	23.4	15.7	10.7	3.3	53.0
	% within b_ Title	21.5%	3.0%	20.6%	19.0%	15.7%
More than 20 years	Count	15	1	2	0	18
	Expected Count	7.9	5.3	3.6	1.1	18.0
	% within b_ Title	10.1%	1.0%	2.9%	0.0%	5.3%
Total Count		149	100	68	21	338
Expected Count		149.0	100.0	68.0	21.0	338.0

7.4.3 Age

This section of the survey questionnaire asked respondents to indicate their age, in years. In total, 331 respondents completed the question.

As shown in Table 7.7, the most prevalent age group was the 25-34-year-old age bracket (mode=33.8%; n=112), while ordinal level 3 – the 35-44-year-old age bracket (median=29.9%; n=99) – represented the central age group. Together, these two cohorts comprised 61.7% of the sample. Otherwise, it appears from the table that most respondents retired or changed activity after the age of 54.

Table 7.7: Frequency Distribution of Respondents' Ages

Age		Frequency	Valid Percent
1	18-24	20	6.0
2	25-34	112	33.8
3	35-44	99	29.9
4	45-54	78	23.6
5	55-64	18	5.4
6	65-74	4	1.2
	Total	331	100.0

7.4.3.1 Cross Tabulation (Job Title * Age)

For the purpose of identifying potential differences between portfolio managers, buy-side analysts and sell-side analysts, the survey respondents' age and job title were compared as shown in Table 7.8.

Portfolio managers were the largest investment management cohort in the sample (blue shading; n=147). They tended to be older than the other two cohorts in the 35-44, 45-54 and 55-64-year-old age brackets, which implies age may be an indication of job title within the investment management industry. Moreover, in light of the significant findings in the preceding sections, it follows that age may also be a significant indicator for employer and experience. Notably, Fabozzi et al. (2007) also found a link between age and experience, remarking that the age of 35 was an applicable threshold for a manager to be considered experienced within the investment industry.

Buy-side analysts were the second largest investment management cohort in the sample (green shading; n=98). They tended to be younger than the other two cohorts within the more narrowly defined 25-34-year-old age bracket, further implying that age may be an indicator for buy-side analysts and correspondingly their most likely employer and level of work/industry experience. Moreover, these statistics tend to substantiate the related findings in the previous chapter; that is, since buy-side analysts usually work for and report to portfolio managers, we should not be surprised to observe that they should tend to be younger, less experienced and mostly work for investment fund companies.

Sell-side analysts appeared asymmetrically represented across all of the age categories listed in Table 7.8 (pink shading; n=66). Nonetheless, they comprised the youngest cohort in the sample, i.e. the 18-24-year-old age bracket, which tends to support alternative evidence given during the interviews that sell-side employment is often regarded as a useful staging-post for early-career investment management professionals.

Notably, for the same reasons as described in the preceding section, the initial significant Pearson Chi-Square Test of Association results (not shown) could not be relied upon because 9 cells (37.5%) in Table 7.8 had expected counts of less than 5. However, when remedial column and row adjustments were made to the contingency table[14], the revised Pearson Chi-Square Test of Association statistic confirmed the initial result that there was evidence to indicate that a significant relationship exists between age and job title: χ^2=48.206 (df=2, n=311) and p<.001. The Likelihood Ratio Test statistic (45.58) and the Linear by Linear Test of Association statistic (10.11) were also significant at the 1% level. Thus the null hypothesis of 'no association' was rejected. Moreover, the Cramer's V Test statistic of .394 for df=1 was indicative of a medium effect-size, implying the statistical evidence points to a moderately strong association between job title and age within the investment management population generally.

Numerous papers have addressed the related questions of whether an investment manager's job title, employer, experience and age influence his/her investment performance (e.g. the size of portfolio returns), see for example Bai et al. (2018), Greenwood and Stefan (2009), Fabozzi et al. (2007), Chevalier and Ellison (1999) and Golec (1996). Specifically, Bai et al. (2018) show that relatively older fund managers significantly outperform their younger peers in terms of fund returns and stock picks. They found older fund managers displayed more confident behaviour: making larger bets, window dressing their holdings less, and securing more fund flows, consistent with them being better at marketing their funds to investors. Greenwood and Nagel (2009) used age as a proxy for managers' investment experience and found evidence that inexperience significantly affects trading behaviour. They showed

[14] 'Other' column was removed. Rows 1 and 2 merged=under 35. Rows 3, 4, 5, 6 merged =over 35.

young managers, but not old managers, exhibit trend chasing behaviour in some of their stock investments. Their findings also revealed retail investors fared poorly at the hands of inexperienced managers. Moreover, in the context of business cycles, they revealed inexperienced investors play a role in the formation of asset price bubbles. That is, their facts are consistent with the popular view that inexperienced investors are susceptible to buy assets with inflated prices during bubble periods. But once investors have experienced a bubble and subsequent crash, they are less willing to participate the next time. In a similar vein Gerding (2014) observed that young financial traders bring more than love of risk and braggadocio to financial markets. They also often come disencumbered with more conservative social norms, and instead go to work for brokers and other financial intermediaries during boom times with a cavalier attitude towards risk, law, and traditional values. Golec (1996) also compared the relationship between an investment manager's age and experience (tenure) with his/her investment performance and risk-taking. However, his results revealed better risk-adjusted performance (alpha) from a fund manager who is relatively young (less than 46 years old) yet has managed a fund for a relatively long time (more than 7 years). Moreover, his results - which were based on a sample of funds of various types between 1988–1990 - showed a significant age effect at the 1 percent level. He also noted that a manager's predicted risk-adjusted returns increased by one percentage point for each 5.5 years of tenure in his current position. He concluded investment returns are affected by age, work experience (what he called tenure) and even the MBA status of the investment manager. Analogous to Golec (1996), Chevalier and Ellison (1999) remarked that if "ability" exists, it is not always obvious whether it resides in the manager or in the fund organisation. Nevertheless, their findings indicated younger managers outperformed older managers. Specifically, a manager who was 12 years older than the mean manager was predicted to lag the mean manager by one percentage point per year. They suggested that one explanation for why such performance differences might exist was that younger managers may work harder, both because they are more likely to be fired for poor performance and because they have longer careers ahead of them.

Overall, the findings in this section are well supported in the literature. But as the evidence shows, there are some inconsistencies also.

Table 7.8: Cross-tabulations (Job Title versus Age)

		Title				
Age		1 Portfolio manager	2 Buy-side analyst	3 Sell-side analyst	4 Other	Total
1 18-24	Count	1	9	9	1	20
	Expected Count	8.9	5.9	4.0	1.2	20.0
	% within b_Title	0.7%	9.2%	13.6%	5.0%	6.0%
2 25-34	Count	32	56	14	10	112
	Expected Count	49.7	33.2	22.3	6.8	112.0
	% within b_Title	21.8%	57.1%	21.2%	50.0%	33.8%
3 35-44	Count	55	19	21	4	99
	Expected Count	44.0	29.3	19.7	6.0	99.0
	% within b_Title	37.4%	19.4%	31.8%	20.0%	29.9%
4 45-54	Count	48	9	17	4	78
	Expected Count	34.6	23.1	15.6	4.7	78.0
	% within b_Title	32.7%	9.2%	25.8%	20.0%	23.6%
5 55-64	Count	10	4	4	0	18
	Expected Count	8.0	5.3	3.6	1.1	18.0
	% within b_Title	6.8%	4.1%	6.1%	0.0%	5.4%
6 65-74	Count	1	1	1	1	4
	Expected Count	1.8	1.2	.8	.2	4.0
	% within b_Title	0.7%	1.0%	1.5%	5.0%	1.2%
Total Count		147	98	66	20	331
Expected Count		147.0	98.0	66.0	20.0	331.0
% within b_Title		100.0%	100.0%	100.0%	100.0%	100.0%

7.5 Non-Statistically Significant Findings

7.5.1 Gender Identity

This section of the survey questionnaire asked respondents to indicate their gender. In total, 334 respondents completed the question.

As shown in Table 7.9 and Figure 7.2, nearly nine-tenths (89.8%, n=300) of the respondents in the sample identified as male and just over one-tenth (10.2%, n=34) identified as female. Evidently, the respondents comprising the sample were mostly male. These results tend to support previous studies that show women's representation in fund manager and analyst positions is relatively low compared to men (Clifton et al., 2009). For example, in keeping with our data, only 7 percent of the managers in the Chevalier and Ellison (1999) sample were women.

Table 7.9: Gender Identity

Gender		Frequency	Valid Percent
Valid	1. Male	300	89.8
	2. Female	34	10.2
	Total	334	100.0

7.5.1.1 Job Title * Gender

For the purpose of identifying potential differences between portfolio managers, buy-side analysts and sell-side analysts, the survey respondents' gender identity and job title were compared, see Table 7.10.

Portfolio managers comprised the largest cohort in the sample (44.3%; n=148), nine-tenths (89.9%; n=133) of whom identified as male (blue shading), while the remainder (10.1%; n=15) identified as female (pink shading). Buy-side analysts were the next biggest cohort in the sample (29.6%; n=99), the majority of whom (88.9%; n=88) identified as male, while the remainder identified as female (11.1%, n=11). In a similar vein, the majority of sell-side analysts were male (89.6%; n=60), and the remainder (10.4%, n=7) were female. The smallest and only remaining 'other' cohort (6%; n=20) were likewise mostly male (95.0%; n=19), with one female (5.0%; n=1) represented in the cohort.

Table 7.10: Cross-tabulations (Job Title * Gender)

		Title				
		1 Portfolio manager	2 Buy-side analyst	3 Sell-side analyst	4 Other	Total
Gender						
1 Male	Count	133	88	60	19	300
	Expected Count	132.9	88.9	60.2	18.0	300.0
	% within b_Title	89.9%	88.9%	89.6%	95.0%	89.8%
	% within Gender	44.3%	29.3%	20.0%	6.3%	100.%
2 Female	Count	15	11	7	1	34
	Expected Count	15.1	10.1	6.8	2.0	34.0
	% within b_Title	10.1%	11.1%	10.4%	5.0%	10.2%
	% within Gender	44.1%	32.4%	20.6%	2.9%	100.%
Total	Count	148	99	67	20	334
	Expected Count	148.0	99.0	67.0	20.0	334.0
	% within b_Title	44.3%	29.6%	20.1%	6.0%	100%

Evidently, the male gender identity resoundingly dominates the female gender identity across all three investment management groups in the sample.

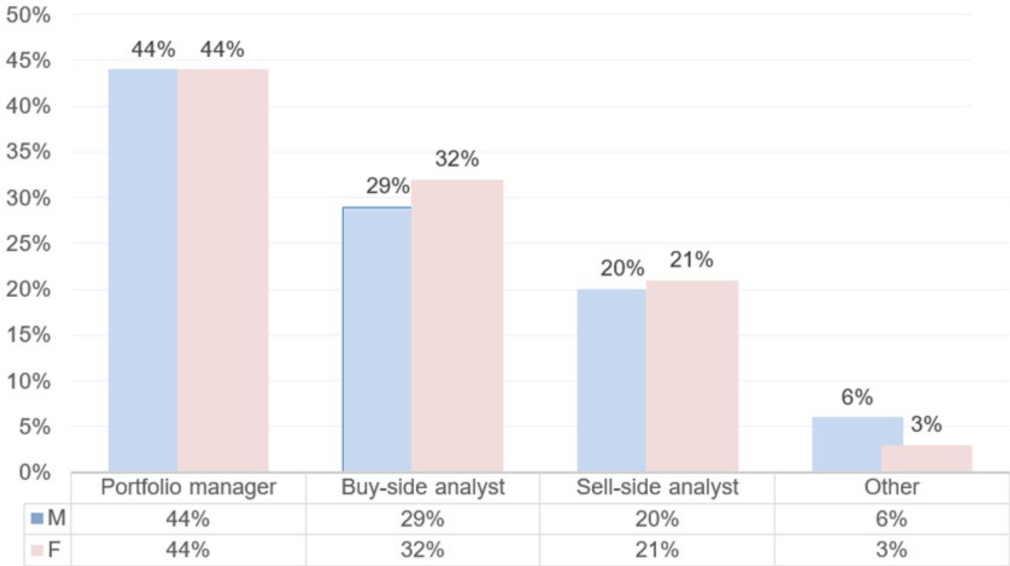
Nonetheless, these results cannot be relied upon beyond the immediate sample because a valid[15] Pearson Chi-Square Test of Association indicated the relationship between job title and gender identity most likely occurred by chance or was the result of sampling error: χ^2= 0.060 (df =2, n=314) and p>.05. The Likelihood Ratio Test statistic, also 0.060, and the Linear by Linear Test of Association statistic (0.014) were also insignificant at the 5% level. Consequently the null hypothesis of 'no association' could not be rejected.

Arguably these results are good news because it would not be nice to think that gender bias was prevalent within the investment management industry. Nevertheless, there are several studies in the literature that have found significant gender-based differences in performance on various dimensions. For example, "women cover roughly 9 stocks, on average, as compared with 10 for men, and women's earnings estimates tend to be less accurate than men's estimates… women are significantly more likely than men to be designated as All-Stars, which indicates that they outperform men in other aspects of job performance." (Clifton et al., 2009, P.1). Moreover, in light of the levels of contemporaneous public interest surrounding issues of gender diversity in the workplace (Cueva and Rustichini, 2015; Winter-Ebmer and Zweimuller 1997; Jones and Makepeace 1996; Coate and Loury 1993; and Olson and Becker 1983), future researchers might be motivated to investigate this apparent demographical 'abnormality' further.

In the meantime, Figure 7.2 uses the same numbers to present an alternative perspective on the issue of gender diversity within the investment management industry. As indicated, the percentage of female investment management professionals appears 'equally weighted' when compared to their male counterparts, except the 'other' category which is of less relevance. So while one might infer from this result that the investment management industry

[15] Because 1 cell (12.5%) in Table 7.10 had an expected count of less than 5, the initial Pearson Chi-Square Test of Association result could not be relied upon. However, when the 'Other' column was removed from the contingency table, a valid test result was achieved: χ^2= 0.060 (df =2, n=314) and p>.05.

seems free from gender bias, the big open question remains concerning the huge disparity between the observed number of females versus males within the sample, and evidentially within the industry as whole according to publicly available CFA statistics (Clifton et al., 2009). Nonetheless, prima facia, gender identity is not expected to influence the test results in this thesis.



	Portfolio manager	Buy-side analyst	Sell-side analyst	Other
M	133	88	60	19
F	15	11	7	1

Figure 7.2: Job Title * Gender Identity

7.5.2 Type of Education

In this section respondents were asked to indicate their highest level of education. In total, 336 respondents completed the question.

As shown in Table 7.11 and Figure 7.3, 92.3% (n=310) of the respondents in the sample (n=336) synchronously held some type of third level university degree (61.31%; n=206) and/or full or partial CFA memebership (30.95%; n=104), with almost 50% (n=50) of these indicating they had attained the full CFA qualification.

However a caveat is needed because of a flaw in the design of the questionnaire. Specifically, the sub-sections that pertained to CFA education and Masters degree did not give respondents the option to tick both boxes in the event they possessed both attributes, i.e. they could only choose one or the other option. Thus it is more reasonable to assume that the 'true' measure of respondents in possession of a Masters degree was higher than the 149 number (44.3%) given in the table. As a corollary, if we assume half of the CFAs in the sample held a Masters degree, then it seems more likely that the true proportion of the sample with a Masters degree was closer to 50% (n=168) and not 44% (n=149).

The remaining 'Other' category (7.74%; n=26) comprised an assortment of related professional financial qualifications, which included: Chartered Accountants (ICAEW; ICAS), Financial Risk Managers (FRM - run by GARP), Certified International Investment Analysts (CIIA), Associates of the Institute of Investment Management and Research (AIIMR - precursor to CFA), holders of the Diploma in Wealth Management (CISI and FCSI) and the Investment Management Certificate (IMC).

Evidently the respondents comprising the sample were well educated. However, as seen in Tholen (2018), HE [Higher Education] institutions do not necessarily serve as sites of skill development in modern graduate occupations. In fact, when Tholen (2018, p.1) investigated the apparent gap in our knowledge of how we understand the effectiveness and capability of HE as a site of work skill development for different occupational contexts, he found that "the skills demanded by employers and to perform the work are not necessarily aligned with the skills and knowledge that HE imparts." Therefore, while it is often assumed that the majority of graduate workers' skills are principally developed at university or at least associated with HE, the evidence suggests there is considerable occupational heterogeneity in the workplace, which in Tholen's case specifically included the investment management industry. For instance, Tholen found that financial analysts have diverse educational backgrounds and are expected to learn most of their skills on the job and for some in combination with the pursuit of a professional qualification. He explains that "financial analysts believe it takes considerable time to fully understand the delicate and intricate aspects of financial analysis. The core features of financial analysis develop gradually and sometimes unconsciously. Financial analysis demands good social skills and these skills develop through interaction with other managers, colleagues and in particular other stakeholders who have certain desires and interests in specific content as well as a particular delivery of that content." (Tholen, 2018, p.7). Thus, there appears to be little reliance or expectation that HE takes a prominent place outside initial or general training.

An alternative perspective is given in Chevalier and Ellison (1999) who found that older managers tend to be less well educated than their younger colleagues, i.e. from the perspective of a university education. Their results indicated managers with MBAs outperformed managers without MBAs by 63 basis points per year. Moreover, they suggested that the MBAs or graduates of more prestigious colleges might do better because they are smarter, better educated, work for firms that provide better support services, and have better networks of contacts from whom to gather information. Golec (1996) also concluded that managers with MBAs outperform those without them.

Table 7.11: Type of Education

Panel A_ Education		
	Frequency	Valid Percent
PhD degree	13	3.87%
Master's degree	149	44.35%
Undergraduate degree	44	13.09%
Total Valid Responses	206	61.31%

Panel B_ CFA Qualification		
	Frequency	Valid Percent

CFA member	50	14.88%
CFA student - Level 1	20	5.95%
CFA student - Level 2	16	4.76%
CFA student - Level 3	18	5.36%
Total Valid Responses	104	30.95%

Panel C_ Other – unclassified		
	Frequency	Valid Percent
Other - unclassified	26	7.74%
Total Valid Responses	n = 336	n = 100%

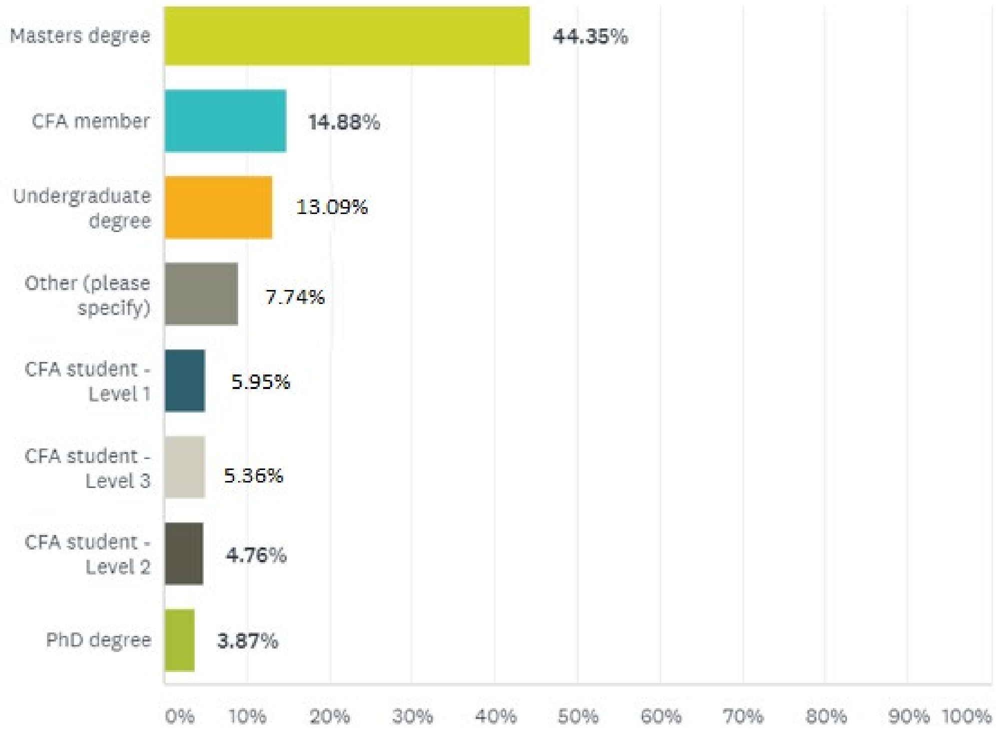


Figure 7.3: Type of Education

Source: Kelly (2019)

Developed by the author using SurveyMonkey

7.5.2.1 Job Title * Type of University Degree

For the purpose of identifying potential differences between portfolio managers, buy-side analysts and sell-side analysts, the survey respondents' job title was compared to their type of university degree, see Table 7.12.

Portfolio managers (blue shading) had the highest percentage of *undergraduate-only* degree-holders (26.1%; n=23), while buy-side analysts (green shading) had the highest percentage of Master's degree-holders (79.0%; n=49). All three investment management cohorts had broadly the same percentage of PhD degree-holders.

However, these results cannot be relied upon beyond the immediate sample because the Pearson Chi-Square Test of Association indicated the relationships between job title and university education had most likely occurred by chance or as a result of sampling error: χ^2= 2.889 (df =6, n=206) and p>.05. The Likelihood Ratio Test statistic (2.916) and the Linear by Linear Test of Association statistic (0.595) were also insignificant at the 5% level, thus failing to reject the null hypothesis of 'no association'.

Nonetheless, as indicated in the literature and the interview data, the evidence tends to support the view that the institutional HE system is predominantly generalist, i.e. oriented towards general curricula and programmes (Tholen, 2018). Moreover, as shown in Figure 7.8, the majority of the respondents participating in the study (25.6%, n=85) indicated that it was the 'investment management industry's latest innovations and alpha insights' that exerted the greatest influence over their investment behaviour. Secondly, 23.2% (n=77) of them indicated it was their obligation to 'conform to their firm's prescribed company policy on valuation' that exerted the strongest motivational influence on their investment behaviour. Notably, 'accounting/finance methodologies learned while attending university' was ranked as the third most influential factor by almost 20% of the sample (19.9%; n=66).

Overall, while the majority of respondents in the study were evidently well-educated, it nonetheless seems skills development and training within the investment management industry is mostly an employer led activity.

Table 7.12: Cross-tabulations: Job Title * University Education

		Title				
Education		1 Portfolio manager	2 Buy-side analyst	3 Sell-side analyst	4 Other	Total
Undergraduate degree	Count	23	10	8	3	44
	Expected Count	18.8	13.2	9.0	3.0	44.0
	% within d_ Education	52.3%	22.7%	18.2%	6.8%	100.0%
	% within d_ Job Title	26.1%	16.1%	19.0%	21.4%	21.4%
Master's degree	Count	59	49	31	10	149
	Expected Count	63.7	44.8	30.4	10.1	149.0
	% within d_ Education	39.6%	32.9%	20.8%	6.7%	100.0%
	% within d_ Job Title	67.0%	79.0%	73.8%	71.4%	72.3%
PhD	Count	6	3	3	1	13
	Expected Count	5.6	3.9	2.7	.9	13.0
	% within d_ Education	46.2%	23.1%	23.1%	7.7%	100.0%
	% within d_ Job Title	6.8%	4.8%	7.1%	7.1%	6.3%
Total	Count	88	62	42	14	206
	Expected Count	88.0	62.0	42.0	14.0	206.0
	% within d_ Education	42.7%	30.1%	20.4%	6.8%	100.0%
	% within d_ Job Title	100.0%	100.0%	100.0%	100.0%	100.0%

7.5.3 Type of University Undergraduate / Postgraduate Course of Study

In this section respondents were asked to indicate their choice of undergraduate and/or postgraduate course of study. In total, 338 respondents completed the question.

As shown in Table 7.13 and Figure 7.4, the top three course choices were finance (43.8%; n=148), economics (18.9%; n=64) and business studies (13.0%; n=44), respectively. Moreover, as shown in Table A7.5.3 in the appendix, the same rankings were evident when all three investment management cohorts (portfolio managers, buy-side analysts and sell-side analysts) were considered separately. For example, sell-side analysts (53%; n=36) represented the largest of the three cohorts to study finance compared to buy-side analysts (44%; n=44) and portfolio managers (39%; n=58). Similarly, undergraduate economics and business courses were ranked second and third choices by each of the three investment management cohorts.

It seems only logical that the investment management industry should mostly want to recruit finance, economics and business graduates. However, the low frequency counts pertaining to the study of Accountancy was a surprising finding; it ranked eighth in descending order of preference (1.8%; n=6).

Notably, there is a perception in the literature that an ‘expectation gap’ exists between industry and education. Specifically, in the context of accountancy, a number of researchers have shown that employers continue to find accounting graduates not ‘work ready’, see for example Low et al. (2016, 2013), Cicekli (2016), Bui & Porter (2010), Marshall et al. (2010), Botes (2009), and Kavanagh & Drennan (2008).

When Low et al. (2016) examined what accounting employers were seeking in their ‘ideal’ accounting graduate, their research found that in terms of technical skills, employers require at least a sound understanding of the fundamental technical accounting skills. But beyond this minimum threshold little more is expected technically of graduates as the requisite technical skills are learned ‘on the job’. What is more, their findings indicated “that the touted ‘expectation gap’ is not as pervasive as prior literature has suggested. Over half of employers believed universities are preparing students adequately for the workplace, although this seemed to be moderated by an opinion among employers that this is ‘as well as an academic institution can do’” (Low et al., 2016, p.36). Their findings were also accompanied by some key recommendations. These included: greater inclusion of non-technical skills in accounting education through the incorporation of practical case study problems into accounting curricula; facilitating group discussion forums that included the production of written reports and business presentations for ‘clients’, and the continued encouragement of internship opportunities within university degrees.

In a similar vein Cicekli (2016) found that 40 percent of managers thought universities did not provide their graduates with the skills necessary to be successful in their jobs. More training in analytical thinking skills and soft skills (communication, interpersonal relationship, and teamwork skills) were indicated in the study to be particularly sought-after by managers in the banking sector. In keeping with Low et al. (2016), Cicekli also advises bank executives to communicate and collaborate with educators to make sure their needs are known and met.

Overall, the perceived gap between the skills and attributes accounting graduates gain from university and those expected and/or required by employers of those graduates seems realistic. Thus, in light of the aforementioned findings it seems only appropriate to append similar recommendations to the current research study. Concurrently, we also recommend that the important skills associated with big data analysis, machine leaning, natural language processing, quantitative computer analysis techniques, multi-factor financial modelling, together with training in the writing and application of computer-based stock-market algorithms, are added to university course curricula lest the ‘expectations gap’ widens even further.

Table 7.13: Type of Undergraduate and/or Postgraduate Course of Study

Education		Frequency	Valid Percent
Valid	.0 Other	27	8.0
	1. Accountancy	6	1.8
	2. Finance	148	43.8
	3. Economics	64	18.9
	4. Business	44	13.0
	5. Science	13	3.8
	6. Mathematics	17	5.0
	7. Law	3	.9
	8. Healthcare	1	.3

	10. Computing	1	.3
	11. Engineering	13	3.8
	12. Technology	1	.3
	Total	338	100.0

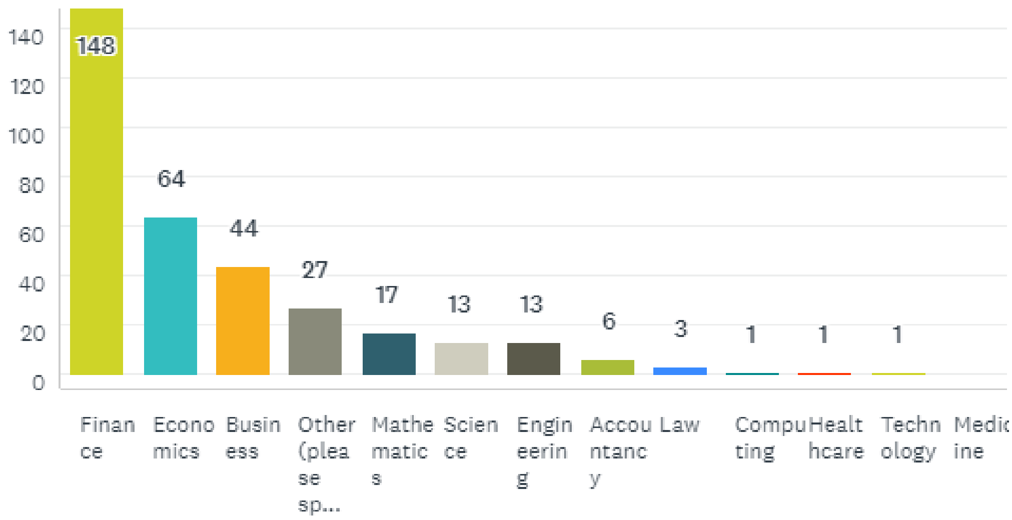


Figure 7.4: Field of Undergraduate and/or Postgraduate Course of Study

Source: Kelly (2019)
Developed by the author using SurveyMonkey

7.6 Foundational Investment Management Beliefs and Preferences

7.6.1 Investment Management Style

This section discusses a foundationally key investment management question. It asked respondents whether they were 'active' or 'passive' investors. In total, 331 respondents completed the question.

As shown in Figure 7.5, just over two-thirds (67.1%; n=222) of the sample indicated they were 'active' investment managers compared to 4.8% (n=16) who indicated they followed 'passive' investment management strategies. Nonetheless, it is also notable that a sizeable proportion of the sample (28.1%; n=93) indicated they favoured both approaches.

These findings represent something of a conundrum when viewed through the lens of the capital asset pricing model (CAPM) and the efficient-markets hypothesis (EMH), see Sharpe (1991) and Fama (1970), respectively. That is, according to the EMH it is difficult (impossible in the case of 'perfect' market efficiency) for 'active' investors to outperform the markets on a consistent basis over the longer-term. Moreover, EMH theory argues that when investors do manage to 'beat the market' it is likely the result of some sort of short-term imperfection in the marketplace. However, there is also another side to 'passive' investing which this discussion often ignores, i.e. the so-called 'efficient markets paradox'. Lorie and Hamilton (1973) noted that the market can only be efficient if a large number of investors actually believe it to be inefficient: the so-called efficient markets paradox. In other words, the existence of a large number of 'active' investors is a necessary requirement for efficiently functioning capital markets, cited in Blitz (2014, p.1). Additionally, the academic literature contains several empirical studies that purportedly demonstrate the superiority of 'active' paradigms of investing over 'passive' investment management styles [investors who generate portfolio/share returns greater than market (index) returns], see for example Ang (2014), Huij and van Gelderen (2014), Doeswijk et al. (2014), Ilmanen and Kizer (2012), Blitz (2012), Ang et al. (2009) and Carhart (1977).

In a similar vein, it is notable that all of the interviewees featured in Chapter 6 ascribed themselves as 'active' managers, who believed the EMH was either invalid or not useful in a practical investment sense. Furthermore, contrary to what it mostly says in the literature, they cited their proven investment track records as evidence to show the EMH, and by default 'passive' investing, did not fit with their consistently 'proven' actively-managed out-performance. They argued that, subject to the education, skill and experience of the investment manager in question, 'active' investing does potentially generate 'alpha' (excess stock market returns) over the longer-term. This evident fact was powerfully illustrated by

Robert St George, Citywire (07 November 2017) wherein he stated that "between 2005 and 2015, assets under management in 'active' funds – excluding index and money-market products – more than doubled from about \$4.6 trillion to \$9.5 trillion". With such a sizeable spend on 'active' investments, there is clearly widespread investor belief in the potential benefits of 'active' investment management, which in turn implies the recognition that markets are not completely efficient. What's more, most of the interviewee fund managers made it unmistakably apparent that they held critical, even scornful, views regarding the major theoretical assumptions underpinning modern finance theory.

Overall, despite the over-whelming theoretical support for 'passive' investing in the academic literature, it nevertheless seems likely - on purely economic grounds - that the behaviour of investors is set to remain atypical for the foreseeable future.

Figure 7.5: Investment Management Style

The frequency distributions for this variable are presented in Table A7.6.1 in the appendix.

7.6.2 Equity Investment Management Typologies

This section of the questionnaire survey asked respondents to indicate which of the following equity investment typologies they preferred: 'value' stocks, 'growth' stocks, 'momentum' stocks, 'exchange traded index funds' (ETFs), or some combination of these. In total, 339 respondents completed this question, see Table 7.14 and Figure 7.6.

Table 7.14: Type of Equity Investments Preferred

		Frequency	Valid Percent
1	Value stocks	107	31.6
2	Stocks that combine Value with Momentum	99	29.2
3	Growth stocks	56	16.5
4	ETFs	28	8.3
5	Index funds	17	5.0
6	Momentum stocks	13	3.8
7	Other	19	5.6
	Total	339	100.0

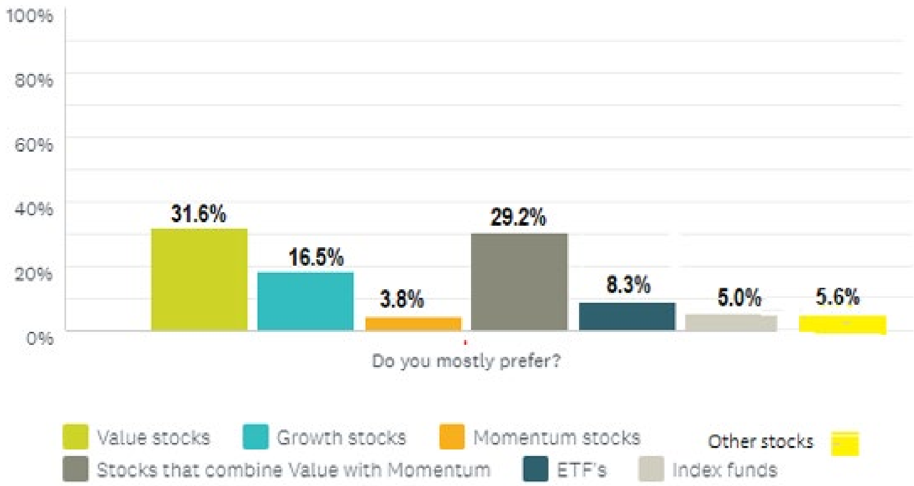


Figure 7.6 Type of Equity Investments Preferred

Just under one-third (31.6%; n=107) of the sample indicated they preferred 'value' stocks over the rest of the investment choices listed in Table 7.14. Next, an almost equal number of respondents (29.2%; n=99) indicated they preferred 'stocks that combine value with momentum'. The third largest cohort (16.5%; n=56) pointed out they preferred 'growth stocks', while the next biggest group (8.3%; n=28) indicated they preferred ETFs. The remainder of the sample was made up of index funds (5%; n=17), momentum stocks (3.8%; n=13) and finally the ‘other’ category (5.6%; n=19).

Evidently, the respondents viewed value-based investment strategies (value type stocks) as offering the best out-performance possibilities compared to the other choices available to them in the survey. Conspicuously however, almost one-third of the respondents in the sample also indicated they preferred investment strategies that combined ‘value’ stocks with ‘momentum’ stocks.

Overall, the questionnaire findings are consistent with the interview evidence as well as the findings of various other researchers in the literature, see for example Chongsoo et al. (2017), Rana and Phillips (2016), Lee et al. (2014), Asness et al. (2013), Elze (2010), Chan and Lakonishok (2004), Kuo and Satchell (2001), Fama and French (2012, 1998, 1996, 1993, 1992), Zheng (1999), Carhart (1997), La Porta et al. (1997) and Sharpe (1992).

Chongsoo et al. (2017) used the stocks of 4,952 firms over a 15-year period from January 2, 1999 to December 31, 2014 to show that value stocks outperform growth stocks. Twenty years earlier La Porta et al. (1997) had also found that the superior returns to value stocks compared to growth stocks persisted long after portfolio formation. Alternatively, Rana and Phillips (2016) found the performance of growth and value stocks varied substantially with business cycles. That is, they observed that the foreign risk premium for growth stocks is mostly positive and especially high during contractions; in contrast, value stocks demand more premiums during expansions. In a similar vein, Lee et al. (2014) observed that value stocks are vulnerable to losses during extreme downturns like the crisis of 2008, which is consistent with them being riskier than growth stocks.

But as noted earlier, almost one-third of the respondents in the sample indicated they preferred investment strategies that combined ‘value’ stocks with ‘momentum’ stocks, a finding that is also in common with previous authors, see for example Elze (2010), Asness et al. (2013), Zheng (1999) and Carhart (1997). Specifically, Elze (2010) extended prevailing research on existing value anomalies. He observed that for the 'EuroStoxx index' (a market proxy for the European stock market), 'enhanced' value strategies can produce superior returns compared to returns of the whole market or 'simple' value strategies without capturing higher risks. With regard to strategies combining momentum and value variables (Recognized Value Strategy), he showed that both investment performance differences (premiums) and statistical significance improved compared to 'simple value' and/or 'simple momentum' variables.

Similarly, Asness et al. (2013) found consistent value and momentum return premia across eight diverse markets and asset classes and uncovered a strong common factor structure among their returns. Likewise, Carhart (1997) observed that performance persistence can be explained by including a momentum factor. In a similar vein Zheng (1999) suggested that the "smart-money" effect is closely related to momentum in stock returns.

Finally, the interview findings cited value-momentum combinations as an important 'new' phenomenon (factor structure) that was worthy of careful consideration by practitioners and academics alike. The significance of these value-momentum based findings is discussed further in Chapter 10.

7.6.3 Investment Management Genre

This section of the survey asked respondents to indicate whether they used 'quantitative' or 'qualitative' methods of investment decision-making. In total, 331 respondents completed the question.

As shown in Figure 7.7, nearly half (48.9%; n=162) of the sample indicated they preferred 'qualitative' investment decision-making techniques compared to the 5.4% (n=18) who indicated they preferred ‘quantitative’ methods. Examples of ‘qualitative’ measures might include ratio analysis, leading indicators, measures of market share, customer or employee satisfaction, and new product innovation and quality assessments; while ‘quantitative’ measures can include financial econometrics, statistical models, computerised multi-factor accounting and finance models, and trading algorithms designed to analyse stocks and/or make investment decisions. However, a sizeable proportion of the sample (45.6%, n=151) indicated they also utilised a mixture of both ‘quantitative’ and ‘qualitative’ techniques to appraise investments.

Overall, these results were unsurprising when considered alongside the related interview findings described in Chapter 6. Specifically, several fund managers had indicated the industry was already in the midst of transitioning from mostly ‘qual’ to more ‘quant’ and/or ‘mixed’ methods styles of investment management.

For example, the discussions with the high-ranking interviewee fund managers in Chapter 6 revealed the financial markets and the participants in them are becoming increasingly sophisticated every year, leading in turn to a growing expectation among investment managers that the better equipped they are with the basic tools of financial calculus, the better their chance of success. To illustrate, one the interviewees indicated Breiman’s Random Forest (Breiman 2004, 2001, 2000, 1996) represented a useful statistical methodology for modeling investment portfolio construction and prediction. Moreover, the decision tree ideas inherent in random forests are also applicable to pattern analysis, dimension reduction, regression analysis and machine learning. However, notwithstanding their inherent practical investment management appeal, there has been little exploration of their statistical properties and consequently little is known about the mathematical forces driving the algorithm (Biau, 2012).

Concurrently, the interviewees cited the increasing use of factor analysis as an alternative means of analysing large quantities of numeric data ('big quant' analysis) via various dimension reduction and regression analysis techniques. Furthermore, the methodological research approach adopted in this study attests to the usefulness of factor analysis as a means to reducing large numerical data sets into smaller and more compact factor structures that can readily facilitate meaningful regression analysis. As shown in Chapter 9, the factor procedures utilised in this study encompassed missing data analysis, exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and structural equation modelling (SEM). Like Breiman's tree methodology, the SEM procedures achieve error and bias reduction and greater regression prediction accuracy. Moreover, the factor algorithms inherent in the SPSS machine learning menus afford the user multiple creative ways of building sophisticated multi-factor financial models. Synchronously, another dimension of this movement towards more 'quantitative' methods of investment analysis and decision-making is reflected in the rapid emergence of low-cost 'robo' advice companies – which are often billed as investment services for the masses (Financial Times, August 24, 2018).

Conjointly, the advent of 'big qual' analysis is significantly speeding-up the investment management research process, and uncovering critical data points that otherwise can be missed by buy or sell-side analysts more accustomed to a less sophisticated approach to 'qual' research. Pragmatically, the growing popularity of 'AlphaSense' across the investment management industry is conspicuous in this regard. 'AlphaSense' helps investors and analysts search across millions of indexed documents to find information buried in SEC and global filings, broker research, earnings call and conference transcripts, investor relations presentations, press releases (public & private companies), news, industry and trade journals, web clippings and own in-house uploaded content. Aside from AlphaSense, academic researchers and investment practitioners are increasingly turning to more generic computer-assisted qualitative data analysis [CAQDAS] software packages that, depending on the skill of the investment manager in question, enable them to develop in-house 'qual' applications that can be more suited to their particular analytic style and the work being undertaken. Notable examples of 'qual' based software modelling packages [CAQDAS] include Nvivo, QDA Miner, Quirkos, MAXQDA, and Atlas ti. Finally, Davidson et al. (2019) recently remarked that the industry is witnessing more and more investment managers undertaking 'big qual' analysis in a manner that aims to maintain the integrity of qualitative work, pays attention to the context and richness of such research, and provides the means of handling large volumes of detailed data.

Overall, the interview findings together with the data analysis presented in this chapter, help to shed light on the evident fact that text classification, text extraction and comparing data statistically are skills that are currently developing rapidly within academia and the investment management industry. In tandem, applications of CAQDAS, quantitative investment analysis, correlational analysis, computer-based multi-factor financial modelling, as well as the SEM and decision tree algorithms referred to above, are heralding the arrival of a new era of innovation in equity fund management praxis (Lohrmann & Luukka, 2019; Zhong & Enke, 2016; Oztekin et al., 2016 and Ali et al., 2012).

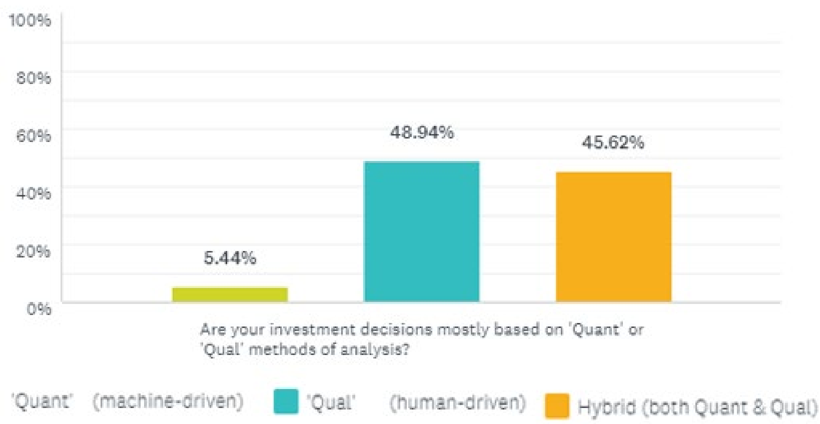


Figure 7.7: Investment Management Genre

The frequency distributions for this variable are shown in Table A7.6.3 in the appendix.

7.6.4 Motivational Factors Known to Influence Investment Behaviour

Behavioural studies are often based on the idea of how we think (cognition), how we feel (emotion), and how we act (behaviour) all interact together (Shiller, 2015; and Ellis, 1957, 1962). Specifically, our thoughts determine our feelings and our behaviour.

As shown in Figure 7.8, when asked to choose from a range of five antecedent and often latent motivational factors known to influence investment behaviour, the majority of the respondents (25.6%, n=85) indicated that the 'investment management industry's latest innovations and alpha insights' tended to exert the most influence on their investment behaviour. The second biggest cohort (23.2%; n=77) stated that their obligation to 'conform to their firm's prescribed company policy on valuation' was the strongest influence. Thirdly, one-fifth (19.9%; n=66) of the sample (n=332) stated 'accounting/finance methodologies learned while at university' was the most influential factor. The final two motivational factors were 'the CFA program course of study' (15.7%, n=52) and 'experience plus academic knowledge' (15.7%, n=52).

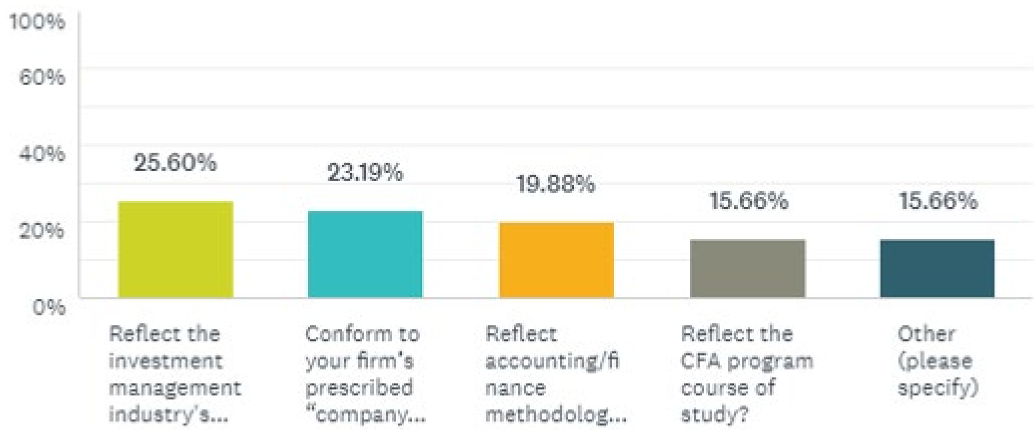


Figure 7.8: Major Motivational Influences on Investment Behaviour

The frequency distributions for these variables are shown in Table A7.6.4 in the appendix.

These findings are supported in the literature. For example, as discussed in Section 7.5.2, Tholen (2018) reports that investment managers are expected to learn most of their skills on the job and/or in combination with the pursuit of a related professional investment management qualification, such as any one of those awarded to Chartered Accountants (ICAEW; ICAS), Financial Risk Managers (FRM - run by GARP), Certified International Investment Analysts (CIIA), Associates of the Institute of Investment Management and Research (AIIMR - precursor to CFA), holders of the Diploma in Wealth Management (CISI and FCSI) and the Investment Management Certificate (IMC). Thus it would be a mistake to assume that HE [Higher Education] institutions necessarily serve as sites of skills development in modern graduate occupations. Furthermore, as discussed in Section 7.5.3, Cicekli (2016) reports that 40 percent of managers in the banking sector think universities do not provide their graduates with the skills necessary to be successful in their jobs.

7.6.5 Industry Typologies

In this section the respondents were asked to indicate which of the industry typologies listed in Table 7.15 they preferred. In total 302 respondents completed the question.

Just over one-third (39.1%; n=118) of the respondents favoured investments in Electric, Oil, Gas and Coal Energy activities. The next highest proportion, approximately one-quarter of the sample (24.2%; n=73), indicated they favoured investments in Water supply, Sewerage and Waste management services. Similarly, circa one-quarter (22.8%; n=69) of the sample indicated they preferred investing in Financial and Insurance activities. In the same vein, around one-quarter (22.8%; n=69) indicated they liked to invest in the Pharmaceutical and Health Care sectors. Similarly, 22.5% (n=68) of the sample indicated they preferred Wholesale and Retail trade activities. Next, just over one-fifth of the respondents (22.2%; n=67) identified Agriculture, Fruticulture, Forestry and Fishing as the industrial sector of their choice. This was followed by the Metals, Iron, Steel and Artificial Limbs sector (21.9%; n=66), which was then followed by the Air, Road Transport Hauliers and Storage sector (21.2%; n=64). The remaining industrial sectors were as shown in Table 7.15.

The findings in Table 7.15 reveal the investment managers in the survey were ‘active’ across all of the major industry sectors. However, the results should not be interpreted as implying the respondents only held widely diversified holdings across industries in order to reduce their portfolios' idiosyncratic risk (Markowitz, 1952). On the contrary, the assembled findings of this research study have shown that skilled fund managers have a propensity to hold concentrated portfolios when they believe some industries will outperform the overall market or if they have superior information to select profitable stocks in specific industries. In essence the evidence lends credence to the belief that investment manager performance and industry concentration are positively correlated. This inference is consistent with the interview evidence presented in Chapter 6 and with the questionnaire evidence presented in Chapters 7 and 8. Moreover, it is also consistent with evidence in the literature (Kacperczyk et al., 2005; Nieuwerburgh and Veldkamp, 2005; Baks et al., 2001; Levy and Livingston, 1995).

Table 7.15: Major Industrial Sectors

Industry Typology	Response Count	Response Percent
Electric, Oil, Gas, Coal Energy	118	39.10%
Water supply, Sewerage, Waste management	73	24.20%
Financial, Insurance activities	69	22.80%
Pharmaceutical, Health Care	69	22.80%
Wholesale, Retail trade	68	22.50%
Agriculture, Fruticulture, Forestry, Fishing	67	22.20%
Metals, Iron, Steel, Artificial Limbs	66	21.90%
Air, Road Transport Hauliers, Storage	64	21.20%
Arts, Entertainment, Sports, Recreation	61	20.20%
Textiles, Leather	42	13.90%
Wood Industry, Upholstery	42	13.90%
Glass, Bricks, Tiles, Concrete	41	13.60%
Medical Services, Animal Hospitals	40	13.20%
Professional, Scientific, Technical activities	40	13.20%
Manufacturing	36	11.90%
Green/Bio/Wind Energy	35	11.60%
Nuclear Power Stations	29	9.60%
Education, Training	28	9.30%
Biotechnology	27	8.90%
Foods, Drinks, Tobacco	26	8.60%
Mining, Quarrying, Sand Pits	26	8.60%
Jewellers, Diamonds	25	8.30%
Gaming	24	7.90%
Chemicals, Rubber, Paints	23	7.60%
Printing, Paper	23	7.60%
Building Construction	22	7.30%
Real Estate activities	19	6.30%
Information, Communication	16	5.30%
Other Industries (please specify)	10	3.30%
Total Respondents = 302		

7.7 Conclusion

This chapter addresses the first of three overarching research questions driving the study, i.e. whether the personal characteristics, backgrounds and beliefs of investment managers tend to influence their investment decision-making behaviour. To this end, the chapter utilised the survey questionnaire evidence collected from 339 buy and sell side respondents in 2016. Since the data was mostly categorical (nominal and ordinal), the analysis made extensive use of chi-square tests of statistical dependence/independence to assess levels of association and sampling error between groups. Additionally, Phi and Cramer's V techniques were used to measure effect sizes. Overall, the analysis of the relation between investment behaviour and manager characteristics supported some interesting conclusions.

The analysis of the survey findings revealed evidence of moderate to strong statistically-significant associations in the dataset that measured investment managers' job title, employer, age and experience. In this vein, the findings revealed that within the investment management population generally, an investment manager's job title says a lot about the type of firm he/she works for; how old he/she is; and who tends to have the most investment management work experience. Moreover, the evidence affirms that the lacunae separating the buy and sell-side cohorts are both distinctive and wide.

The analysis also highlighted some interesting statistically non-significant relationships between the respondents' job title, gender identity, type of education and type of university undergraduate/postgraduate course of study undertaken. In essence, the findings reveal an investment manager's job title also says a lot about whether he/she is likely to be male or female; how likely he/she is to go to university; and what type of degree he/she is likely to pick when they get there. However, on this occasion the results cannot be relied upon beyond the immediate sample because it was not statistically possible to determine if the aforementioned relationships had occurred by chance or were simply the result of sampling error. Nonetheless, the findings potentially add value to the investment management literature, for example by contributing to ongoing debates related to the so-called 'gender gap', HE education 'expectations gap', university accounting graduate 'skills gap', and the evidently sizeable 'buy-/sell-side investment management gap'.

The findings also contribute to other, no less important, contemporaneous debates in the investment management literature. For example, the results highlight the respondents' bent for 'active' vs. 'passive' styles of investment management; their preference for quantitative vs. qualitative investment appraisal techniques; their propensity for investments related to financial and insurance activities vs. the manufacturing sector vs. the alternative industrial classifications shown in Table 7.15; their penchant for 'value' stocks, 'growth' stocks and 'momentum' stocks vs. stocks that combine 'value' with 'momentum'; their predisposition to comply with their firms' prescribed company policy on valuation vs. act on the influence exerted by the accounting/finance methodologies they learned while attending university vs. follow their innate experience plus academic knowledge vs. be guided by the influence brought to bear by the investment management industry's latest innovations and alpha insights. However, as cautioned earlier, these sample-specific, non-parametric, descriptive results should not be inferred more generally to the wider investment management population because they are statistically non-significant findings.

Overall, the findings presented in this chapter lend support to the interview findings described in Chapter 6, and vice versa, and potentially add value the literature.

The next chapter discusses the survey questionnaire evidence in light of the research study's two remaining overarching research questions: the utility of accounting and modern finance theory in equity investment decision-making; plus the role and utility of sell-side equity research in buy-side equity investment management and decision-making.

Chapter 8

DESCRIPTIVE ANALYSIS:

RESPONDENT VALUATION METHOD

8.1 Introduction

In the previous chapter we discussed the survey questionnaire evidence as it related to the first of the three overarching research questions driving the study. Specifically, Chapter 7 examined whether the personal characteristics, backgrounds and beliefs of investment managers (fund managers and financial analysts) tended to influence their investment management behaviour and decision-making.

In this chapter the survey evidence is discussed as it relates to the second and third of the research study's three overarching research questions, namely (i) the utility of accounting and modern finance theory in equity investment decision-making, and; (ii) the role and utility of sell-side equity research in buy-side equity decision-making.

The aim of this chapter is to extend the investment management literature as it relates to the appraisal methods used by buy and sell-side investment managers (portfolio managers, buy-side analysts and sell-side analysts) to make profitable equity decisions. Thirty-five years ago Arnold and Moizer (1984, p.195) famously observed: "Surprisingly little evidence exists about the appraisal methods used by UK investment analysts". Today, it is likewise surprising to find there is an even greater paucity of research of this type, and even more so as it relates to the European investment management industry. In the words of Hobbs & Singh (2015, p.42): "There is very little research on the topic of buy-side analyst performance, and that which does exist yields mixed results".

Thus, cognisant of Arnold and Moizer's (1984) stated UK aims, this chapter describes the accounting and finance procedures European investment managers use to appraise ordinary shares and highlights areas where there is evidence of a schism between buy and sell side perspectives.

The structure of the chapter is as follows: Section 8.2 describes the findings that relate to the utility of accounting theory in investment management decision-making. It comprises two main sub-sections that separately examine the respondents' use of intrinsic accounting valuation models (discounted cash flow model, dividend discount model, and the residual income valuation model) and 'multiples' accounting valuation models (price-book multiple, price-earnings multiple, Shiller-CAPE multiple, enterprise value multiple, price-cashflow multiple, earnings yield multiple, and dividend yield multiple). Section 8.3 describes the findings that relate to the utility of modern finance theory in investment management decision-making. It comprises two main sub-sections that separately examine the respondents' use of single-factor risk-adjusted return models (CAPM, Consumption-based CAPM, Sharpe ratio, and Momentum models) and multi-factor risk-adjusted return models (Fama-French 3-factor model, Carhart 4-factor model, inter-temporal capital asset pricing model, and arbitrage pricing model). Section 8.4 concludes the chapter.

8.2 Utility of Accounting Theory

Question #2 of the survey asked respondents; 'When valuing stocks, please indicate how often you use the following accounting models?' In total, between 212 and 248 respondents completed the question.

The results are presented in two stages. Firstly, three of the best-known intrinsic or 'fair' value accounting models are examined. Secondly, seven of the best-known relative or ‘multiples’ accounting models are examined. In both instances the questionnaire responses pertaining to each model type are presented in the form of summary statistics, frequency distributions and contingency charts and tables.

8.2.1 Intrinsic Accounting Valuation Models - 'Fair' Value Indicators

This section examines three related ‘fair’ value model types used to price equity stocks: Discounted Cash Flow (DCF or NPV) Model, Dividend Discount Model (DDM), and Residual Income Valuation (RIV) Model – sometimes called the Economic Value Added (EVA) Model. Selected results for the three intrinsic variables (questions) are shown in Figures 8.1 to 8.3.

DCF was the most frequently used intrinsic valuation method. Over half (64.2%; n=158) of the respondents indicated they used them either ‘almost all the time’ (35.8%; n=88) or ‘frequently’ (28.5%; n=70), while almost one-seventh (14.6%; n=36) indicated they ‘sometimes’ used them. The remainder of sample (21.1%; n=52) indicated they ‘seldom’ used them.

DDM was the respondents’ second most popular choice of intrinsic valuation model. Almost one-third (30.0%; n=72) of the sample indicated they used them ‘almost all the time’ (9.2%; n=22) or ‘frequently’ (20.1%; n=50), while just under one-fifth (22.1%; n=53) indicated they used them ‘sometimes’. The remainder of sample (47.9%; n=115) indicated they ‘seldom’ used them.

RIV was the final classification listed under Q2 in the survey questionnaire. Most of the sample (59.8%; n=140) indicated they ‘seldom’ used them, while just under one-fifth (20.1%; n=47) indicated they used them ‘sometimes’. Nevertheless, one-fifth (20.1%; n=47) of the sample indicated they used them ‘almost all the time’ (5.6%; n=13) or ‘frequently’ (14.5%; n=34).

Overall, the evidence indicates DCF usage within the investment management industry is ubiquitous, that is, over three-quarters (78.86%; n=194) of the sample indicated they used DCF models either 'frequently' or 'sometimes'. These findings correlate well with the extant investment management survey research literature, as well as the theoretical accounting literature. For instance, Demirakos et al. (2004, p.221) cite Penman (2001), Copeland et al. (2000), and Palepu et al. (2000) to assert "that DCF is most widely used in practice". More recently, Muhlynina & Nyborg (2016, p.2 and P.18), who conducted an online survey that elicited 299 valid responses from investment professionals, likewise concluded that "The most popular multiperiod model is DCF". And, their findings revealed that "Seventy-six percent of respondents report that they use DCF almost always or always (conditional on using a multiperiod model)". Additionally, Brown et al. (2016, p.146), whose approach more closely matches the current research study, also implemented a mixed-methods research design. Specifically, their survey elicited 344 valid buy-side analyst responses from 181 investment firms, which were further supported by 16 detailed follow-up interviews. Their stated findings were: "Intrinsic value models and proprietary models [e.g., cash flow model, dividend discount model, residual income model] received the highest ratings (the majority say they use these models very frequently)". Further, affirming the theoretical perspective, Muhlynina & Nyborg (2016) remarked that finance textbooks continue to especially emphasize the technique of discounted cash flows (DCF). Interestingly, these findings stand in sharp contrast to the picture presented in Barker (1999), who reported that DCF models are of little practical importance to investment decisions. Even Arnold and Moizer's (1984, p.201) earlier seminal research paper reported that "Surprisingly, in view of its academic respectability, the discounted cash flow technique (net present value) is used only infrequently, although several analysts did note that it was used for the evaluation of shares in oil companies and shipping companies." It seems reasonable to conjecture that advances in computerisation may account for the observed differences in empirical results over time.

The questionnaire findings also corroborate the related DCF interview evidence [and vice versa] described in Chapter 6. For example, interviewee #1 summed up the usefulness of intrinsic models this way: "… [fund managers and analysts] will have those models, they will have their P/E's and all that, and they will have some net present value models, discounted cash flow models. They all have them. You know… they will not… have enough to make decisions. They will have to check, you know, check where they are. You know, it's a reality check, or whatever".

In contrast, the DDM response rates were not as 'positive' as the DCF results. As shown below, nearly half (47.9%; n=115) of the sample indicated they 'seldom' used dividend discount models (DDMs). A priori, this finding was largely expected. For example, Barker's (1999) findings, which comparatively were also based on interviews and questionnaire surveys of investment analysts and fund managers, found that both groups ranked the dividend discount model as unimportant (see also the review of the related finance, accounting and investment analyst literature in Chapters 4, 3 and 2, respectively). More recently, Muhlynina & Nyborg (2016, p.45) revealed in their "Table 6: Multiperiod models" findings that DDM was used by only 18% (n=232) of their survey respondents. This result was correspondingly less favourable than the 30% ('frequently'; n=72) DDM response rate indicated in the current sample as whole.

Interviewee #6 explained the usefulness of DDMs this way: "… the way you analyse some companies… you adapt it to the conditions of the markets…. for banking, you don't do a DCF. You could do DDM, dividend discount model, which is a little bit similar". Generally, the interview evidence indicated DDMs are somewhat useful for appraising banks and other financial service companies. On the other hand, interviewee #3 would not agree with this conclusion. He writes: "… I don't trust… the dividend discount model, I mean, it's useless.

Look at Berkshire Hathaway. I mean, ha, ha. Berkshire Hathaway would have a value of zero NPV…"

The empirical RIV questionnaire findings were largely an unexpected survey outcome. That is, the magnitude of the 59.8% (n=140; 'seldom') RIV response rate derived from the sample as whole was surprising because, a priori, Bradshaw (2004), Penman (2005), Ohlson (2005, 1995), Peasnell (1982) and Edwards & Bell (1961) all make mostly positive comments about them. For example, Bradshaw (2004) finds that investors could earn higher returns over a one-year holding period by relying on RIV models. Moreover, Penman (2005, p.367) writes: "During the last several years, residual income valuation (RIV) has become the centrepiece of accounting-based valuation… The RIV Model has increasingly been advocated as a practical alternative in financial statement analysis texts and valuation practice…". More recently, Gleason et al. (2013) arrived at a similar conclusion regarding the superior investment performance of RIV models. They investigated the influence of inferred valuation model use on the investment performance of sell-side equity analysts' published price targets. Their results document that substantial improvements in price target quality occur when analysts appear to be using a residual-income valuation technique. Generally, the media frequently make positive comments about EVA models, which often are heralded as a modern-day adaption of RIV methods that seemingly hold sway with investment management practitioners. Nonetheless, a posteriori, Muhlynina & Nyborg's (2016, p.45) "Table 6: Multiperiod models" findings reveal that the RIV model was used by only 9% (n=228) of their sample as a whole. Specifically, it was ranked the least useful model vs. the 6 intrinsic valuation models featured in their survey, and thus their empirical intrinsic results conveniently serve as independent corroboration of the current RIV research findings. Interestingly, Gleason et al. (2013) remarked that RIV use is somewhat more prevalent among analysts employed at small brokerage houses and among analysts who cover small firms or firms with low book-to-market ratios.

In conclusion, Penman (2005, p.367) sums up the usefulness of them this way; he writes, “It is of course imperative that a valuation model be consistent with valuation theory, but it is not sufficient. Valuation models are utilitarian – they serve to guide practice – so the choice between competing technologies ultimately comes down to how useful they are for the practical task of evaluating investments”.

Evidently, whilst RIV models may represent a practical alternative in financial statement analysis and valuation practice (Penman, 2005), they appear to also have their fair share of challengers.

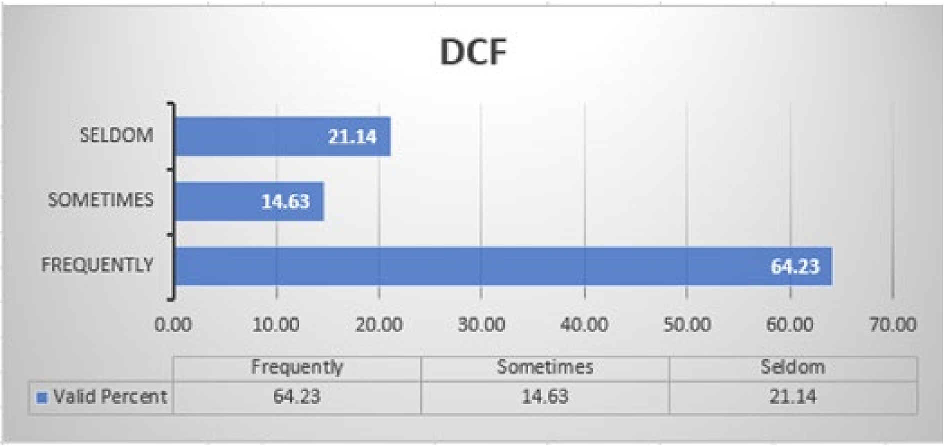


Figure 8.1A: DCF Valuation Model (Re-grouped responses)

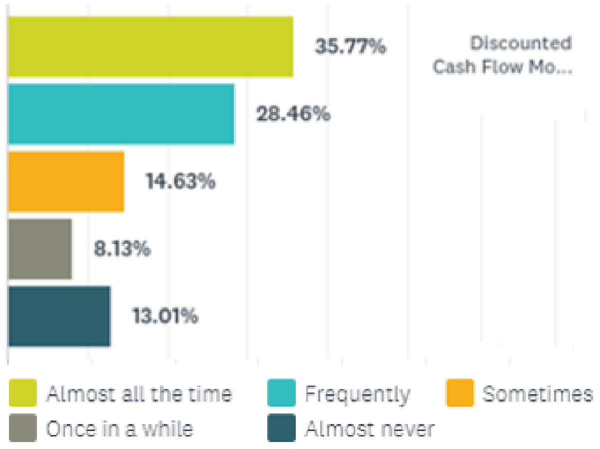


Figure 8.1B: DCF Valuation Model (Unabridged responses)

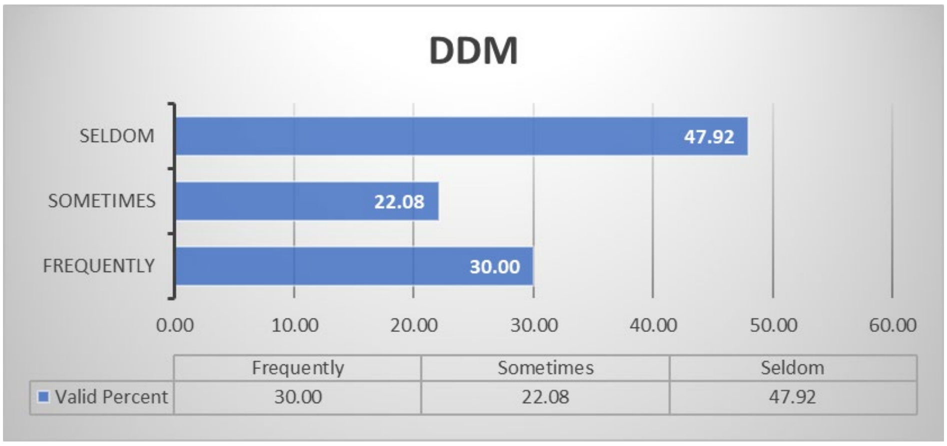


Figure 8.2A: DDM Valuation Model (Re-grouped responses)

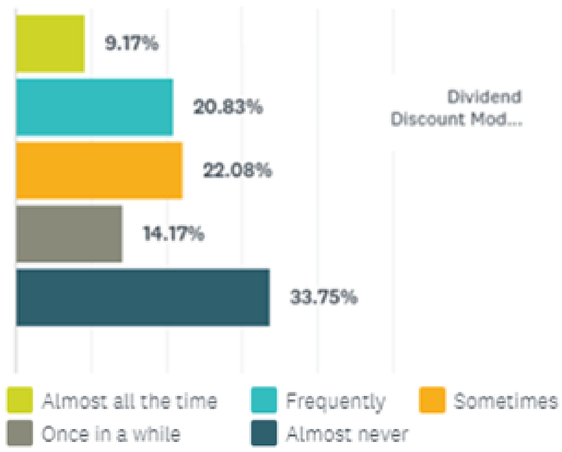


Figure 8.2B: DDM Valuation Model (Unabridged responses)

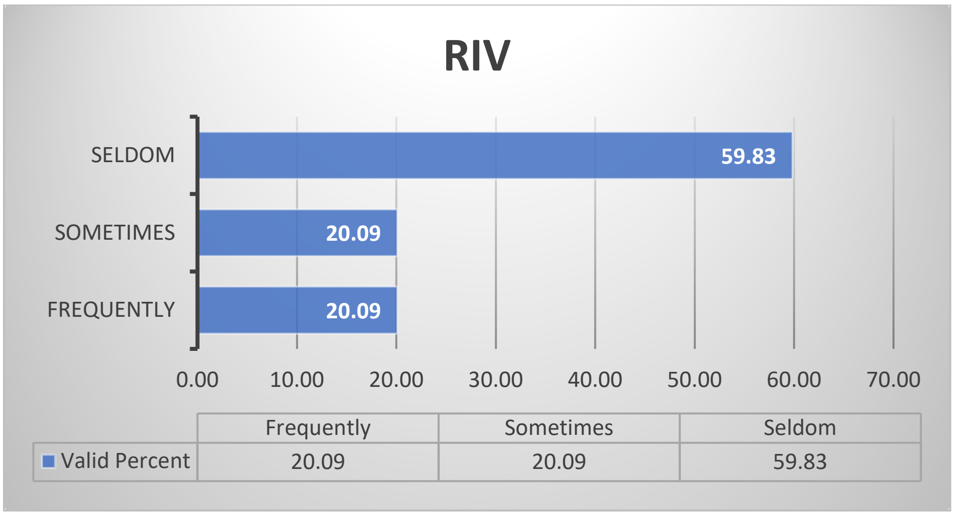


Figure 8.3A: RIV Valuation Model (Re-grouped responses)

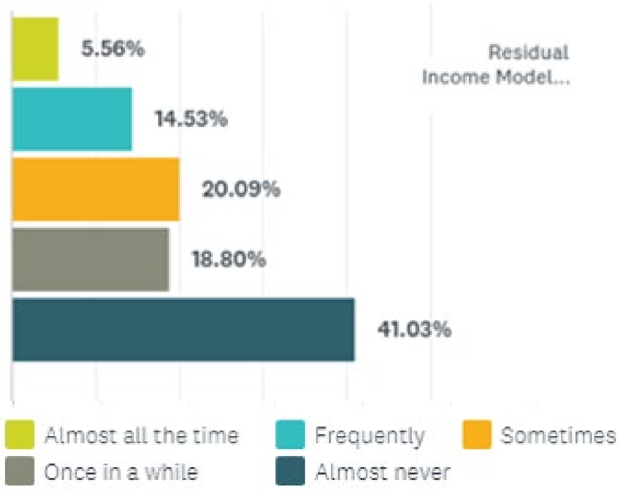


Figure 8.3B: RIV Valuation Model (Unabridged responses)

8.2.1.1 Cross-Tabulations (Job Title * Intrinsic Valuation Model)

For the purpose of identifying potential differences between portfolio managers, buy-side analysts and sell-side analysts, the ‘composite’ intrinsic valuation model responses (above) were disaggregated across the three investment management cohorts as shown in Figures 8.4 to 8.6 below.

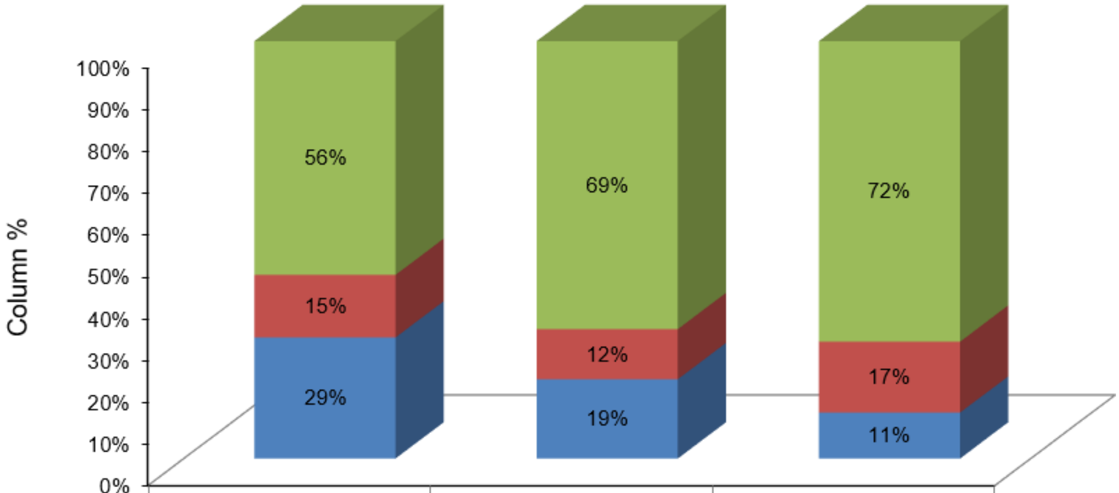
The DCF cross-tabulations reveal the existence of some notable schisms between the buy-side and sell-side cohorts. For example, more than twice as many portfolio managers (29%=seldom) reported 'seldom' using DCF methods compared to sell-side analysts (11%=seldom). Conversely, 16% fewer portfolio managers (56%=frequently) reported 'frequently' using DCF methods compared to sell-side analysts (72%=frequently). However, only a small 3% gap (69% minus 72%) separated buy-side analysts from their sell-side analyst colleagues.

The DDM cross-tabulations reveal only minor differences separated the three investment management cohorts.

The RIV cross-tabulations were likewise unremarkable, with only minor differences separating the three groups of respondents. Although given the known closeness of their working relationships, it was surprising to observe that the 'sometimes' RIV usage rates (26%) for portfolio managers were double those of buy-side analysts (13%).

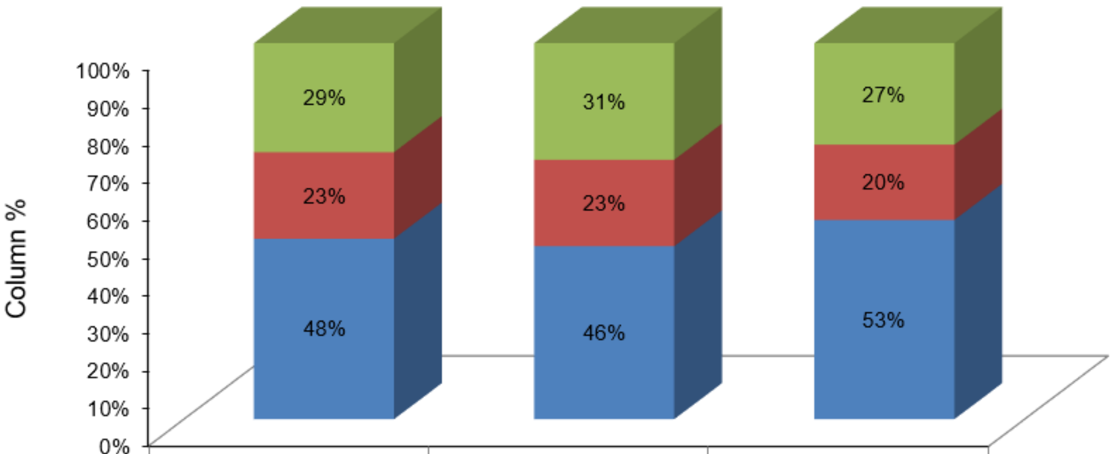
Overall, the picture presented in this section largely mirrors the evidence revealed in the previous section. That is, the majority of respondents in each job category indicated they 'frequently' used discounted cash flow (DCF) models to price equity stocks, whilst synchronously approximately half of each cohort reported 'seldom' using dividend discount (DDM) and/or residual income valuation (RIV) models. Overall, the most surprising finding was the relatively sizeable proportion of each group that reported 'seldom' using RIV models in practice.

In conclusion, valuation theorists who've studied the theoretical properties of several valuation frameworks (e.g. Penman, 2001; Copeland et al., 2000; and Palepu, 2000) assert that DCF and RIV, properly applied, result in identical valuations (see Demirakos et al., (2004). In the words of interviewee #3: "… In the end they're all the same if you do the right calculations. But NPV doesn't really calculate the real investment of capital. Ehm... Discounted Cash Flow, same problem… I mean that's the reason... And, Capital Asset Pricing Model… I used to do that some 25 years ago, until I realized that it doesn't make sense".



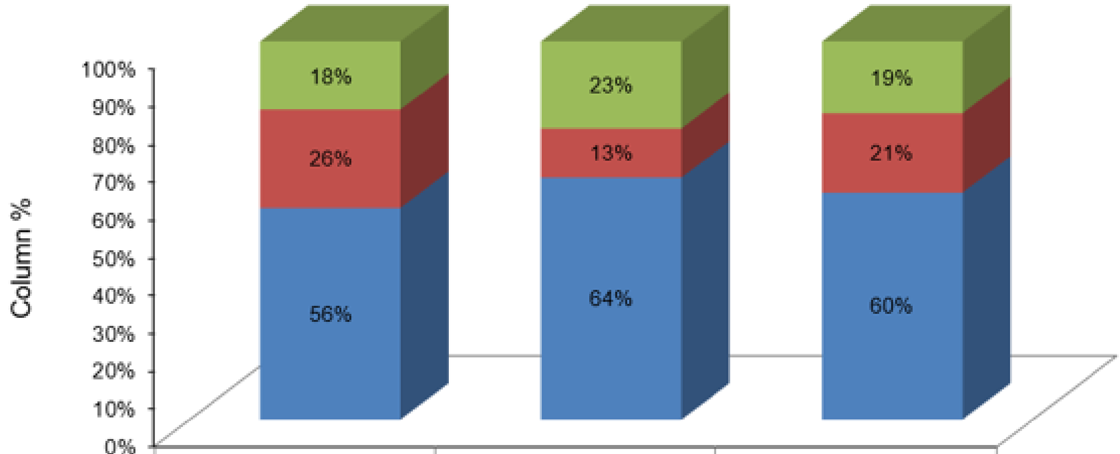
	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	56%	69%	72%
Sometimes	15%	12%	17%
Seldom	29%	19%	11%

Figure 8.4: Job Title * DCF Model



	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	29%	31%	27%
Sometimes	23%	23%	20%
Seldom	48%	46%	53%

Figure 8.5: Job Title * DDM



	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	18%	23%	19%
Sometimes	26%	13%	21%
Seldom	56%	64%	60%

Figure 8.6: Job Title * RIV Model

8.2.2 'Multiples' Accounting Valuation Models - Relative Value Indicators

Numerous well-researched studies have used valuation ratios as part of a prediction process (Wilcox,2007). This section extends the analysis of accounting valuation theory by examining the extent to which the following eight ‘relative’ valuation model types are used in practice to price equity stocks: i) Price-Book multiple (P/B model), (ii) Price-Earnings multiple (P/E model), (iii) Enterprise Value multiple (EV/EBITDA model), (iv) Shiller-CAPE multiple (CAPE model), (v) Price-Sales multiple (P/S model), (vi) Price-Cash flow multiple (P/C model), (vii) Earnings Yield multiple (E/Y model), and (viii) Dividend Yield multiple (D/P model). Selected results for the eight ‘multiples’ variables (questions) are shown in Figures 8.7, 8.8A and 8.8B.

The P/E model was the most frequently used multiple. Almost three-quarters (71.3%; n=176) of the sample’s respondents indicated they used it either ‘almost all the time’ (35.6%; n=88) or ‘frequently’ (35.6%; n=88), while almost one-fifth (18.6%; n=46) indicated they used it ‘sometimes’. The remainder of the sample (10.1%; n=25) indicated they ‘seldom’ used this valuation method in practice.

The EV/EBITDA model was the second most popular valuation multiple. Over half (63.3%; n=157) of the sample indicated they used it ‘almost all the time’ (28.6%; n=71) or ‘frequently’ (34.7%; n=86), while just over one-fifth (21.0%; n=52) indicated they used it ‘sometimes’. The remainder of the sample (15.7%; n=39) indicated they ‘seldom’ used it in practice to price equity stocks.

The P/B model was the third most popular valuation multiple. Over half (51.6%; n=125) of the sample indicated they used it ‘almost all the time’ (16.9%; n=41) or frequently (34.7%; n=84), while just over one-quarter (26.0%; n=63) indicated they used it ‘sometimes’. The remainder of the sample (22.3%; n=54) indicated they ‘seldom’ used it.

The P/C model was the fourth most popular valuation multiple. Over half (52.5%; n=127) of the respondents indicated they used it ‘almost all the time’ (19.0%; n=46) or ‘frequently’ (33.5%; n=81), while just under one-fifth (19.0%; n=46) indicated they used it ‘sometimes’. The remainder of the sample (28.5%; n=69) indicated they ‘seldom’ used it in practice.

The D/Y model was the fifth most popular valuation multiple. Just under half (45.2%; n=107) of the sample indicated they used it ‘almost all the time’ (19.0%; n=45) or ‘frequently’ (26.2%; n=62), while just under one-fifth (25.3%; n=60) indicated they used it ‘sometimes’. The remainder of the sample (29.5%; n=70) indicated they ‘seldom’ used it in practice to price equity stocks.

The E/Y model was the sixth most popular valuation multiple. Just under half (44.0%; n=103) of the respondents indicated they used it ‘almost all the time’ (19.7%; n=46) or ‘frequently’ (24.4%; n=57), while just over one-fifth (20.5%; n=48) indicated they used it ‘sometimes’. The remainder of sample (35.5%; n=83) indicated they ‘seldom’ used it.

The P/S model was the seventh most popular valuation multiple. One-third (33.6%; n=80) of the sample indicated they used it 'almost all the time' (10.9%; n=26) or 'frequently' (22.7%; n=54), while just under one-quarter (24.8%; n=59) indicated they used it 'sometimes'. The remainder of the sample (41.6%; n=99) indicated they 'seldom' used it.

The Shiller-CAPE model was the survey's least popular choice of valuation multiple. Almost two-thirds (65.27%; n=156) indicated they 'seldom' used it, while just under one-quarter (21.34%; n=51) indicated they used it 'sometimes'. The remainder of the sample (13.40%; n=32) indicated they 'frequently' used it.

Additionally, as an aid to the analysis, a 'catchall' multiples classification is included. It comprises two 'composite' multiples charts, also shown below. Together, these two 'generic' charts show that between one-half and three-quarters (64.4%; n=105) of the sample's respondents used a 'multiples' valuation model either 'almost all the time' (34.4%; n=56) or 'frequently' (30.1%; n=49), while circa one-fifth (21.5%; n=35) indicated they used them 'sometimes'. The remainder of the sample (14.1%; n=23) indicated they 'seldom' used them in practice.

To summarise, as reflected in the 'Generic' charts, the evidence presented in this section demonstrates that, overall, most of the sample (85.9%; n=140) 'frequently' and/or 'sometimes' use accounting multiples to price equity stocks, while only a relatively small portion of the sample (14.1%; n=23) indicated they 'seldom' use them.

Overall, the most conspicuous finding relates to the P/E ratio. The finding indicates it is the most frequently used accounting multiple in practice, that is, 222 respondents indicated they use it almost ninety percent (90%) of the time, that is, 'frequently' (71.26%; n=176) or 'sometimes' (18.62%; n=46). This finding is amply corroborated viz. the accounting, finance and investment management literature, see for example Forte et al. (2018), Mukhlynina and

Nyborg (2016), Bunn et al. (2014), Clatworthy and Jones (2008), Bradshaw (2004, 2002), Demirakos et al. (2004), Block (1999), Barker (1999), Fouche and van Rensburg (1999), Miles & Nobes (1998), Pike et al. (1993), Arnold and Moizer (1984) and Moizer and Arnold (1984). To illustrate, Demirakos et al. (2004, p.234) show in their study of the valuation methodologies contained in 104 analysts' reports that "Across all sectors, a PE model is the dominant model in 55.5 (53.4 percent) of the reports". Their study also showed that "PE multiples were the dominant valuation model in 68.8 percent of reports in the beverages sector, in 39.7 percent of reports in the electronics sector, and in 52.6 percent of reports in pharmaceuticals." Comparatively, Asquith et al. (2005), who analysed a sample of 1126 analyst reports delivered from 1997 to 1999, demonstrate that all analysts who cited a valuation method employed an earnings multiple. Correspondingly, Block (1999) reported that analysts rely more heavily on earnings multiples than intrinsic DCF methods of valuation. Also, Bradshaw (2002) demonstrates that analysts tend to justify favourable stock recommendations and target prices with reference to low P/E ratios relative to growth projections. Although in the spirit of caveat emptor, interviewee #5 warns that PE multiples are potentially one of the most divisive valuation methods used in practice. Nonetheless, Imam et al. (2008) show that DCF and P/E are the only two models which are generally highly rated by analysts from all sectors.

Whilst the evidence indicates the price-earnings ratio is the most popular relative valuation metric in use, the literature shows practitioners frequently rely on different versions pursuant to their definition of net earnings, e.g. whether trailing or forward. Forte et al. (2018) and Schreiner, (2007) suggest forward PE metrics are better value indicators than trailing PEs because price discounts expected earnings, and multiples based on two-year-ahead forecasts (not just one year ahead) are strongly more accurate. However, when used for portfolio construction and asset allocation decisions, these simple heuristics do not always work well.

For example, Forte et al.'s (2018, p.17) regression findings "confirm that basing investments on the valuations yielded by forward P/Es might lead to weak results". In fact, they found that multiples involving forward-looking P/E unexpectedly yielded the worst risk-adjusted returns. Aside from the range of multifarious PE multiples that abound in the literature and practice, Yi et al. (2018) highlight several non-firm-specific factors that can also influence them, for example: stock market maturity (Graham and Dodd, 1934); stock market efficiency (Fama 1965, 1970); price bubbles, i.e. the spontaneous behaviour of individuals in the stock markets (Shiller, 2000; Allen & Gorton, 1993); interest rates; GDP growth rates; and risk factors peculiar to individual countries or regions (Damodaran, 2001). Furthermore, the interview findings stress the importance of specialised sell-side industry knowledge coupled with industry specific multiples. But caveat emptor viridis, neither the literature nor this study's interview or questionnaire findings purport to be unequivocal. To illustrate, Mukhlynina and Nyborg (2016, p.15) determined that "there does not seem to be a general rule as to what the best performing multiple actually is."

Intriguingly, the evident popularity of PE ratios in the literature and this study fails to resonate with the study's Shiller-Cape findings. That is, the majority of the respondents (65.27%; n=156) indicated they 'seldom', if ever, used the cyclically adjusted price-earnings (CAPE) ratio to make investment decisions. This was a surprising finding in light of the many positive comments attributed to it in the accounting, modern finance and behavioural finance paradigms of the literature, see for example Keimling (2015), Bunn et al. (2014), Shiller (2005), and Campbell & Shiller (1988, 1998, 2001). Nor do the results fit with the interview findings; for example, as interviewee #4 remarked: … " We know the most important factor [critical success factor] of the portfolio is asset allocation. That means, if I invest in stocks or not, or in cash… that's the most important factor, research on asset allocation, … or… sector and country allocation. So I think the most important research we did are… the studies on CAPE ratio, Shiller-Cape, and other fundamental indicators. There is our focus. So it's not so relevant if I invest in the German Bayer or in the German BASF. It's more important if I invest in Germany or in Japan, or in Automobile or in Healthcare, or in Cash. And so I would say Asset Allocation is the most important thing". Arguably, this PE vs. Shiller-Cape anomaly is symptomatic of the wider theory vs. practice schism evident in this study and within the investment management industry as a whole.

Nevertheless, as intimated earlier, practicing investment managers rarely confine their decisions-making solely to P/E multiples and/or the Shiller Cape multiple. Instead, the extant empirical literature indicates they tend to focus on a short-list of multiples – the evidence suggests in the region of five to eight (Schreiner, 2007) – and then they base their final investment decisions (recommendations) on the most value-relevant one or two of these.

EV/EBITDA was ranked the second most useful multiple overall; 84.3% of the sample indicated they use it 'frequently' (63.31%; n=157) or 'sometimes' (20.97%; n=52). Comparatively, Mukhlynina and Nyborg (2016) reported EV/EBITDA was the most popular ratio (overall) in their valuation survey, whilst indicating asset managers were also heavy users of PE. Their results showed 84% of their sample used the EV/EBITDA multiple 'always' or 'almost always' when performing a multiples valuation analysis. These findings are also consistent with Clatworthy and Jones (2008, p.351) who in keeping with the current research approach also adopted a mixed methods research methodology incorporating questionnaires and semi-structured interviews disseminated to fund managers and analysts. Their results revealed "8 out of 11 analysts (73%) specifically referred to their reliance on EBITDA, but only 50% of fund managers referred to it." They explained that analysts, who are typically industry specialists, need to compare companies; whereas fund managers, who are typically country specialists, use comparative data less. They also reported that EBITDA is a superior comparative earnings measure for the analysis of overseas equities because it strips out major international accounting differences that may arise from the treatment of debt, taxes, depreciation and goodwill. In addition, they suggested EBITDA adds to the informational content of the income statement by providing an enhanced view of the operational profitability of the firm. In contrast, Francis et al. (2003) show fully inclusive earnings measures are superior to EBITDA in explaining US share returns. Thus, while EBITDA may enhance comparability, there is a risk that EBITDA omits potentially value-relevant information which is typically captured by conventional earnings measures.

The PC multiple (price to operating cash flow ratio) was ranked the third most useful multiple overall; 71.49% of the sample indicated they use it ‘frequently’ (52.48%; n=127) or ‘sometimes’ (19.01%; n=46). Correspondingly, Brown et al. (2015, p.4 and p.15) ranked cash flow models second in order to PE ratios. They explained their result as follows: “The factors analysts believe are most indicative of high-quality earnings include that earnings are backed by operating cash flows, are sustainable and repeatable, reflect economic reality, and reflect consistent reporting choices over time”. Similarly, Brown et al. (2016, p.140) added: “Buy-side analysts also believe the most important attribute of high-quality earnings is that earnings are backed by operating cash flows.” Additionally, DeFond and Hung (2003) found that analysts' cash flow forecasts provide useful information when earnings lack quality or relevance. Intriguingly, Schreiner’s (2007) study of European stock markets indicated that the PC multiple was better than the PB multiple when used for stock valuation purposes or to support recommendations.

The PB multiple (price to book value and price to total assets) was ranked the fourth most useful multiple overall; 77.68% of the sample indicated they use it ‘frequently’ (51.65%; n=125) or ‘sometimes’ (26.03%; n=63). Imam et al. (2008) reported a similar finding in their financial and industrial sectors’ survey; their comparative PB multiple score (vs. the current ‘frequently’ score) ranked just above mid-rating. However, as the ensuing discussion demonstrates, generalised rankings such as these offer only limited research value. Nonetheless, as explained below, the current P/B ranking is lower than what had been expected a priori based on the evidence disclosed in this study's extant literature reviews, see Chapters 2, 3, 4, 6, 7, 8 and 10.

First popularised some 90 years ago by Graham & Dodd (1934, 1949), the accounting, finance and investment management paradigms of the literature continue to consistently affirm its importance in investment management decision-making, see for example Almumani (2014), Gleeson et al. (2013), Malhotra and Tandon (2013), Hossain and Nasrin (2012), Imam et al. (2008), Demirakos et al. (2004), Park and Lee (2003), Lie and Lie (2002), Kothari (2001), Piotroski (2000), Dechow et al. (2000), Agarwal et al. (1996), Fama & French (1992; 1993; 1999) and Basu (1983).

To illustrate, Lie and Lie (2002) show that book value multiples deliver more accurate estimations than revenues and earnings multiples. Although they noted its precision was significantly influenced by firm size, profitability, and the presence of intangibles. Park and Lee (2003) conducted a similar study on the Japanese stock market and found that P/B is more predictive than ratios using earnings, EBIT, revenues, and cash flow. Herrmann and Richter (2003) show that the P/B multiple is superior to the EV/EBITDA multiple, so long as comparable firms are chosen according to ROE and earnings growth, instead of industry groupings alone.

More recently, Forte et al. (2018) show that the PB measure is more suitable for financial institutions and capital-intensive businesses, although it is less important in those industries where the key objective is prospective growth, such as technology or new social media. In contrast, Piotroski et al. (2016, p.651) state: "The firm's book-to-market ratio, BTM, captures its growth options and level of financial distress and is measured as the firm's most recently reported book value, scaled by its market value of equity on the date of the analyst report". However, as stated in Schreiner (2007, p.42): "the use of the P/B multiple with industrial firms requires care because reported numbers for assets are based on historical costs, which are typically an unreliable indicator of economic value. Frykman & Toleryd (2003, p.65) nonetheless assert that the P/B multiple "is best used on firms in capital-intensive industries (e.g., oil & gas or financials) where tangible (financial) assets are the source of value generation" (cited in Schreiner, 2007). More generally, Imam et al. (2008) affirm that both P/B and P/E are important in the financial sector, while low ratings usually attach to other accrual methods. Correspondingly, Tasker (1998) and Barker (1999a) find that practitioners prefer using P/B and P/E multiples in the financial industry; price to operating cash flow (P/OCF) multiples in the consumer services industry; and P/D multiples in the utilities industry.

Additionally, a related stream of the literature attaches considerable importance to binary combinations of price to earnings (P/E) and price to book (P/B) ratios, indicating these measures provide useful indications of value and growth stocks (Penman, 2011; Wilcox and Philips, 2005; Bhojraj et al., 2003; Cheng and McNamara, 2000; Fairfield, 1994; Fama-French, 1992, 1993; Block, 1995; Wilcox, 1984 and Block, 1964). For example, Cheng and McNamara (2000) show that combinations of P/E and P/B multiples perform better than either P/E or P/B alone, which suggests that both earnings and book value fundamentals are relevant to value. Fairfield (1994) also demonstrates how combinations of P/E and P/B ratios can be used to construct non-risk-adjusted profitable trading positions. Alternatively, Fama and French (1992 and 1993) demonstrate how combinations of P/E and P/B ratios are used to construct risk-adjusted portfolios that can generate abnormal returns over the longer term. In contrast, Penman (2011) uses different combinations of P/E and P/B ratios to argue that the so-called 'value premium' is an erroneously labelled concept that assigns greater risk to 'growth stocks' and not less risk as argued in Fama and French (1992, 1993). Nonetheless, leaving aside the specific idiosyncrasies of one prominent academic's valuation approach over another, the current research evidence supports the fundamental truth described in Imam et al. (2008, p.515) that "Consistent with earlier studies, it is apparent that valuation models are complementary to each other, that is, valuation models are perceived to be important in combination, not in isolation".

Even so, the emphasis placed on book values in the accounting and finance literature – whether used as standalone multiples or in combinations – has its fair share of antagonists. For example, Ohlson (2005) and Ohlson & Juettner-Nauroth (2005) critique the emphasis placed on book values (and earnings) when valuing a firm. Instead, their abnormal earnings growth (AEG) model specifies earnings per share rather than earnings and book values as the focus of value. Moreover, Penman (2005) describes how AEG models differ from RIV models by specifying earnings per share rather than earnings and book values.

In a similar vein, the interview findings (Chapter 6) indicated that portfolio managers may no longer be inclined to rate PB models as highly as the extant literature suggests. For example, interviewee #3, who is featured in the "Great Minds of Investing" (Leber, 2015), stated "… We've tested about 1 million factors and come up with about 80 that are useful. There are unusual factors… we aren't academics, we simply look at them; do they work, or don't they work…We tested everything that we could get our hands on". So just there, based on what this world-renowned value investor has asserted, it appears the decision-making relevance of PB models is waning versus the multiplicity of alternative signals that investment managers can utilise. That is, rather than make investment decisions based solely on standalone PB multiples and/or simplistic two, three, four or five factor combinations of same (Fama and French, 2017, 2016, 2015, 2012, 1995, 1993, 1992; Novy-Mark, 2015, 2012; and Carhart, 1997) – it seems more likely, considering today's new hi-tech/big-data investment management reality, that investment managers are evaluating investments and portfolios using increasingly more sophisticated multi-factor valuation models. Imam et al. (2008) also assert that investment managers might be turning to alternative, more sophisticated, valuation methods if these are perceived to better meet their needs.

The DY multiple was ranked the fifth most useful multiple overall was ranked the fourth most useful multiple overall; 70.47% of the sample indicated they use it 'frequently' (45.15%; n=107) or 'sometimes' (25.32%; n=60). Comparatively, Imam et al. (2008, p.512) indicated DY's "use as a primary valuation model is very limited". It was ranked tenth of thirteen valuation models listed on their 'Table 2. Panel B: Valuation model usage (content analysis)'. Similarly, Moller and Sander (2017) argue that the dividend yield by itself is a poor predictor of performance. However, consistent with Ang and Bekaert (2007), they find that dividend growth becomes strongly predictable when dividend and earnings yields are combined in a joint DY_EY model specification. Further, Barker (1999) – in a comparable study of UK analysts and fund managers – ranked the dividend yield model alongside the PE model as the two most important valuation measures. Notwithstanding these results, Imam et al. (2008, p.517) noted that "buy-side analysts argue that the DY is a supplementary measure, not a primary one." In this context, when they asked buy-side analysts to rate the importance of DY, they rated it highly; whereas the opinions of sell-side analysts were shown to be mixed.

The EY multiple was ranked sixth most useful multiple overall; 64.53% of the sample indicated they use it 'frequently' (44.02%; n=103) or 'sometimes' (20.51%; n=48). It is the reciprocal of the P/E and is commonly labelled a reasonable approximation of the real expected return to equity (Wilcox, 2007; Greenblatt, 2006; Siegel 2005). Moreover, Wilcox (2007) claims an earnings yield approach to valuation is superior to the Gordon DDM approach. Specifically, he contends that his adjusted earnings-yield measure created for the U.S. equity market is a much better predictor of near-term real equity returns than other popular valuation measures. Comparatively, Bali et al. (2008) show that earnings yield has significant explanatory power at the firm level and under certain conditions at the industry level, but not at the market level. Analogously, Greenblatt (2006) created an adjusted earnings yield formula that is currently popular among practitioners. Campbell and Shiller (1988a) additionally derived an adjusted EY ratio (1/CAPE) that is analogous to the renowned Shiller-Cape (price-earnings) multiple. Their results indicate that a long moving average of real earnings to the current stock price is a powerful predictor of the return on a stock, particularly when the return is measured over several years. Likewise, Rangvid (2017) show that the cyclical-adjusted earnings yield (CAPE) tracks future returns particularly well. In contrast, Lewellen (2004) finds that dividend yield has more explanatory power than earnings yield for the excess market return. Paradoxically, Shiller (1984) shows that earnings yield has less predictive power than dividend yield at the aggregate level. Moreover, Wilcox (2007) concedes that there are time periods when the traditionally reported EY and PE multiples will provide a poor estimate of the true worth of a stock. Notwithstanding the often-dissonant nature of the extant evidence, the current research findings indicate EY is a less popular measure of expected returns than many of the other metrics described herein.

The PS multiple was ranked the seventh most useful multiple overall; 58.4% of the sample indicated they use it ‘frequently’ (33.61%; n=80) or ‘sometimes’ (24.79%; n=59). Comparatively, Herrmann and Richter (2003) show that metrics based on sales are the least reliable, while those built on earnings are the most reliable. Nonetheless, Armstrong et al. (2011) argue that the market capitalization to revenue ratio (price/sales ratio) is of central interest in many areas of capital market investment analysis and research, not least valuation research.

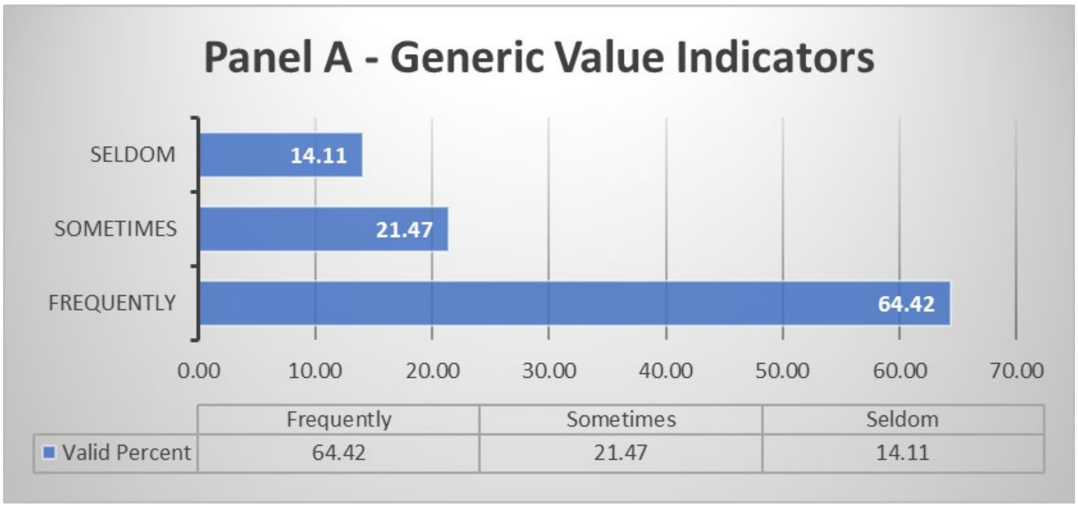
Finally, the Shiller-Cape multiple (as known as the P/E 10 ratio) was ranked eight most useful valuation multiple overall; 34.74% of the sample indicated they use it ‘frequently’

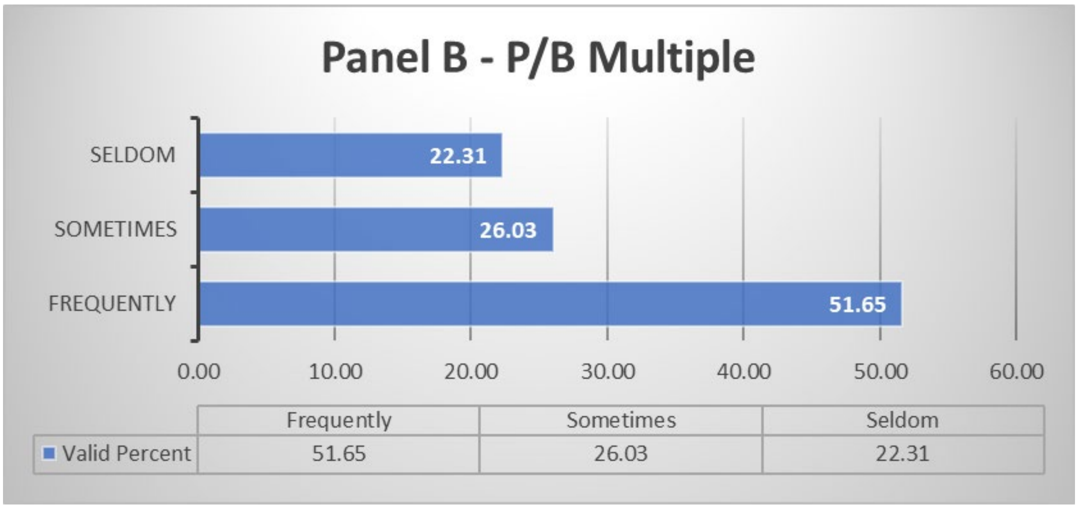
(13.40%; n=32) or 'sometimes' (21.34%; n=51). This is a surprising finding considering the many positive comments attributed to it in the investment management literature (Siegel, 2016; Keimling, 2016; Bunn, et al., 2014; Shiller, 2005; Campbell & Shiller, 1988, 1998, 2001; and Graham and Dodd, 1934). Specifically, their research demonstrates that under-valued equity markets achieve higher future LT returns vs. their over-valued counterparts. And while many different valuation measures purport to capture profitable future investment opportunities, not all of them are equally effective. In this light, Graham & Dodd (1934) suspected that cyclical fluctuations in earnings could adversely affect the validity of the P/E (as well as the other valuation measures described in this chapter). As a result, they recommended using an average of earnings for the last 7 to 10 years to calculate the P/E. Subsequently, based on their recommendations, "Shiller defined the numerator of P/E(10) as the real S&P 300 and the denominator as the moving average of the preceding 10 years of real reported earnings. The CPI was used to adjust for inflation." (cited in Wilcox, 2007, P.61). Furthermore, while existing research indicates that the cyclically adjusted Shiller-CAPE has predicted long-term returns in the S&P 500 since 1881 somewhat reliably, Keimling (2016) shows that this was also the case for 16 other international equity markets in the period from 1979 to 2015. In addition, CAPE enabled equity market risks to be gauged. In this manner, low market valuations were not only followed by above average market returns, but also lower drawdowns. On the contrary, high market valuations led to lower returns and faced higher market risks. More recently, Siegel (2016, p.47) affirmed that "The CAPE ratio is a very powerful predictor of long-term real stock returns."

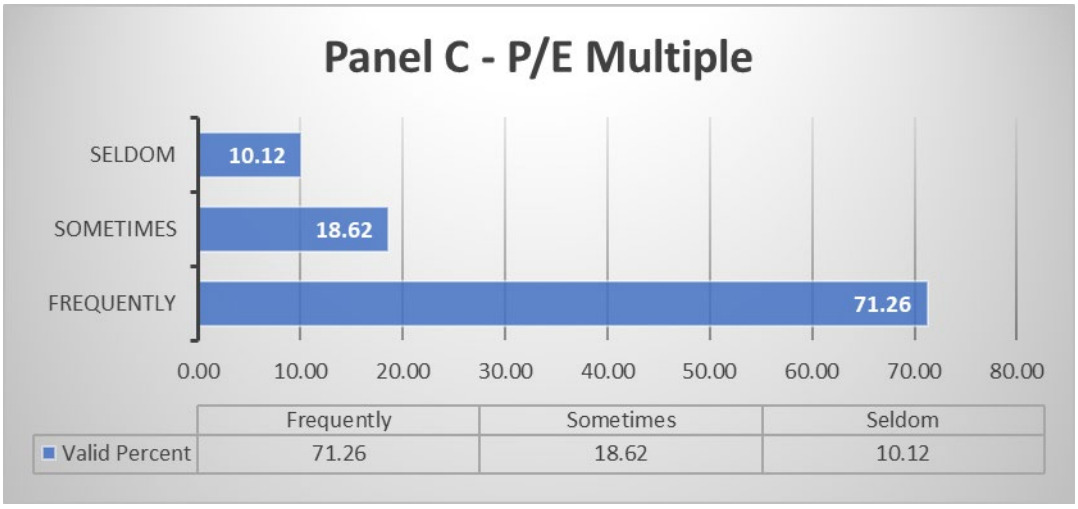
Also, the current Shiller-Cape questionnaire findings do not accord with the interview evidence. To illustrate, as interviewee #4 asserted: "… I think the most important research we did are… the studies on CAPE ratio, Shiller-Cape, and other fundamental indicators." The context of this quotation related at the time to the high valuation of the US stock market (arguably even more so in early 2019), which in turn implies US investors can only expect below-average returns coupled with higher downside potential. Hence the pragmatic real-world appeal of CAPE to interviewee #4. In contrast, Dimitrov and Jain (2018) contend that market timing strategies using CAPE should not be profitable. Likewise, other CAPE commentators (Lahart, 2016) argue that the Shiller-Cape ratio may be sending false signals about stocks. Moreover, Vanguard (2012) showed that the CAPE ratio as a market signal was weak and not trustworthy; it failed more often than it succeeded.

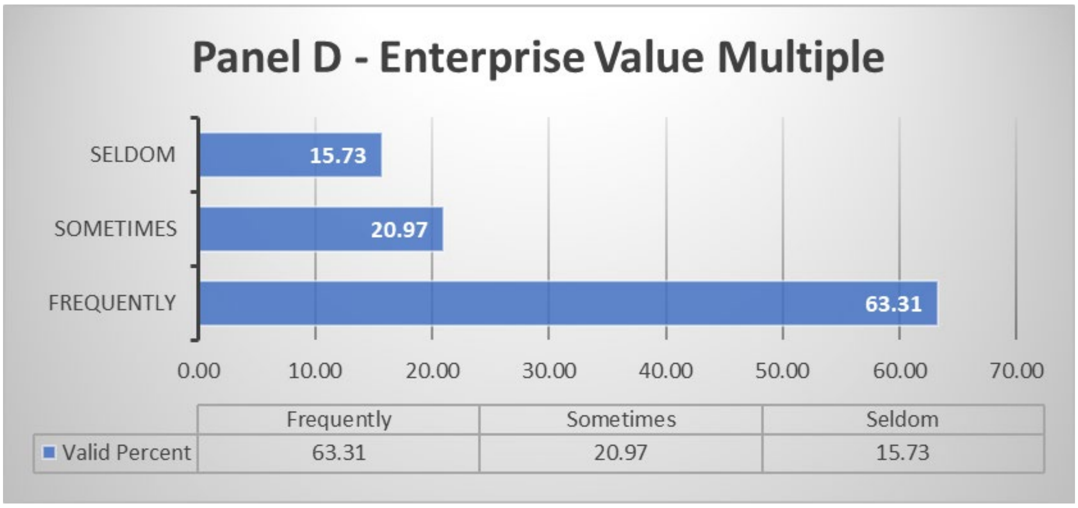
Overall, these findings align with what it says in the accounting and finance literature and with what the interviewees reveal in Chapter 6. Consistent with Bradshaw (2004), most empirical studies show that investors and analysts frequently rely on at least some of these models to support their stock recommendations. The implied inference is, irrespective of whether investors are rational, markets are efficient, or returns are random, the investment community still requires standards of comparison to justify their latest trading decisions. In this respect, despite their deficiencies, accounting multiples have much to offer investors [fund managers] and financial analysts [buy and sell-side].

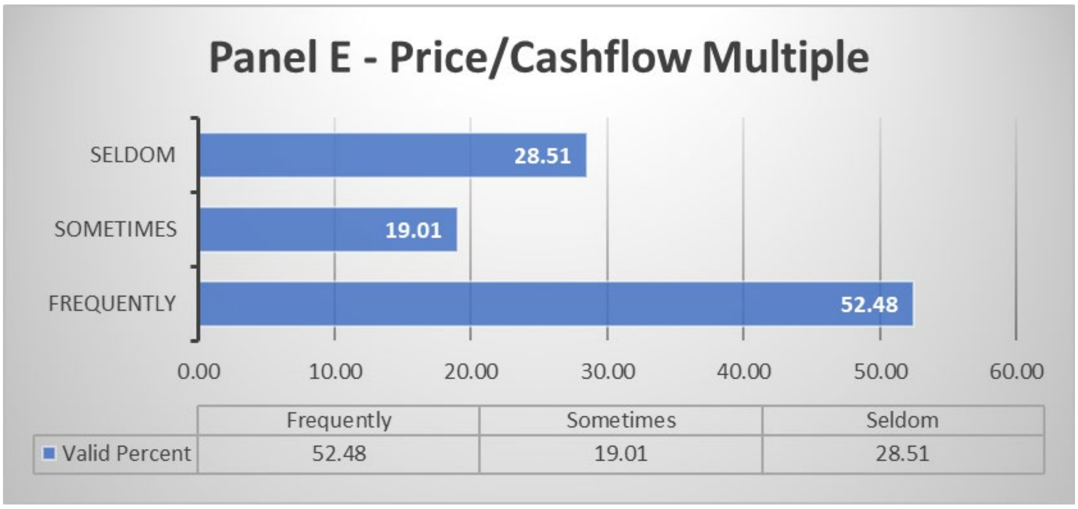
Nonetheless, while interesting, these results offer only limited research value because they mostly impart what is already known in the literature, see for example Chapter's 2, 3 and 4. Thus, in order to develop a fuller answer to the research question relating to how widely accounting and finance multiples are used in practice, the composite relative frequency distributions discussed in this section, and shown in Figures 8.7, 8.8A and 8.8B below, are disaggregated across the three investment management cohorts [portfolio managers, buy-side analysts and sell-side analysts] in the manner described in the next section.

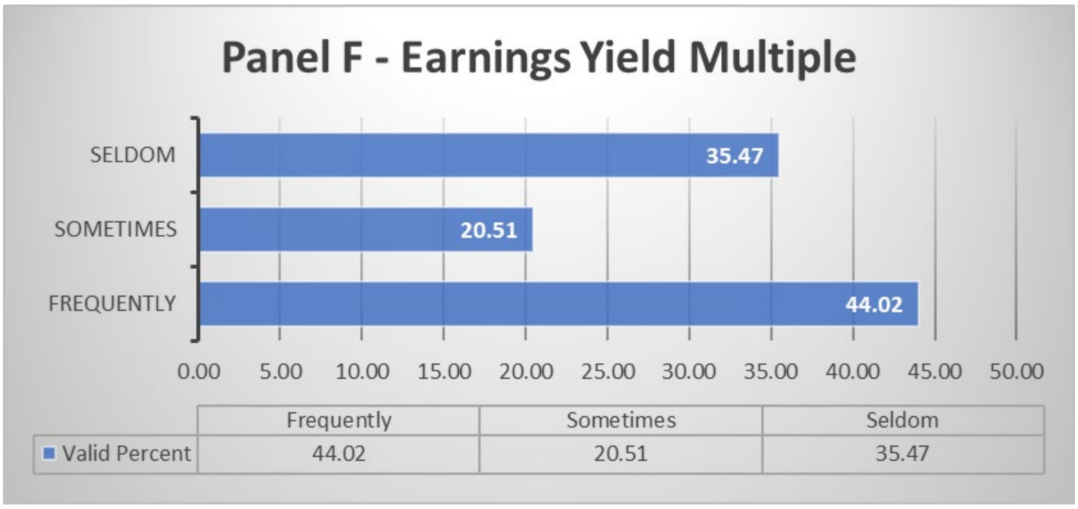

Panel A - Generic Value Indicators
SELDOM
SOMETIMES
FREQUENTLY
14.11
21.47
64.42
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
Frequently
Sometimes
Seldom
Valid Percent
64.42
21.47
14.11


Panel B - P/B Multiple
SELDOM
SOMETIMES
FREQUENTLY
22.31
26.03
51.65
0.00
10.00
20.00
30.00
40.00
50.00
60.00
Frequently
Sometimes
Seldom
Valid Percent
51.65
26.03
22.31


Panel C - P/E Multiple
SELDOM
SOMETIMES
FREQUENTLY
10.12
18.62
71.26
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
Frequently
Sometimes
Seldom
Valid Percent
71.26
18.62
10.12


Panel D - Enterprise Value Multiple
SELDOM
SOMETIMES
FREQUENTLY
15.73
20.97
63.31
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
Frequently
Sometimes
Seldom
Valid Percent
63.31
20.97
15.73


Panel E - Price/Cashflow Multiple
SELDOM
SOMETIMES
FREQUENTLY
28.51
19.01
52.48
0.00
10.00
20.00
30.00
40.00
50.00
60.00
Frequently
Sometimes
Seldom
Valid Percent
52.48
19.01
28.51


Panel F - Earnings Yield Multiple
SELDOM
SOMETIMES
FREQUENTLY
35.47
20.51
44.02
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
Frequently
Sometimes
Seldom
Valid Percent
44.02
20.51
35.47

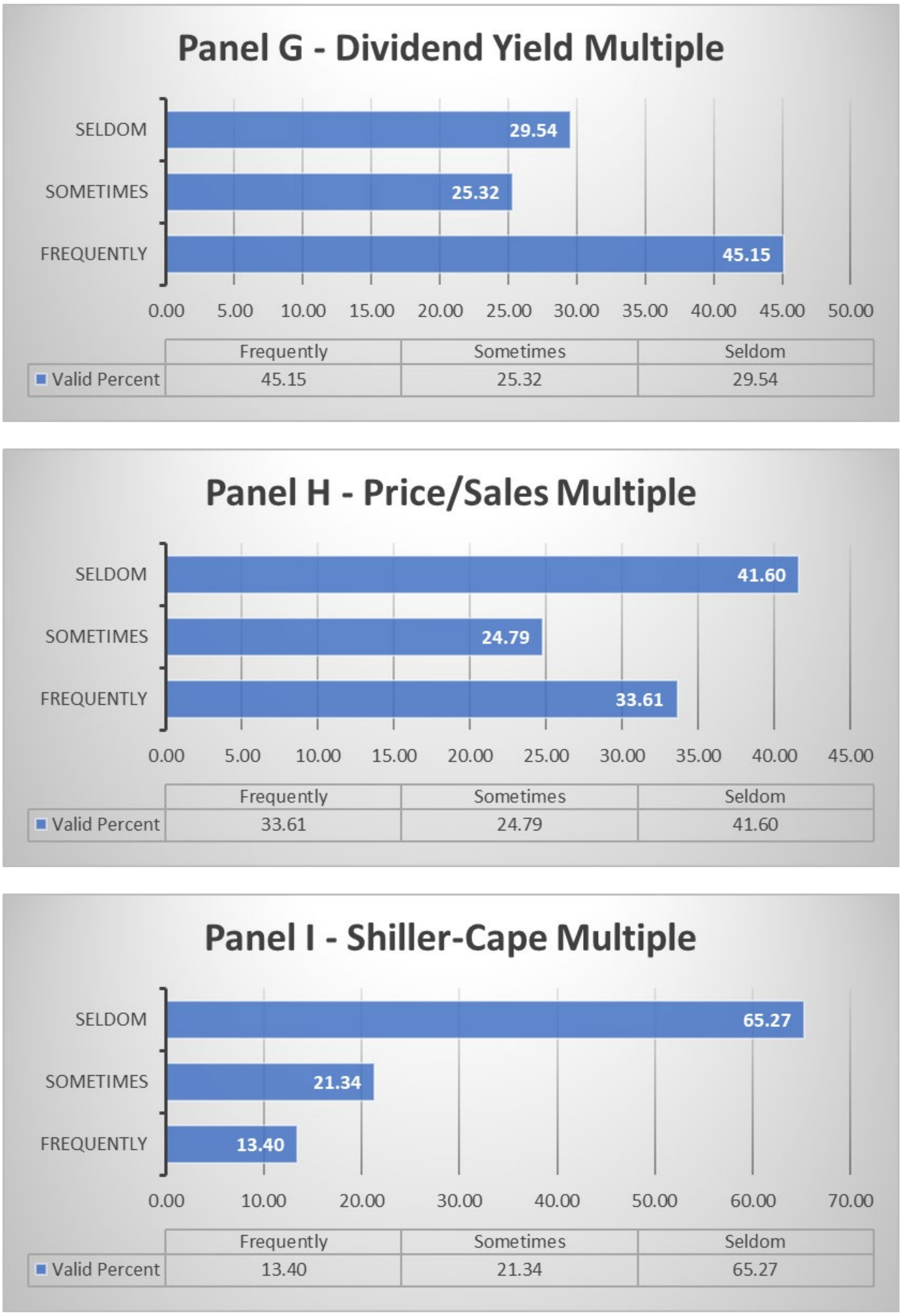


Figure 8.7 - Panels A to I: Multiples Valuation Models (Re-grouped responses)

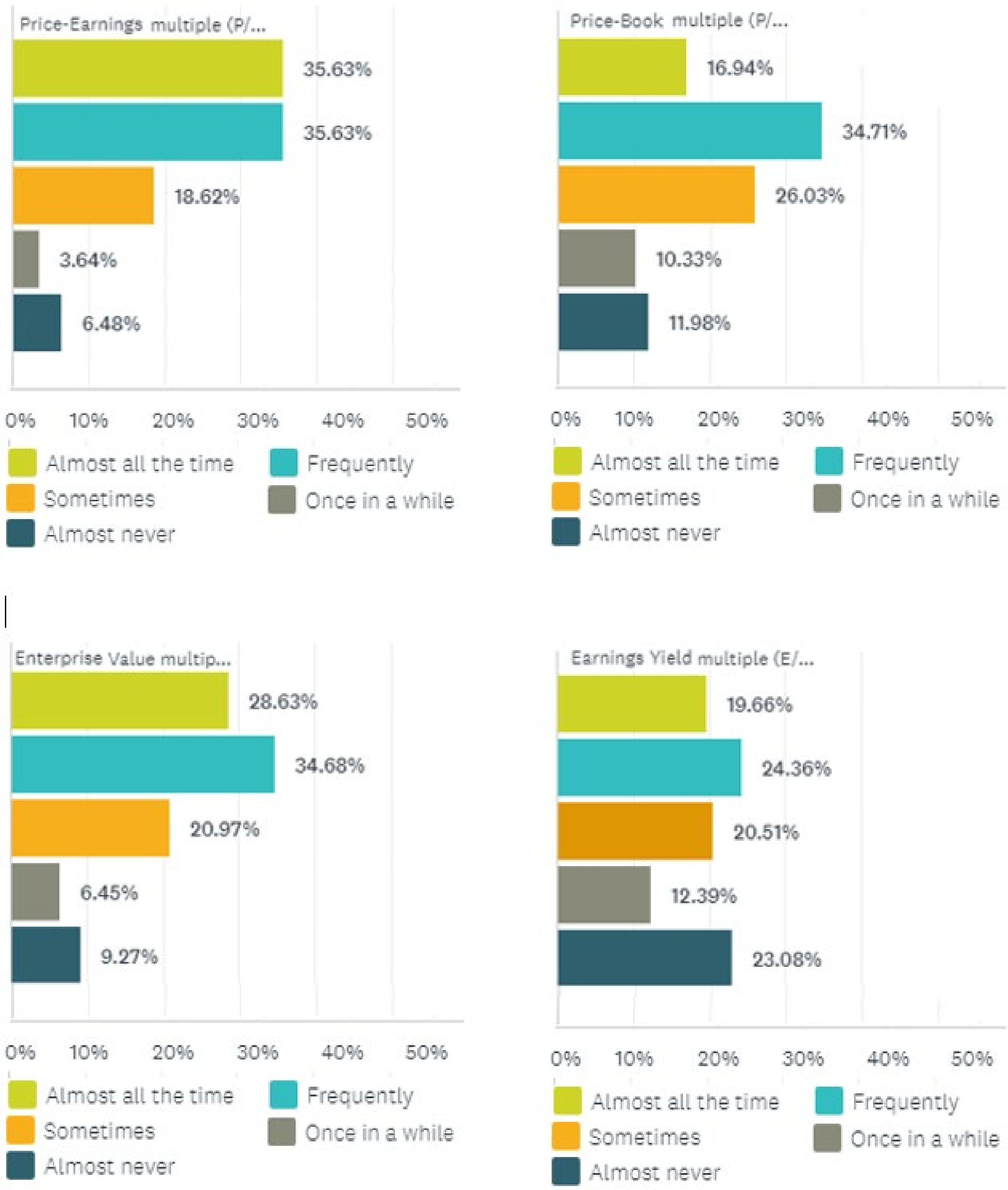


Figure 8.8A: Multiples Valuation Models (Unabridged responses)

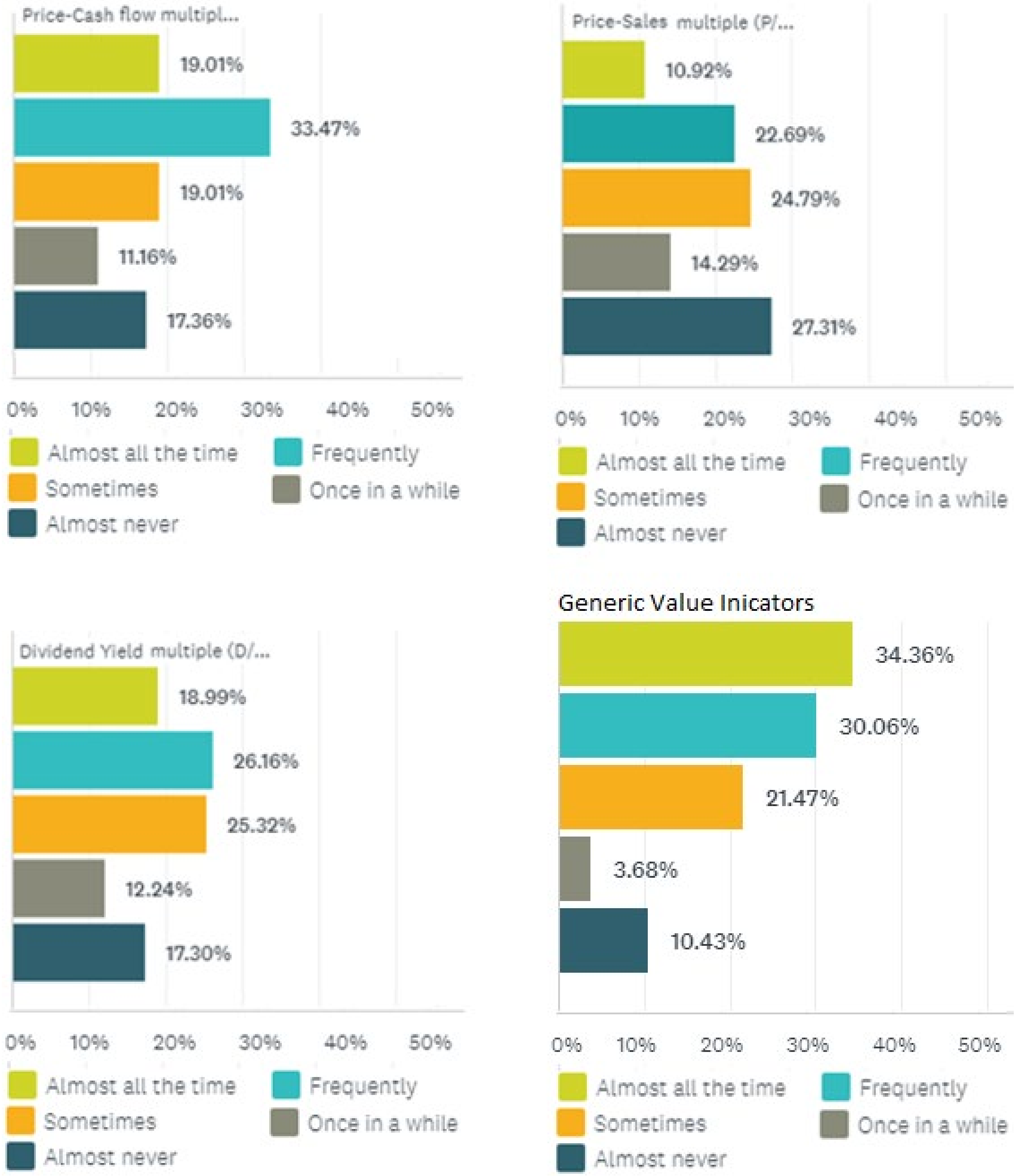


Figure 8.8B: Multiples Valuation Models (Unabridged responses)

8.2.2.1 Cross-Tabulations (Job Title * Multiples Valuation Model)

The previous discussion reveals investment opinion, concerning how well specific multiples fit into the broader comparative performance analysis of companies and/or equities in practice, is far from unequivocal. The contention in this section is that even when individual investment managers hold similar sounding job titles or share similar investment proclivities, differences in their opinions still arise; which in turn gives rise to a range of dysfunctional decision-making behaviours that often negatively impact investors. But the degree to which investment opinion varies across similar or disparate groups of investment managers is not widely known or discussed in the literature. Therefore, for the purpose of identifying potential differences between portfolio managers, buy-side analysts and sell-side analysts, the respondents' seemingly favourable dispositions vs. multiples valuation models are examined more closely using the nine contingency charts shown below, see Figures 8.9 to 8.17 and Table 8.1

In the first instance, referring to the 'Generic' chart (Figure 8.9), it appears the three job cohorts held broadly similar views regarding the usefulness of multiples valuation models to price equity stocks. However, the evidence indicates some notable differences divided them also.

To illustrate, the composite 'Generic' chart indicates only a small 5 percentage point (67% minus 62%) difference separates portfolio managers' from buy-side analysts' in the 'frequently' category, while for the same variable a noticeably wider 15% 'gap' (62% minus 77%) divides buy-side analysts from their *sell-side analyst* colleagues. Secondly, only a small 1 percentage point difference (21% minus 22%) separates portfolio managers from buy-side analysts in the 'sometimes' category, but a wider 7% 'gap' (22% minus 15%) separates buy-side analysts from *sell-side analysts* in the same category. Thirdly, only a small 4 percentage point (12% minus 16%) difference separates portfolio managers' from buy-side analysts' in the 'seldom' category, whilst a wider 8% divide separates buy-side analysts (16%) from *sell side analysts* (8%) in the same category.

In essence, the composite cross-sectional picture reveals portfolio managers and buy-side analysts share similar views regarding the usefulness of multiples valuation models to price equity stocks, whilst synchronously a noticeable schism is seen dividing the buy and sell-side perspectives. By comparison, the ‘seldom’ results are arguably less consequential when compared to the ‘frequently’ and ‘sometimes’ results. Nevertheless, even though the ‘seldom’ magnitudes are comparably quite small, the results are conspicuous because twice as many buy-side analysts (16%) compared to sell side analysts (8%) reported ‘seldom’ using multiples valuation models to price equity stocks.

Overall, these composite cross-sectional findings impart only limited research value. Therefore, in order to develop a more penetrating understanding apropos the usefulness of multiples valuation models in practice – i.e. how investment managers’ comparative performance analysis of companies and/or equities is influenced by changes in PE, EV/EBITDA, PB, PC, DY, EY, PS, and/or Shiller-CAPE ratios – the eight multiples valuation models were examined more closely as described below.

The PE chart (Figure 8.10) indicates the cross-sectional variation between portfolio managers (69%=frequently) and buy-side analysts (77%=frequently) was 8%, whilst a smaller 2–6% gap separated the two cohorts from their sell-side analyst colleagues (75%=frequently).

The EV/EBITDA chart (Figure 8.11) represents portfolio managers (62%=frequently) and buy-side analysts (63%=frequently) were almost identical (1% difference in their responses), whilst a wider 7–8% gap separated the two cohorts from their sell-side analyst colleagues (70%=frequently).

The DY chart (Figure 8.12) showcases the responses of portfolio managers (48%=frequently) and buy-side analysts (45%=frequently) were almost identical (3% difference), whilst a wider 3–6% gap separated the two cohorts from their sell-side analyst colleagues (42%=frequently).

The PS chart (Figure 8.13) illustrates the cross-sectional variation between portfolio managers (38%=frequently) and buy-side analysts (30%=frequently) was 8%, whilst a smaller 2–6% gap separated the two cohorts from their sell-side analyst colleagues (32%=frequently).

Subsequently, when the 'sometimes' and 'seldom' categories were compared, the four investment management cohorts evinced similar predilections for PE, EV/EBITDA, DY and PS. Thus far the results seemed relatively homogenous. Consequently, in light of the ostensibly uniform nature of the results, it is not possible (at this point in the analysis) to appreciably explain the variation in the composite cross-sectional results evident in Figure 8.9 (Generic Chart), especially the visible lacunae separating the buy and sell-side perspectives. Fortunately, the analysis of the PB, PC, EY and Shiller-CAPE contingency charts happened to be more revealing. To illustrate, each set of 'frequently', 'sometimes' and 'seldom' cross-sectional results are examined as described below.

Firstly, the PB chart (Figure 8.14) indicates only a small 4% difference separates portfolio managers (57%=frequently) from buy-side analysts (53%=frequently), compared to the relatively sizeable 13% to 17% difference that separates them from sell-side analysts (40%=frequently).

The PC chart (Figure 8.15) indicates only a small 3% difference separates portfolio managers (59%=frequently) from buy-side analysts (56%=frequently), compared to the relatively sizeable 16% to 19% difference that separates them from sell-side analysts (40%).

The EY chart (Figure 8.16) reveals only a small 3% difference separates portfolio managers (46%=frequently) from buy-side analysts (49%=frequently), compared to the relatively sizeable 9% to 12% difference that separates them from sell-side analysts (37%=frequently).

The Shiller-CAPE chart (Figure 8.17) reveals only a small 5% difference separates portfolio managers (17%=frequently) from buy-side analysts (12%=frequently), compared to the relatively sizeable (6% to 11%) difference that separates them from sell-side analysts (6%=frequently).

Secondly, when the 'sometimes' cross-sectional results were compared across the three investment management cohorts, they too demonstrated similar but somewhat less remarkable predilections for PB, PC, EY and Shiller-Cape: PB (max variation=5%), PC (max variation=6%), EY (max variation=9%) and Shiller-CAPE (max variation=7%).

Thirdly, when the 'seldom' cross-sectional results were compared across the three investment management cohorts, they revealed what appears to be the root causes of the evident schism separating the buy/sell attitudes regarding the usefulness of multiples valuation models in stock market analysis. The details are as follows:

The PB chart reveals a sizeable 17% gap separates sell-side analysts (32%) from portfolio managers (15%). [The gap between sell-side analysts (32%) and buy-side analysts (24%) is 8%].

The PC chart reveals a sizeable 12% gap separates sell-side analysts (36%) and portfolio managers (24%). [The gap between sell-side analysts (36%) and buy-side analysts (26%) is 10%].

The EY chart reveals a sizeable 17% gap separates sell-side analysts (46%) from portfolio managers (29%). [The gap between sell-side analysts (46%) and buy-side analysts (36%) is 10%].

The Shiller-CAPE chart reveals a sizeable 19% gap separates sell-side analysts (77%) from portfolio managers (58%). [The gap between sell-side analysts (77%) and buy-side analysts (67%) is 10%].

Table 8.1 (below) presents a convenient summary of the above findings. To recap; firstly, the evidence [Green Shading] indicates portfolio managers and buy-side analysts share similar proclivities regarding the usefulness of PE, EV/EBITDA, DY, PB, PC, EY, PS and Shiller-CAPE. Secondly, the evidence indicates [Pink Shading] that the buy and sell-side cohorts share similar tendencies regarding the usefulness of the PE, EV/EBITDA, DY and PS accounting multiples. More strikingly however, the evidence indicates [Blue Shading] that the buy-side's [portfolio managers and buy-side analysts] fondness for the PB, PC, EY and Shiller-CAPE multiples is remarkably different to their sell-side analyst counterparts.

Table 8.1: Comparative Performance Analysis (Maximum Cross-Sectional Differences)

Panel A – Composite 'Generic' Multiples Chart								
	PM_BSA*	BS_SS**						
Frequently	5%	15%						
Seldom	4%	8%						
Panel B – PM_BSA								
	PE	EV/EBITDA	DY	PS	PB	PC	EY	Shiller-Cape
Frequently	8%	1%	3%	8%	4%	3%	3%	5%
Seldom	3%	4%	5%	10%	9%	2%	7%	9%
Panel C – BS_SS								
	PE	EV/EBITDA	DY	PS	PB	PC	EY	Shiller-Cape
Frequently	6%	8%	6%	6%	17%	19%	12%	11%
Seldom	2%	6%	3%	12%	17%	12%	17%	19%
* PM_BSA = Portfolio Managers vs. Buy-side Analysts ** BS_SS = Buy-side vs. Sell-side								

On balance, the evidence above, and in numerous other well-researched studies, indicates that making comparisons based on valuation ratios is common practice amongst most investment managers and analysts, and "the clear consensus within the investment industry is that this practice is worthwhile." (Wilcox, 2007, p.59).

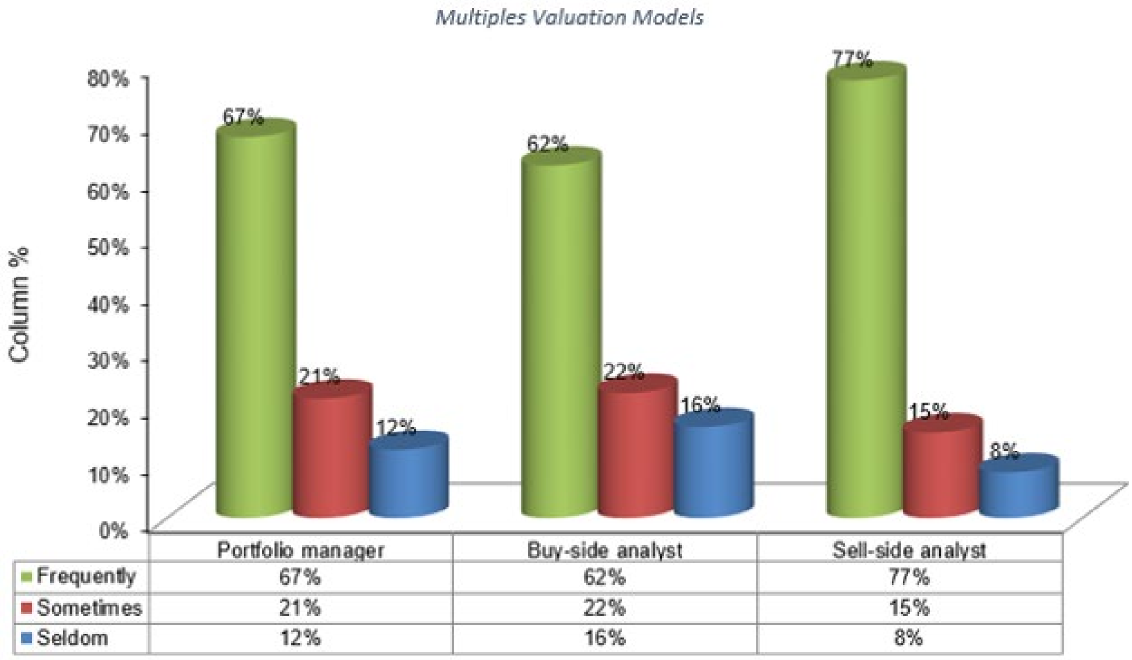


Figure 8.9: Job Title * Multiples Valuation Models – 'Generic' Chart

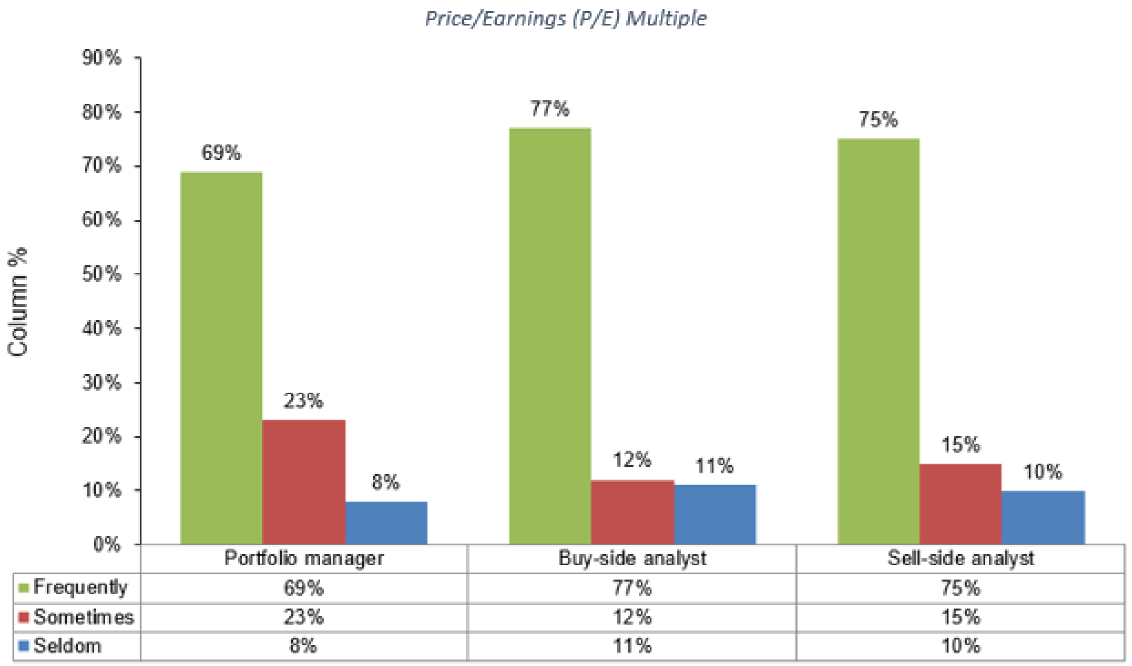


Figure 8.10: Job Title * PE Multiples Model

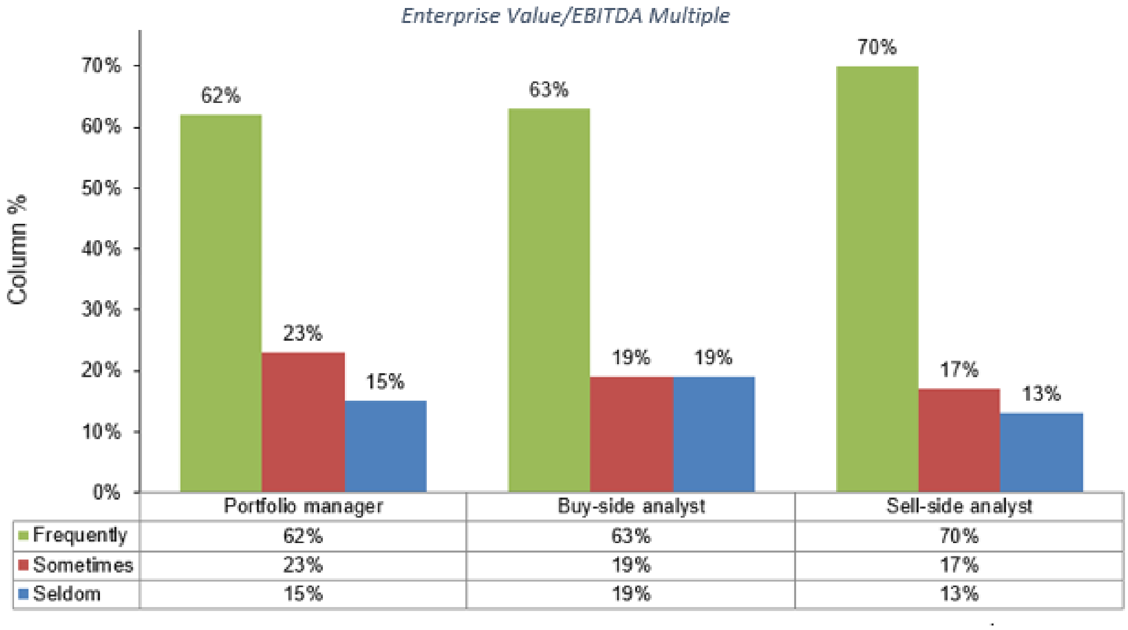


Figure 8.11: Job Title * EV/EBITDA Multiples Model

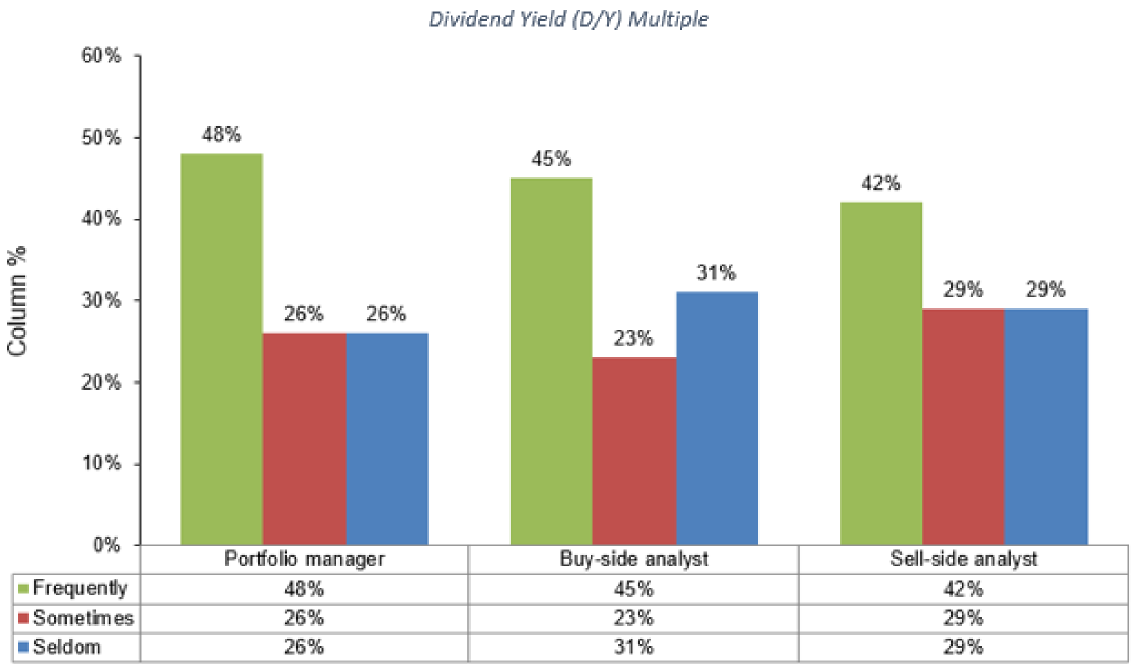


Figure 8.12: Job Title * DY Multiples Model

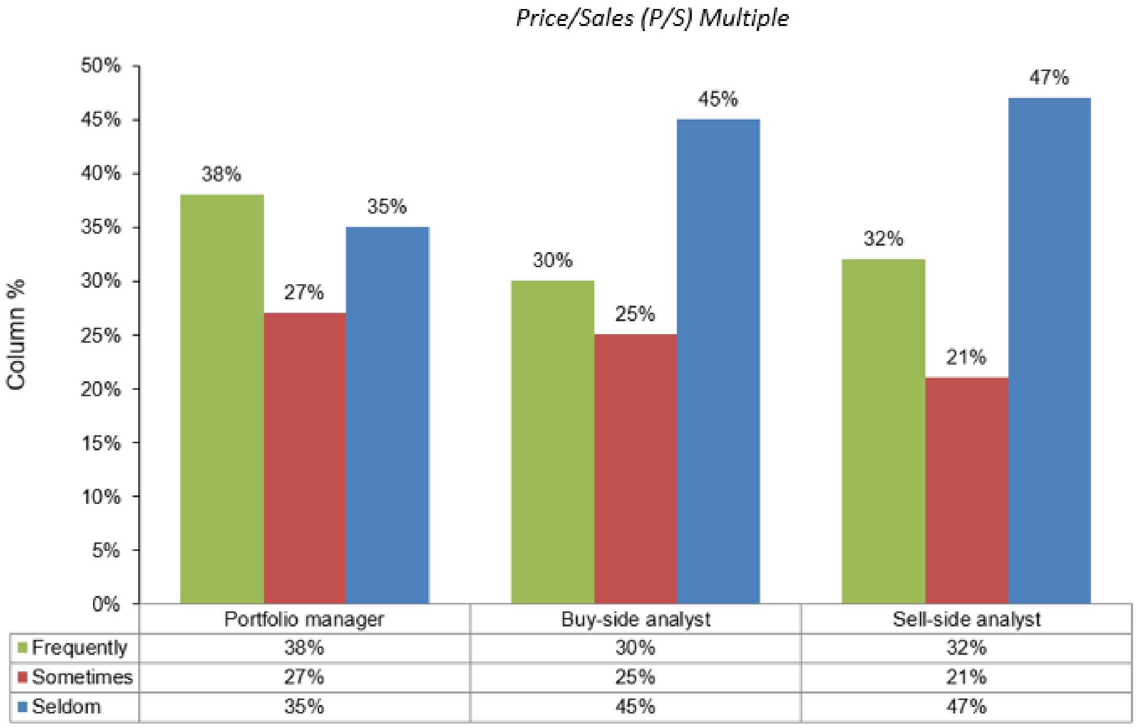


Figure 8.13: Job Title * PS Multiples Model

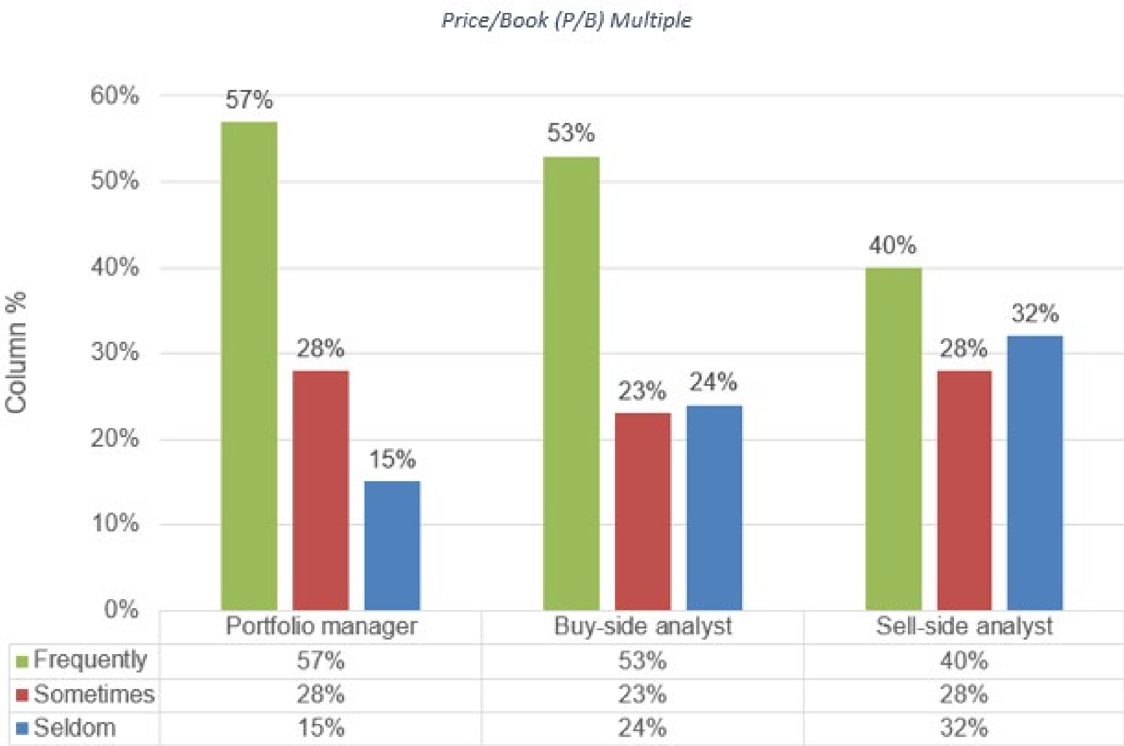
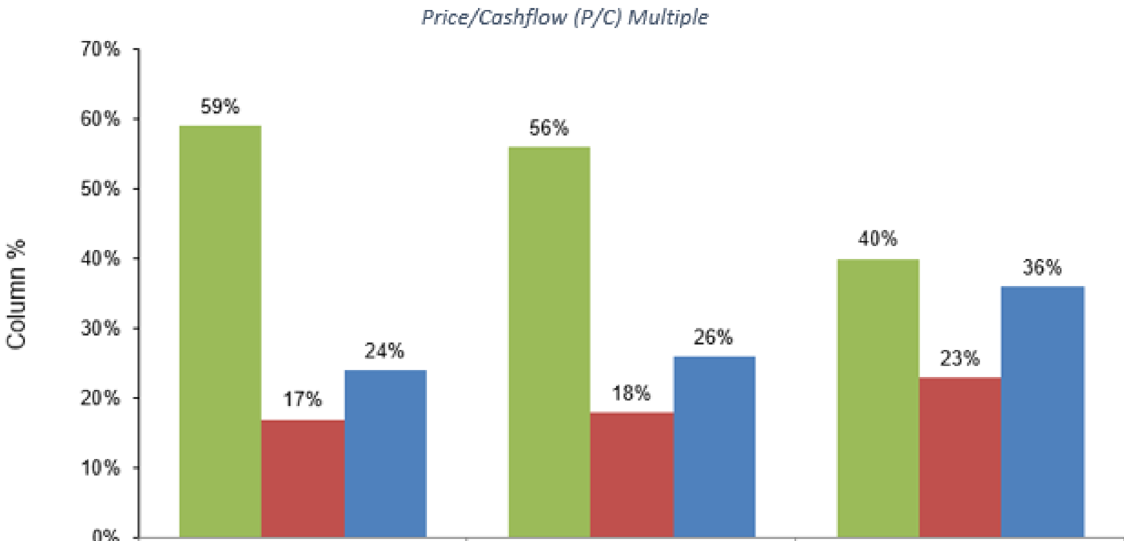
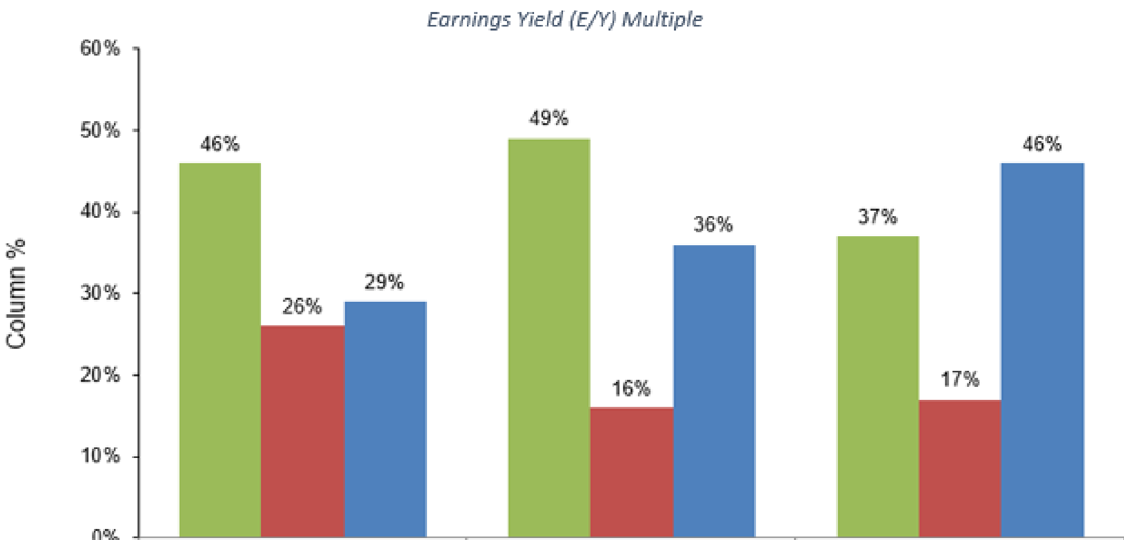


Figure 8.14: Job Title * PB Multiples Model



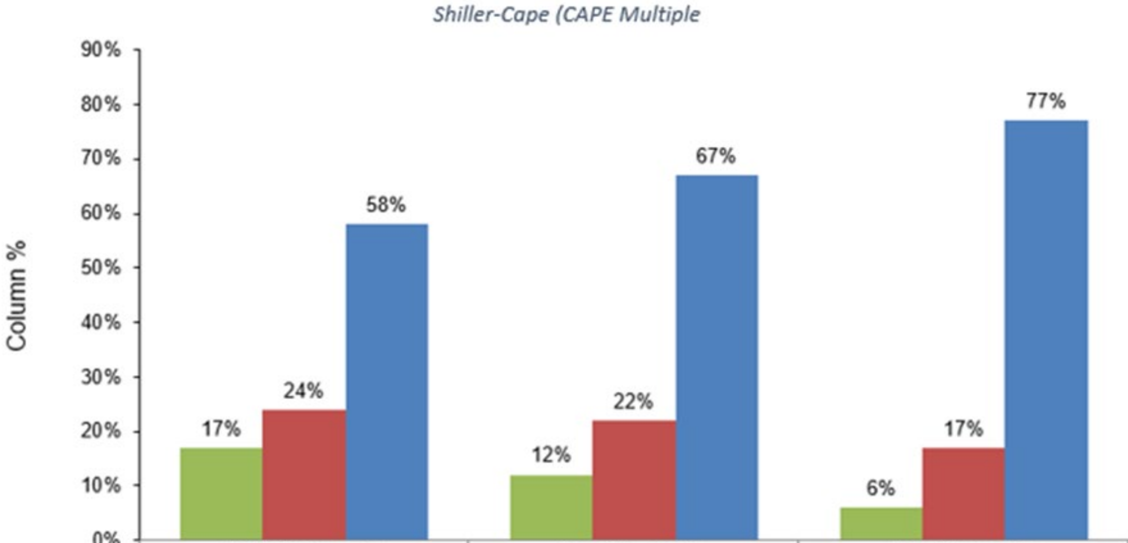
	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	59%	56%	40%
Sometimes	17%	18%	23%
Seldom	24%	26%	36%

Figure 8.15: Job Title * PC Multiples Model



	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	46%	49%	37%
Sometimes	26%	16%	17%
Seldom	29%	36%	46%

Figure 8.16: Job Title * EY Multiples Model



	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	17%	12%	6%
Sometimes	24%	22%	17%
Seldom	58%	67%	77%

Figure 8.17: Job Title * Shiller-Cape Multiples Model

8.3 Utility of Modern Finance Theory

Question #3 of the survey asked participants; 'When valuing stocks, please indicate how often you use the following financial models?' In total, between 237 and 251 respondents completed the question. The results are presented in two stages: Firstly, four of the best-known single-factor risk-adjusted return financial models are presented. Secondly, five of the best-known multi-factor risk-adjusted return models are presented. In both instances, the questionnaire responses pertaining to each model type were examined using frequency distribution charts and tables, contingency charts and tables and summary statistics.

8.3.1 Single-factor Risk-adjusted Return Models

In this section, four related single-factor modern finance model types used to price equity stocks are evaluated: the Capital Asset Pricing Model (CAPM), the Consumption Capital

Asset Pricing Model (CCAPM), the Sharpe Model, and a Momentum Pricing Model. Selected results for the four single-factor variables (questions) are shown in Figures 8.17 and 8.20 and discussed below.

CAPM was the most frequently used finance model. Between one-third and one-half of the sample (40.64%; n=102) reported using CAPM either 'almost all the time' (15.94%; n=40) or 'frequently' (24.70%; n=62), while almost one-fifth (18.3%; n=46) of the sample indicated they 'sometimes' use it to price equity stocks. The remainder of the sample (41.04%; n=103) indicated they 'seldom' use it. Overall, the evidence presented a somewhat mixed picture of CAPM's usefulness.

CCAPM was the respondents' least popular choice. Most of the sample (77.2%; n=186) indicated they either 'almost never' (66.8%; n=161) use it, or use it only 'once in a while' (10.4%; n=25) to price equity stocks. In contrast, 9.5% (n=23) of the sample indicated they use CCAPM models 'almost all the time' (1.2%; n=3) or 'frequently' (8.3%; n=20). Finally, just over one-tenth of the sample indicated they 'sometimes' use it (13.3%; n=32). Overall, the overwhelming majority (77.2%; n=186) of the sample indicated they 'seldom' use CCAPMs to price equity stocks.

The Sharpe ratio was used much less frequently than had been anticipated a priori. The majority (53.3%; n=130) of the sample indicated they 'almost never' (42.6%; n=104) use it, or else use it only 'once in a while' (10.7%; n=26) to price equity stocks. In contrast, just over one-quarter (26.2%; n=64) of the sample indicated they use the Sharpe valuation model 'almost all the time' (8.6%; n=21) or 'frequently' (17.6%; n=43). Finally, just over one-fifth (20.5%; n=50) of the sample indicated they 'sometimes' use the Sharpe ratio. Overall, the results present a mixed picture of Sharpe's usefulness to investment managers.

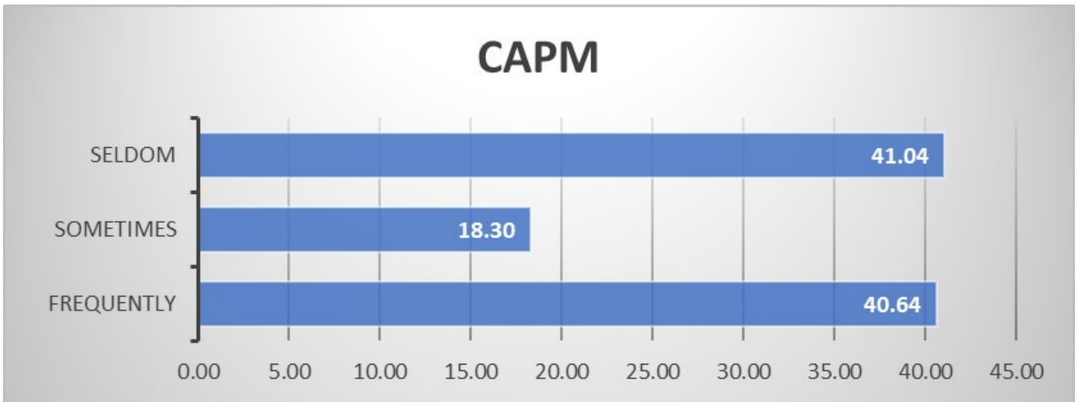
The Momentum Pricing Model frequency distributions presented a picture that was remarkably similar to those of the Sharpe ratio. That is, the majority (54.3%; n=132) of the sample indicated they 'seldom' use one, which represents a surprising finding in light of what is mostly positive empirical research on them in the extant literature, see Chapter 4. In contrast, just over one-fifth (22.2%; n=54) of the sample indicated they use a Momentum pricing model 'frequently', while almost one-quarter (23.5%; n=57) of the respondents reported only 'sometimes' using one. Overall, in keeping with the findings for the Sharpe valuation model, the picture presented regarding the usefulness of Momentum Pricing Models is a hazy one.

Overall, these initial findings are surprising for several reasons. Firstly, the evidence indicates CAPM's usage is not as ubiquitous within the investment management industry as had been expected a priori, i.e. only 41% of the sample indicated they use CAPM 'frequently'. Its antonym is an equally surprising result, i.e. 41% of the sample indicated they 'seldom' use the CAPM. Nonetheless, it is notable that the interview evidence presented in Chapter 6 tends to corroborate these survey findings because they too speak of CAPM's fall from grace. For example, interviewee #3 stated: "… Capital Asset Pricing Model… I used to do that some 25 years ago until I realised that it doesn't make sense".

Unlike the CAPM, the consumption-based capital asset pricing model (CCAPM) results are largely unsurprising due in most part to the a priori review of the literature presented in Chapter 4. In essence, the modern finance literature (Cochrane, 2005) indicates that the CCAPM model tends to be used more frequently by macro-economists rather than investment analysts.

The momentum model results also surprised because the related finance literature reviewed in Chapter 4 paints a largely positive picture of their usefulness to investment managers. In general, momentum pricing models try to capture stock returns that tend to continue rising when they are going up, or alternatively they try to capture stock returns that tend to continue falling when they are going down. In this respect, the extant literature contains numerous, mostly positive, short, medium and long-term-horizon studies that describe such phenomena as past winners and losers, price reversals, mean-reversion, investor over-and-under-reaction, and so forth. Hence, there was an expectation before evaluating the results that the actual momentum model frequency distribution findings would present a correspondingly similar positive picture.

The Sharpe ratio results also surprised because the related finance literature reviewed in Chapter 4 also presents a mostly positive picture of their usefulness to investment managers. In general, the Sharpe ratio tries to capture investment performance relative to risk-taking, and is calculated by dividing the mean portfolio return minus the risk-free rate by the standard deviation of the portfolio's return. Thus, according to the extant literature and numerous media reports, it holds an obvious appeal for portfolio managers. Yet, the current findings failed to mirror such investor appeal.



	Frequently	Sometimes	Seldom
Valid Percent	40.64	18.30	41.04

Figure 8.17A: CAPM (Re-grouped responses)

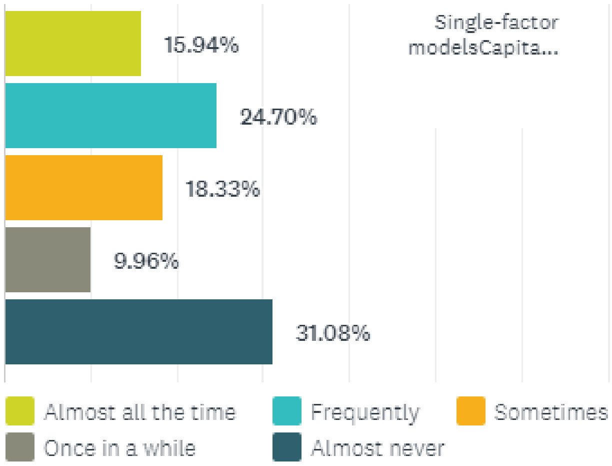


Figure 8.17B: CAPM (Unabridged responses)

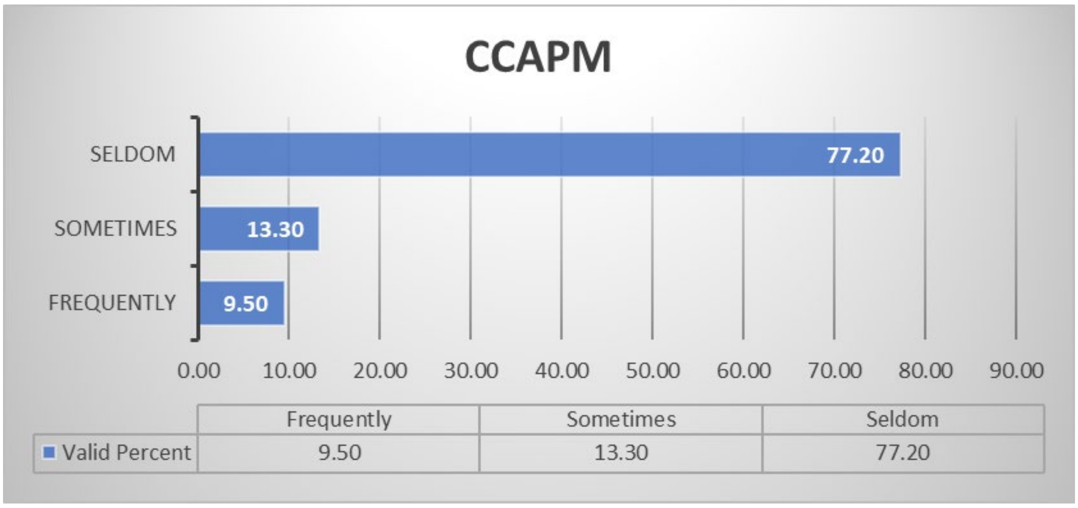


Figure 8.18A: CCAPM (Re-grouped responses)

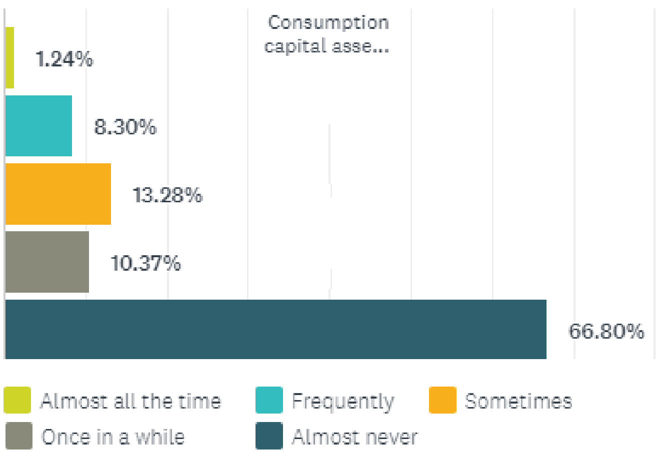


Figure 8.18B: CCAPM (Unabridged responses)

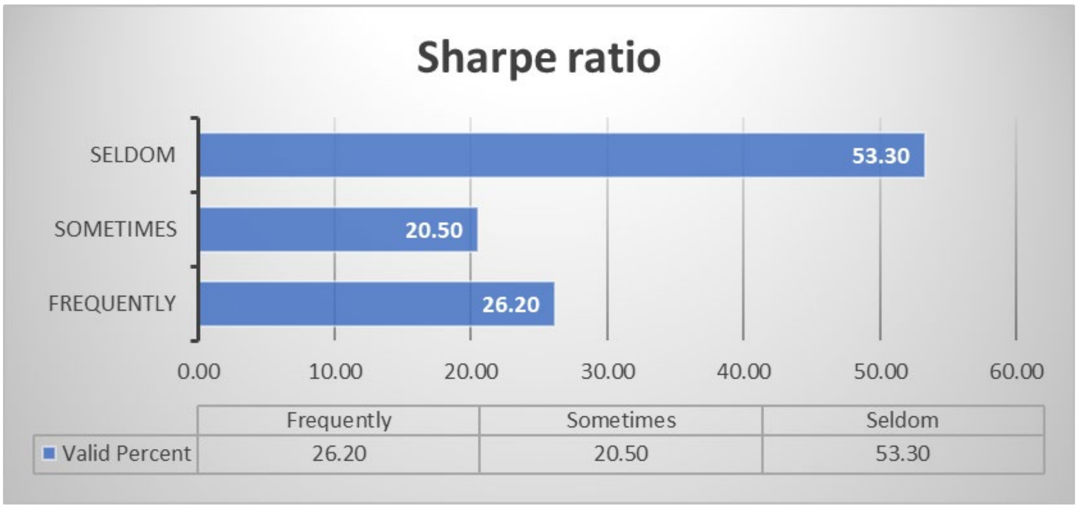


Figure 8.19A: Sharpe Valuation Model (Re-grouped responses)

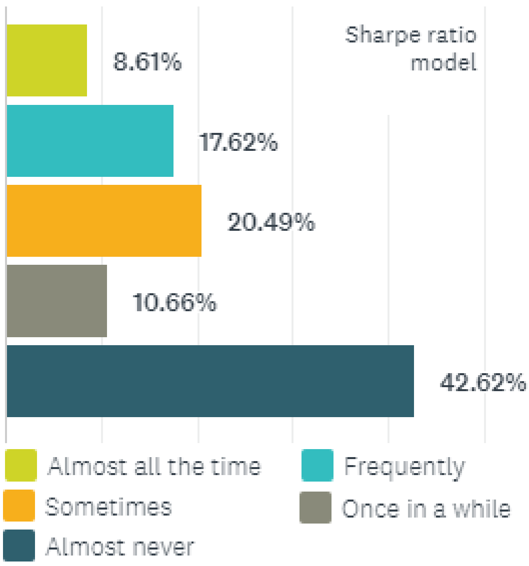


Figure 8.19B: Sharpe Valuation Model (Unabridged responses)

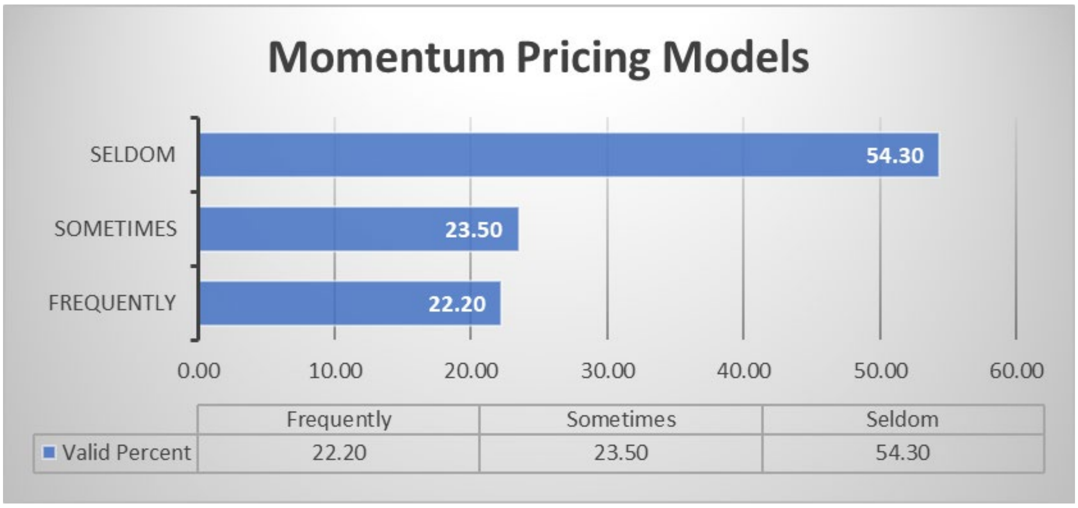


Figure 8.20A: Momentum Pricing Model (Re-grouped responses)

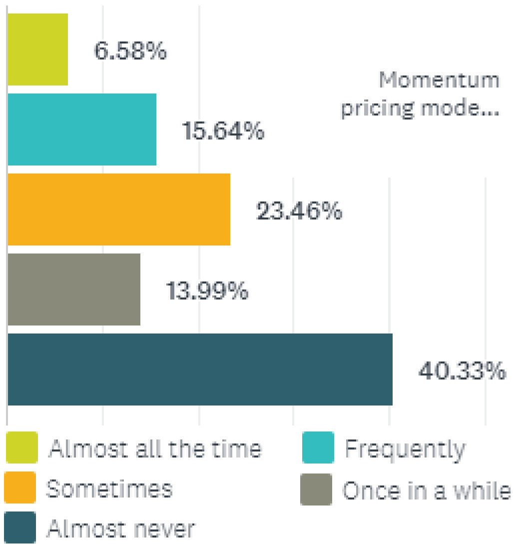


Figure 8.20B: Momentum Pricing Model (Unabridged responses)

8.3.1.1 Cross-Tabulation (Job Title * Single-factor Finance Model)

For the purpose of identifying potential differences between portfolio managers, buy-side analysts and sell-side analysts, the composite single-factor risk-adjusted return model responses were disaggregated across the three investment management cohorts as shown in Figures 8.21 to 8.24.

The CAPM cross-tabulations (Figure 8.21) reveal evidence of a sizeable schism between the buy-side and sell-side cohorts. As shown, more than twice as many sell-side analysts (59%=frequently) compared to portfolio managers (28%=frequently) reported using the CAPM. Concurrently, nearly twice as many portfolio managers (53%=seldom) reported seldom using the CAPM compared to sell-side analysts (29%=seldom). The reported gap (18%) between buy-side analysts (41%=frequently) and sell-side analysts (59%=frequently) is also relatively sizeable.

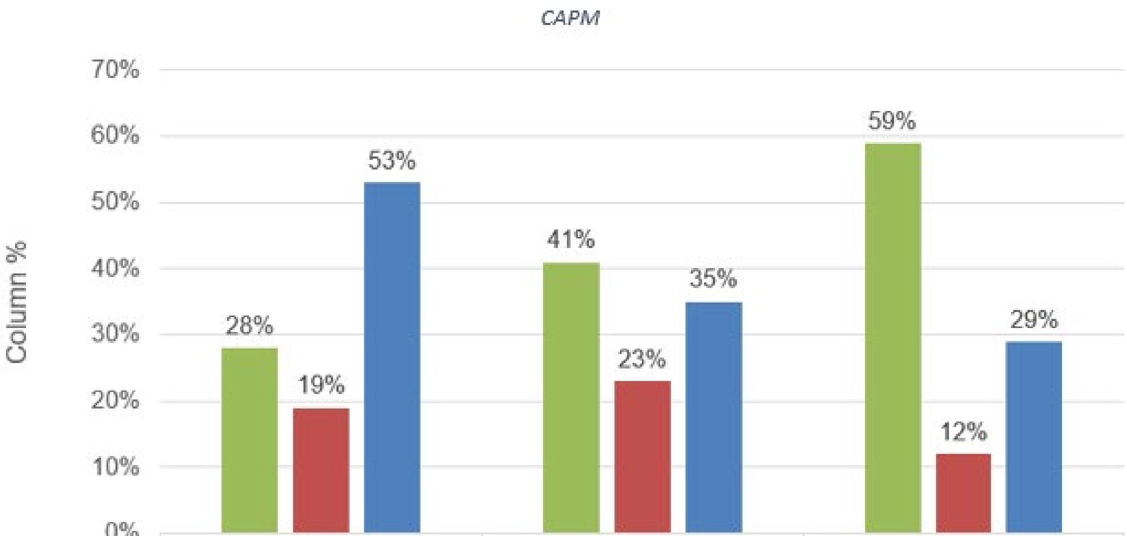
These findings are in line with the interview evidence described in Chapter 6. For example, the majority of the interviewees (portfolio managers) stated they prefer market-based interest rates or some alternative rule of thumb rather than the CAPM discount rate when calculating the cost of equity capital. Nonetheless, the size of the divide between the buy- and sell-side cohorts is an intriguing finding, not least because it represents further evidence of dysfunctional decision-making behaviour within the investment management industry. Moreover, the interview evidence indicated portfolio managers are in the habit of regularly 'binning' Analysts Reports. Their motivation for doing-so seemingly revolves around issues of believability and trust in the information provided by the sell-side. For example, citing the importance of the discount factor when conducting a DCF valuation, it was established that even a small difference in the discount rate makes a big difference to the present value calculation or price of equity. Thus, if an investor is worried (say) about a 'value-trap' then the discount factor may rightly be a big concern for him/her, which in turn implies that if he/she distrusts the source of analyst inputs then he/she will rightly want to bin them.

The CCAPM cross-tabulations (Figure 8.22) are largely unremarkable, aside from the overtly salient observation that most of the survey respondents indicated they do not use them in practice to value equities. For example, almost 90% (89%; n=42) of the sell-side analysts in the survey indicated they 'seldom' use CCAPMs to price equity stocks, while three-quarters of the portfolio managers (74%; n=77) and buy-side analysts (75%; n=59) also reported 'seldom' using them.

The Sharpe ratio cross-tabulations (Figure 8.24) show responses vary a lot across the three investment management cohorts. For example, twice as many portfolio managers (28%='frequently') compared to sell-side analysts (14%='frequently') report frequently using the Sharpe ratio to price equities. Conversely, a sizeable 20% difference divides portfolio managers (49%='seldom') and sell-side analysts (69%='seldom') in the 'seldom' category. In the same vein, there is evidence of an 18% schism between buy-side analysts (51%='seldom') and sell-side analysts (69%='seldom').

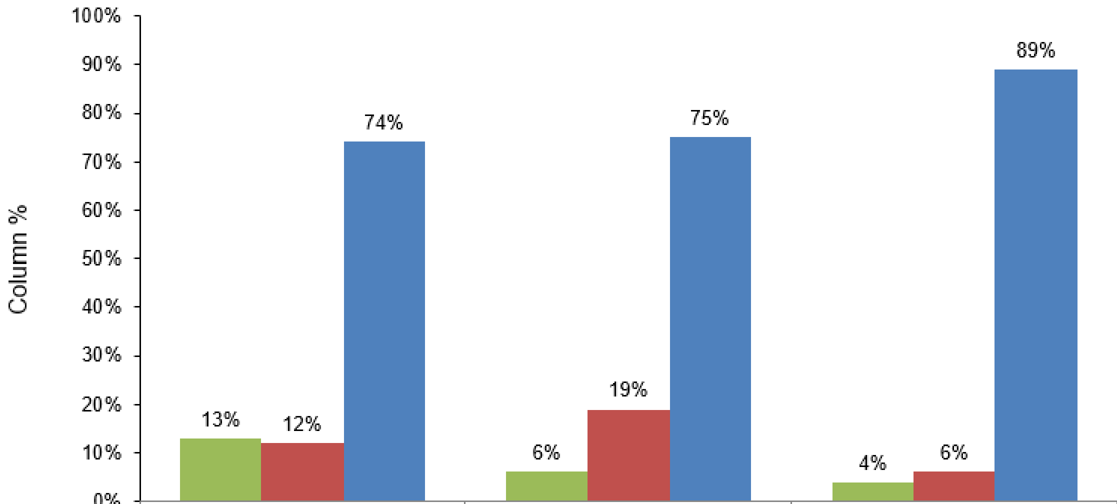
The Momentum model cross-tabulation results (Figure 8.23) displayed remarkably little variation across the three cohorts, and thus were not considered further.

Overall, the quantitative statistical nature of these single-factor finance model findings tends to substantiate the related qualitative single-factor finance findings described in Chapter 6. Moreover, the cross-sectional analysis of the CAPM variable highlights the existence of a sizeable schism between the buy and sell-side cohorts.



	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	28%	41%	59%
Sometimes	19%	23%	12%
Seldom	53%	35%	29%

Figure 8.21: Job Title * CAPM



	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	13%	6%	4%
Sometimes	12%	19%	6%
Seldom	74%	75%	89%

Figure 8.22: Job Title * CCAPM

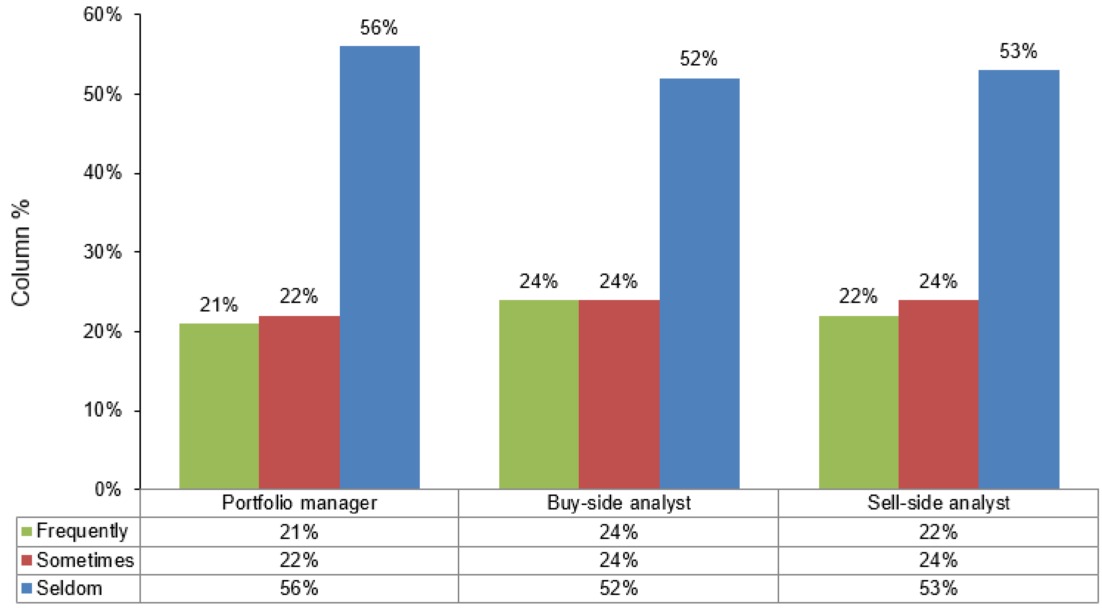


Figure 8.23: Job Title * Momentum Pricing Model

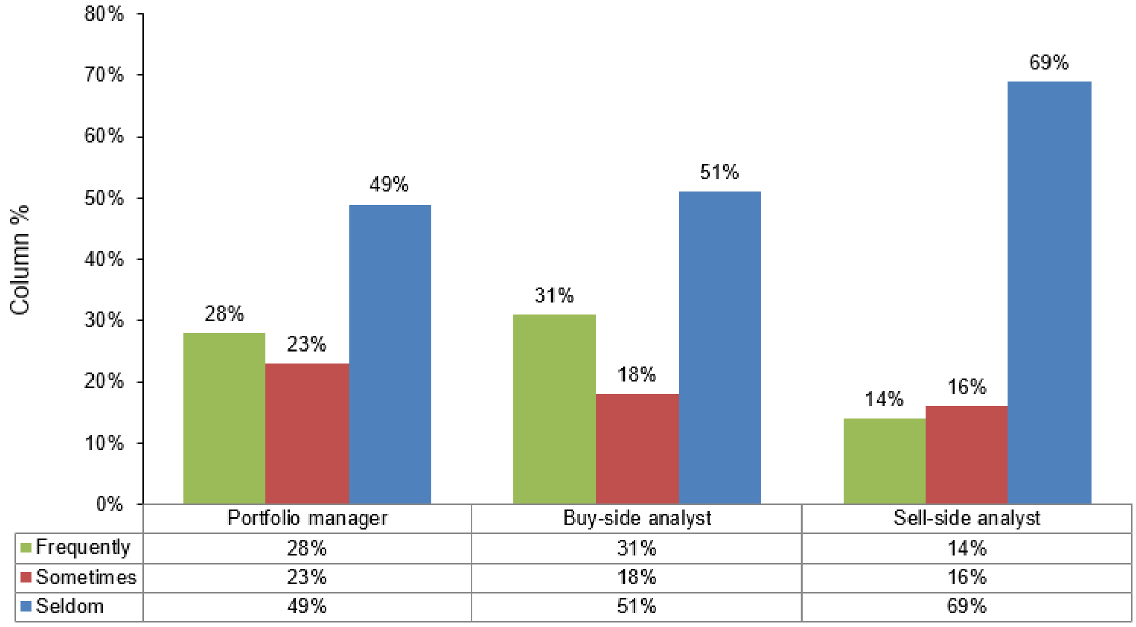


Figure 8.24: Job Title * Sharpe Valuation Model

8.3.2 Multi-factor Finance Models - Risk-adjusted Return Model Typologies

This section examines four related multi-factor finance model types that feature prominently in the modern finance literature: the Fama French 3-Factor Model [FF3F Model], the Carhart 4-factor Momentum Pricing Model [Carhart Model], the Arbitrage Pricing Model [APM] and, the Inter-temporal Capital Asset Pricing Model [ICAPM]. Selected results for the four multi-factor finance variables (questions) are shown in Figures 8.25 and 8.28, and discussed below.

Of the four choices available to the respondents, the FF3F model (Fama and French, 1992, 1993) is arguably the most well-known multi-factor finance model within the asset pricing literature (Cochrane, 2005). Surprisingly however, as shown in Figures 8.25A and 8.25B, almost three-quarters (74.2%; n=178) of the survey's respondents indicated they 'seldom' use it, while just over one-tenth of them reported using it either 'frequently' (13.3%; n=32) or 'sometimes' (12.5%; n=30).

The Carhart 4-factor Momentum Model frequency distributions (Figures 8.26A and 8.26B) were similar to those shown for the FF3F model. Most of the sample (79.0%; n=188) indicated they either 'almost never' (69.3%; n=165) use the Carhart model to price equity stocks, or use it only 'once in a while' (9.7%; n=23). In contrast, 8.8% (n=21) of the sample indicated they use it either 'almost all the time' (2.1%; n=5) or 'frequently' (6.7%; n=16). Finally, just over one-tenth of the sample indicated they use it 'sometimes (12.2%; n=29).

The Arbitrage Pricing Model (APM) frequency distributions (Figures 8.27A and 8.27B) were similar to those shown for the FF3F model and the Carhart 4-factor Momentum Model. The majority of the sample (71.7%; n=170) indicated they either 'almost never' (57.0%; n=135) use APMs to price equity stocks, or use them 'once in a while' (14.8%; n=35). In contrast, 13.1% (n=31) of the sample indicated they use APMs 'almost all the time' (6.8%;

n=16) or ‘frequently’ (6.3%; n=15). Finally, approximately one-seventh (15.2%; n=36) of the sample indicated they use them ‘sometimes.

The Inter-temporal Capital Asset Pricing Model (ICAPM) (Figures 8.28A and 8.28B) was the least popular choice available. The findings were largely similar to those of the FF3F, Carhart and APM models, but even more skewed on one side. As shown, most of the sample (85.3%; n=203) indicated they ‘almost never’ (76.5%; n=182) use ICAPMs to price equity stocks, or else use them ‘once in a while’ (8.8%; n=21). In contrast, 4.6% (n=11) of the sample indicated they use ICAPMs either ‘almost all the time’ (1.7%; n=4) or ‘frequently’ (2.9%; n=7). Finally, just over one-tenth of the sample indicated they use them ‘sometimes (10.1%; n=24).

Overall, the evidence presented in this section demonstrates that multi-factor finance models are not used as widely within the investment management industry as had been expected a priori, i.e. circa +75% of the respondents surveyed indicated they ‘seldom’, if ever, use them in practice. These are surprising findings in light of the almost ubiquitously positive comments attributed to them in the extant literature. Specifically, numerous academic papers provide empirical evidence to demonstrate that the FF3F, Carhart 4-factor, ICAPM and APM models can be utilised to generate excess equity returns for investors over short and/or long-term investment horizons. However, the interview evidence presented in Chapter 6 helps to shine a light on why ‘traditional’ multi-factor finance models seem to be waning in their popularity amongst investment managers. For example, interviewee #7 asserted: “Kevin, if you now look at the recently established funds, contrary to what used to take place, say like in the 90’s, you no longer have many funds calling themselves as value, whatever, or growth, whatever. They tend to have less obvious names, leading to some sort of 'style identification', you know. We describe ourselves as fundamentally driven stock pickers with a momentum approach”. Moreover, Chapter 6 discusses other factors that evidently are influencing the way fund managers and analysts currently process information to make investment decisions. For example, the advent of machine learning, AI (artificial intelligence), big data analysis, plus systems that automatically read and analyse Analyst Reports, Annual Reports, Trade Journals plus many political, economic and investment management reports, is changing the way investment managers currently process information and then use it to make investment decisions. In the same way, algorithmic-driven stock-market decision-making and trading is changing the way investment managers currently conduct business, for example as attested to with the introduction of 'self-driving' funds that warrant no human input in the investment management decision-making process. Synchronously, quantitative multi-factor modelling techniques are rapidly becoming more sophisticated. Hence, attempting to capture excess stock market returns by capitalising on market inefficiencies is unlikely to be successful if investors opt to rely on simple, but often out-dated, three and four-factor accounting and finance models that were once popular in the 80's and 90's.

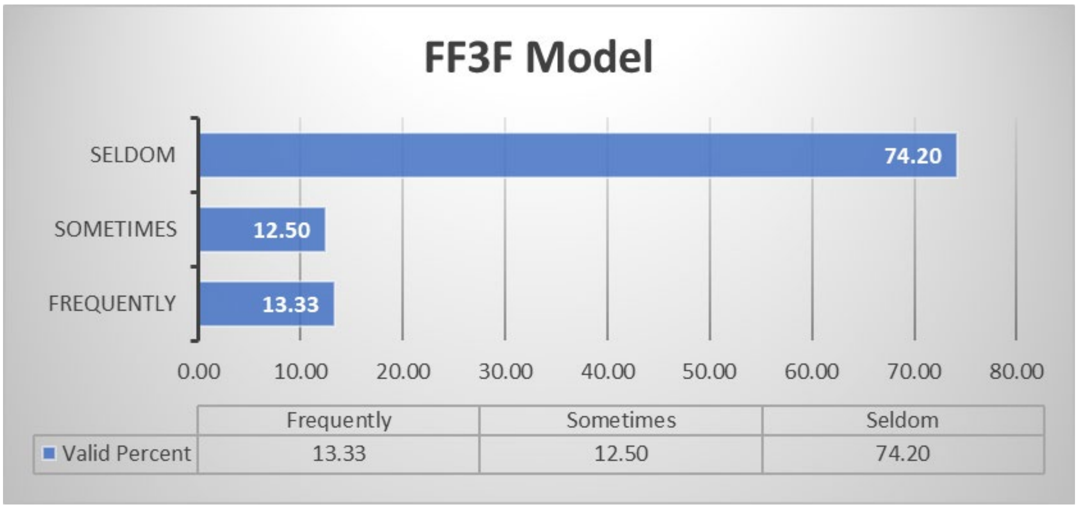


Figure 8.25A: FF3F Model (Re-grouped responses)

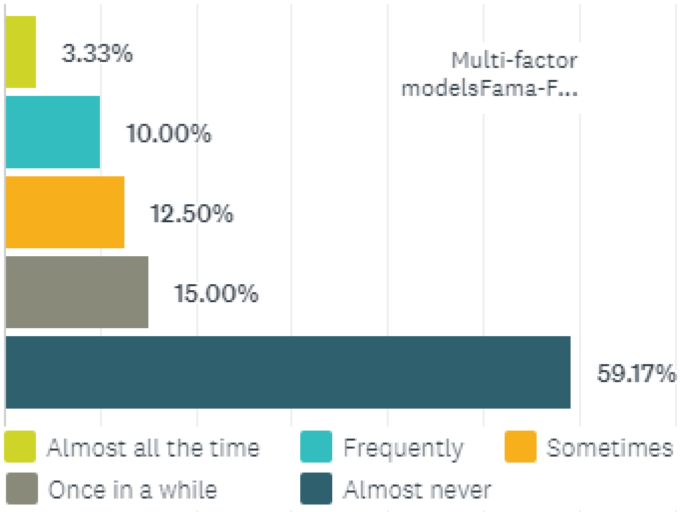
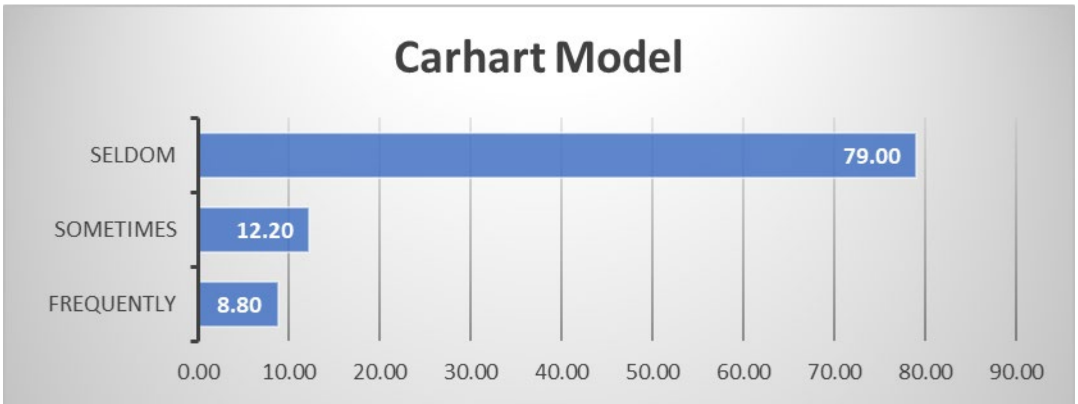


Figure 8.25B: FF3F Model (Unabridged responses)



	Frequently	Sometimes	Seldom
Valid Percent	8.80	12.20	79.00

Figure 8.26A: Carhart Momentum Model (Re-grouped responses)

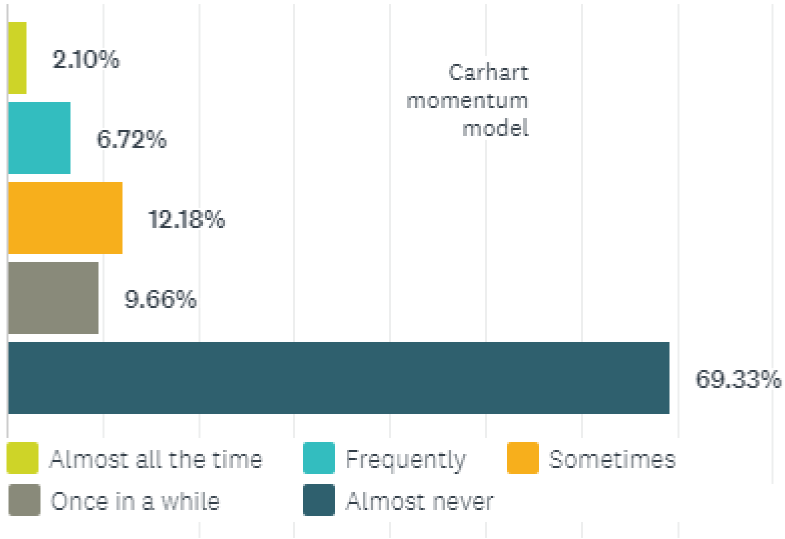


Figure 8.26B: Carhart Momentum Model (Unabridged responses)

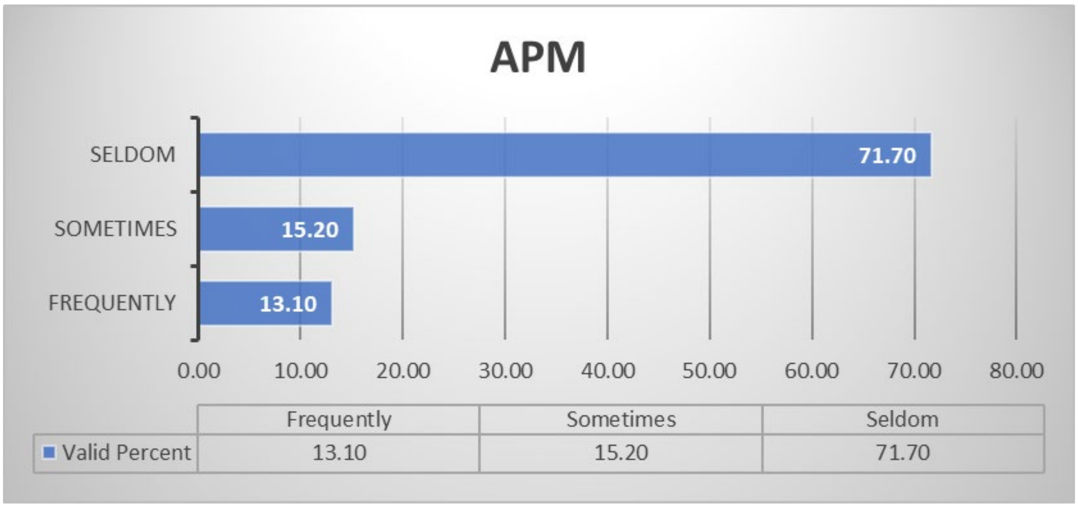


Figure 8.27A: APM (Re-grouped responses)

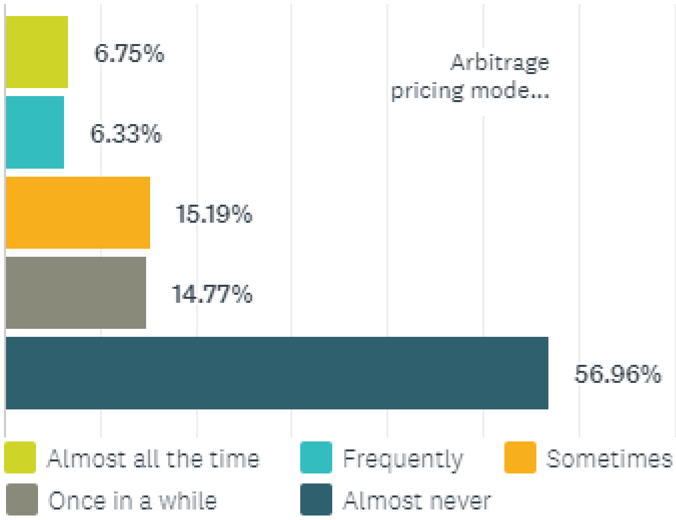
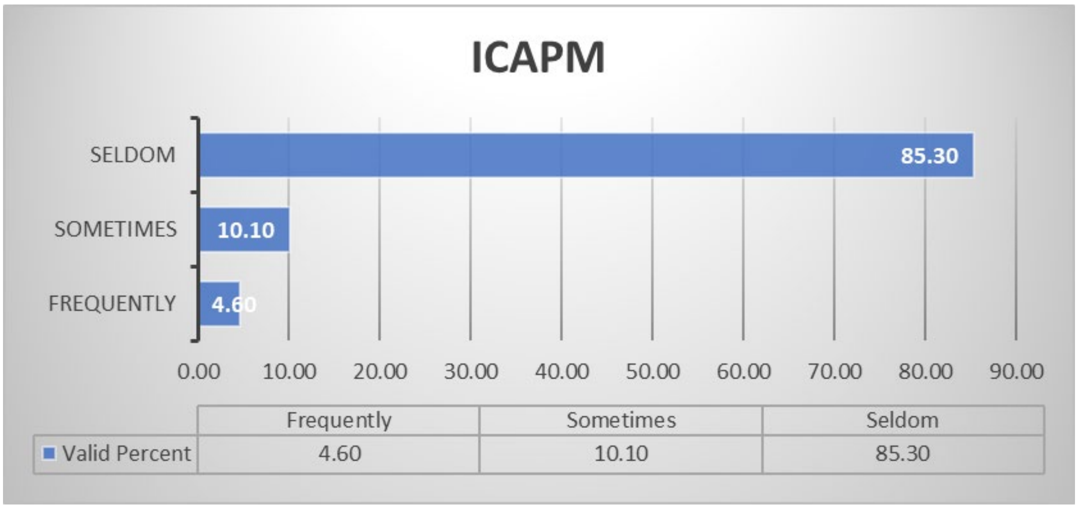


Figure 8.27B: Arbitrage Pricing Model (Unabridged responses)



	Frequently	Sometimes	Seldom
Valid Percent	4.60	10.10	85.30

Figure 8.28A: ICAPM (Re-grouped responses)

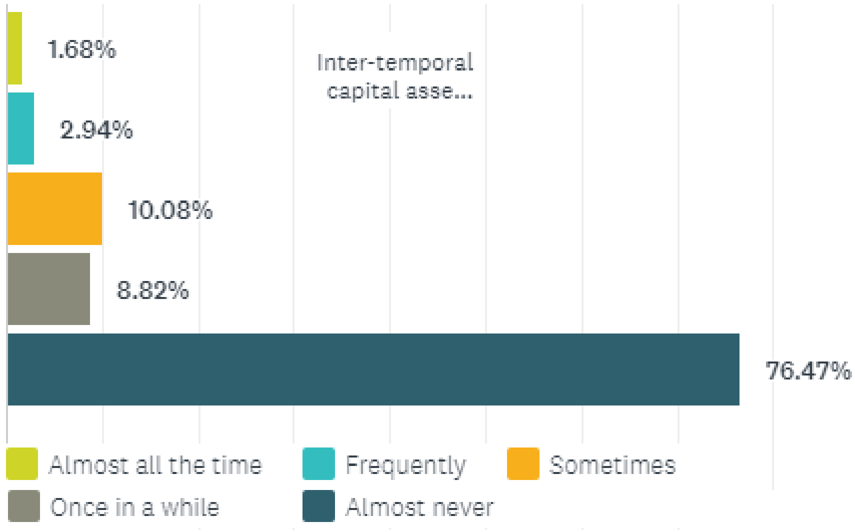


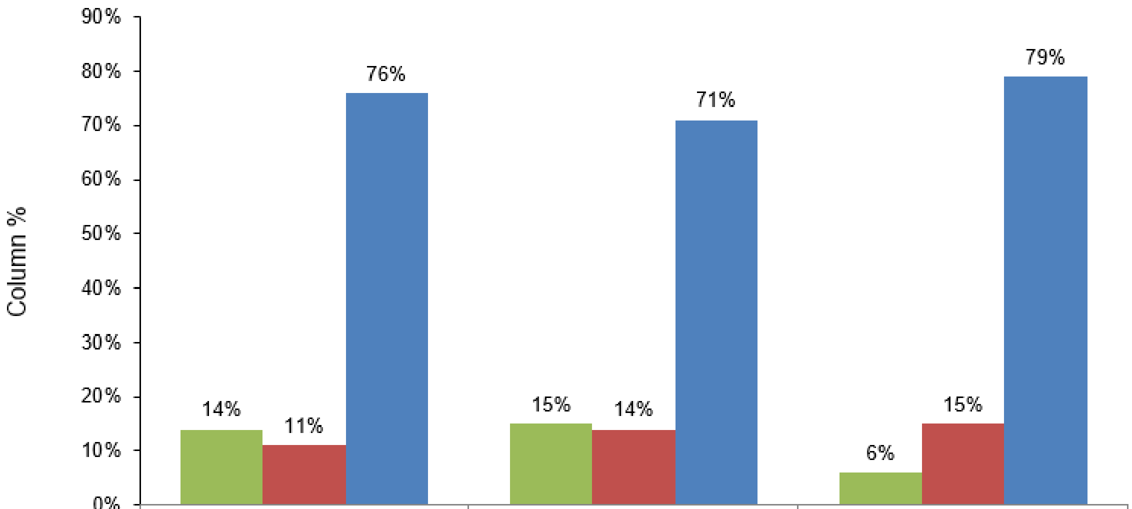
Figure 8.28B: ICAPM (Unabridged responses)

8.3.2.1 Cross-Tabulation (Job Title * Multi-factor Finance Model)

For the purpose of identifying potential differences between portfolio managers, buy-side analysts and sell-side analysts, the composite multi-factor risk-adjusted return model responses were disaggregated across the three investment management cohorts as shown in Figures 8.29 to 8.32.

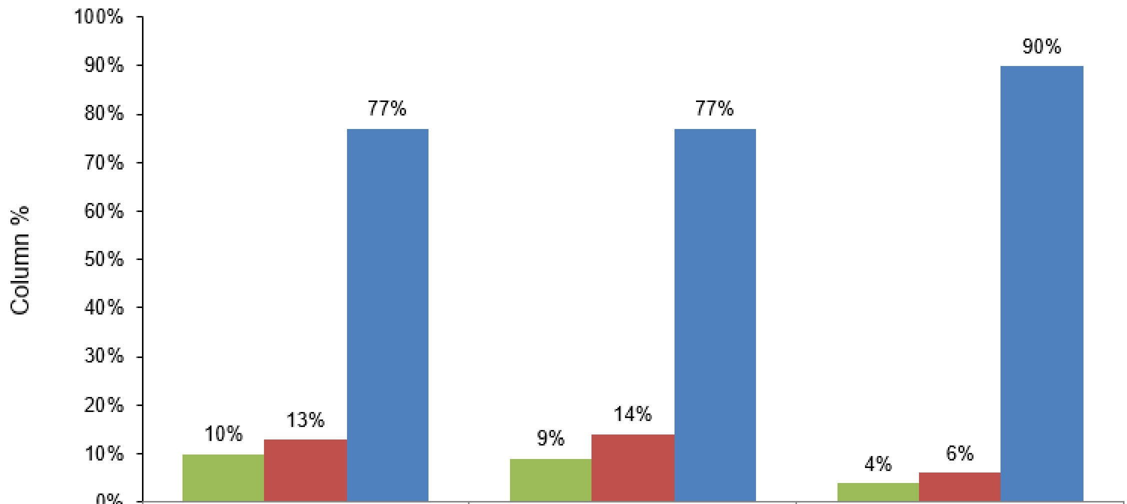
The FF3F cross-tabulations reveal only a small 3% gap separates portfolio managers (76%='seldom') from sell-side analysts (79%='seldom'). In the same vein, the APM cross-tabulations reveal only a small 7% gap separates portfolio managers (69%='seldom') from sell-side analysts (76%='seldom'). The ICAPM cross-tabulations reveal a slightly larger 8% gap divides portfolio managers (84%='seldom') from sell-side analysts (92%='seldom'). Finally, the Carhart cross-tabulations reveal a 13% gap separates portfolio managers (77%='seldom') from sell-side analysts (90%='seldom'). This is the largest of the four gaps.

Overall, most of the respondents in each investment category indicated they 'almost never' use multi-factor finance models to price equity stocks. Moreover, there was notably little variation between the three investment management cohorts.



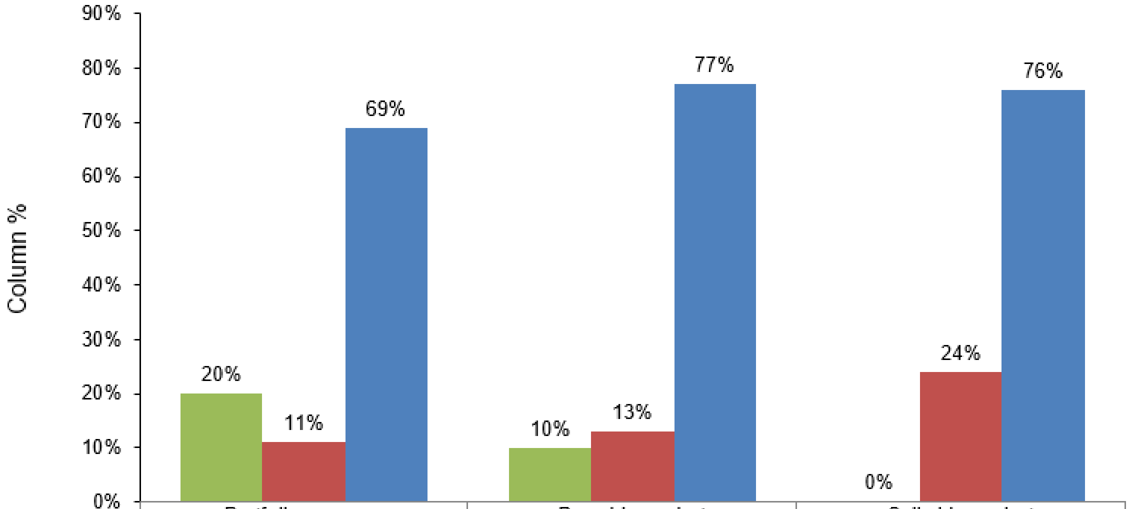
	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	14%	15%	6%
Sometimes	11%	14%	15%
Seldom	76%	71%	79%

Figure 8.29: Job Title * FF3F Model



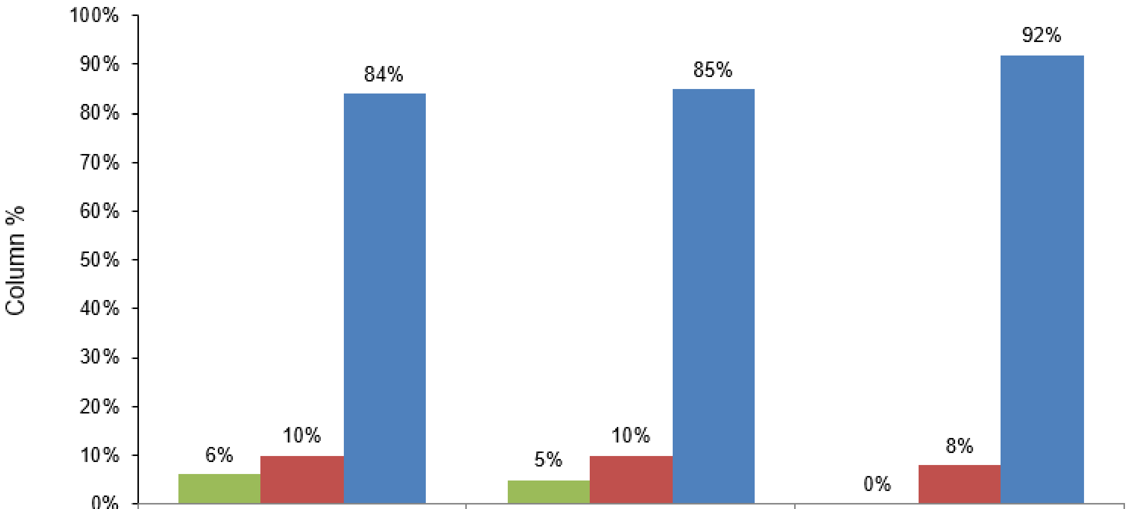
	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	10%	9%	4%
Sometimes	13%	14%	6%
Seldom	77%	77%	90%

Figure 8.30: Job Title * Carhart Momentum Model



	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	20%	10%	0%
Sometimes	11%	13%	24%
Seldom	69%	77%	76%

Figure 8.31: Job Title * APM



	Portfolio manager	Buy-side analyst	Sell-side analyst
Frequently	6%	5%	0%
Sometimes	10%	10%	8%
Seldom	84%	85%	92%

Figure 8.32: Job Title * ICAPM

8.4 Conclusion

This chapter partially addresses the second and third of the three overarching research questions driving the study. To recap, these questions relate to:

1) the utility of accounting and modern finance theory in equity decision-making, and;

2) the role and utility of sell-side equity research in buy-side equity decision-making.

Put simply, the aim of the research is to learn something about the general procedures adopted by European investment managers and analysts in their appraisal of ordinary shares of companies and to suggest areas in which further research might be worthwhile.

The findings in this chapter are based on the survey evidence gathered from the 339 portfolio managers and investment analysts who responded to the questionnaire.

Conspicuously, the survey findings reveal what is largely already known in the investment management literature, i.e. given the choice, the respondents prefer accounting techniques over the neo-classical techniques of modern finance when evaluating equity investments. Moreover, the results demonstrate, with the exception of DCF methods, that the respondents prefer accounting multiples over intrinsic methods of valuation. Gleason et al. (2013, p.112) suggest, "analysts employ heuristics presumably because they provide a ''fast and frugal'' (Gigerenzer, Todd, and the ABC Research Group 1999) mechanism for reducing the complex equity valuation task to a simpler judgmental operation". Abhayawansa et al. (2015) and Imam et al. (2008) also submit that multiples valuation models are favoured by analysts for their simplicity, intelligibility and short-term focus, and because they enable them to more easily communicate with their clients. They also claim that multiples are favoured by fund managers because of their alleged short-term focus, which they contend arises because portfolio managers are remunerated on the quarterly performance of their portfolios relative to market prices – which reflect short-term market perceptions and momentum. However, Gleason et al. (2013, p.112) assert, which the interview evidence also affirms, that: “In general heuristics are quite useful but sometimes they lead to severe and systematic errors”.

Whilst at a fundamental level the survey findings reveal that buy and sell-side investment managers perform similar functions – both study companies in order to make recommendations about whether to buy, sell or hold specific securities – they nevertheless seemingly differ in their respective use of the accounting and finance methods available to them to appraise companies.

Comparing buy/sell-side use of accounting multiples, the survey evidence reveals both sides share similar proclivities when it comes to using PE, EV/EBITDA and DY. Conversely however, the two sides differ with respect to their use of the PB, PC, EY, PS and Shiller-CAPE multiples; specifically, the sell-side use them more often than their buy-side colleagues (Table 8.1). This is a significant finding, as it serves to partially substantiate the interview evidence that shows some portfolio managers and buy-side analysts discard Analyst Reports with disquieting regularity. That is, assuming buy-side users need to trust the information they receive from the sell-side before they can use it, and assuming also that they can`t judge the trustworthiness of sell-side analyst reports until they have firstly understood the significance of the estimates therein, then it seems only natural to conclude that this becomes a frustrating task, before it even begins, when the buy-side notice they are unfamiliar with the valuation metrics (multiples) used by the sell-side to compile the analyst reports. Logically, if they can’t read the reports, it seems unlikely they’ll wish to accept or trust the recommendations within them, and hence discard them on sight. By rational extension, the same judgment applies to the other elements contained in analyst reports: so-called ‘industry knowledge’, target prices and commentary.

The task of comparing and contrasting buy/sell-side findings to other studies in the literature can be difficult. For example, Gleeson et al. (2013, p.85) assert that the "evidence on valuation model use obtained from the content analyses of sell-side research reports may provide an incomplete picture of how analysts actually formulate their price targets". Asquith et al. (2005) and Demirakos et al. (2004) also illustrate this quite well. Asquith et al. (2005), using a database constructed from analyst reports issued by Institutional Investor All-American team members during 1997–1999, observed that 99 percent of the sell-side analyst reports mentioned earnings multiples (e.g., price-to-earnings), but only 13 percent mentioned using DCF or its variants. Demirakos et al. (2004) report that only half of the 104 sell-side analyst research reports in their London Stock Exchange sample mention DCF valuation models or variations such as residual income. But nearly all reports mention heuristics such as earnings, sales multiples, and/or price-to-book ratios.

Alternatively, the interview evidence demonstrates that buy/sell-side comparisons can be difficult to make because related contextual factors may be in conflict, for example: the scale and scope of their coverage may differ; their sources of information may differ; their target audiences can differ; their use of private vs. public information often differ; how their performance is measured may differ; and how they are compensated often differ. As Penman (2010, p.74) observes: ''In valuation, as with most technologies, there is always a trade-off between simple approaches that ignore some pertinent features and more elaborate techniques that accommodate complexities.'' In keeping with this evidence, Groysberg et al. (2013) compared buy-side analysts' stock recommendations with those of sell-side analysts and found buy-side analysts stock recommendations have no investment value. In contrast however, Frey and Herbst (2014, p.442) show that "Overall, the impact of buy-side analysts is more pronounced than that of sell-side analysts", most especially when they make recommendation changes. "Francis and Soffer (1997) find that the market responds more strongly to earnings forecast revisions accompanied by buy (versus hold or sell) recommendations", cited in Ramnath et al. (2008, P.51). In the same vein, Joos et al., (2016), Franck and Kerl (2013) and Jegadeesh et al. (2004) show that the information content of sell-side stock recommendations is highest in recommendation changes.

Although the questionnaire responses provided information about the general appraisal methods, types and sources of information which are used by investment managers and analysts, they were of less help in furthering our understanding of the cognitive processes that underpin buy-side investment decision-making. Nor did we learn how various items are used by sell-side analysts to derive recommendations about whether a particular share should be purchased or sold.

Correspondingly, Arnold and Moizer (1984, p.207) made similar assertions in their seminal paper on UK investment analysts, which remains just as valid in the current research context. Specifically, they stated that "where there are numerous differences of detail between the precise procedures used by analysts [herein portfolio managers, buy-side investment managers and sell-side analysts], as appears to be the case for UK investment analysts, a questionnaire survey is unlikely to be a satisfactory means of capturing these differences; a questionnaire which provided the necessary level of detail would be so long as to discourage probably all but the most committed respondents". Moreover, they suggested in their paper that more appropriate research methods for a study of how particular types of information are used would be direct observation, interviews and laboratory experiments, possibly with questionnaires being used to clarify and substantiate certain aspects of the decision-making processes. Therefore, it was in keeping with this advice that a mixed-methods research strategy, encompassing interviews and questionnaires, was adopted to address the three over-arching research questions driving the study. Hence, the value of the findings in this chapter are enhanced when they are considered alongside the interview findings in Chapters 6, plus the descriptive analysis of the respondents characteristics in Chapter 7. Notably, Chapter 10 also discusses the empirical evidence and draws the final conclusions.

To summarise, this research study demonstrates that there are no magic elixirs that project market returns or mitigate the risks therein, especially since the markets themselves are constantly changing and evolving. The array of available accounting and modern finance techniques certainly helps investors and analysts to make general comparisons across markets, countries, industrial sectors and firms, but the evidence also indicates that different investment managers rate specific accounting methods differently, for example technology and retail analysts vs. media or financial analysts. Additionally, the questionnaire and the interview evidence, together with the more recent literature, attest to multi-faceted changes that have taken place across the investment management industry during the past 10 years, which only add to the complexity of investigating the 'black box' of investment management praxis. And as Imam et al. (2008) observed, 'sophisticated' models are significantly more important than prior survey evidence suggests. Somewhat paradoxically, they also refer to the continued importance of 'unsophisticated' valuation multiples, notably the price/earnings ratio (PE). Nevertheless, their findings tend to fit with the current research findings.

In conclusion, it is the contention of this study that what may matter most [from an investment decision-making perspective] is not so much what specific appraisal methods are used to generate the valuation, but rather how they are used in that general endeavour. Mukhlynina and Nyborg (2016) reached a somewhat similar conclusion, and commenting that there is a lack of academic research on the topic, yet it is very important in practice.

Chapter 9

STRUCTURAL EQUATION ANALYSIS OF QUESTIONNAIRE RESPONSES

9.1 Introduction

Following the descriptive statistical analysis and non-parametric test results presented in the previous two chapters, this chapter presents the exploratory and confirmatory factor models that were used to further test and confirm the relevance of the conceptual framework used in the study to inform the research objectives, questions, dataset, findings and conclusions.

Specifically, the focus of the chapter is to offer a quantitative statistical analysis of the questionnaire responses that were returned by the 339 investment management professionals who completed the survey. In particular, the validity of the four accounting and finance dimensions (intrinsic accounting methods, multiples accounting methods, single-factor finance methods, and multi-factor finance methods) used to construct the questionnaire, and subsequently analyse the responses, was examined. The first and second-order confirmatory factor analysis (CFA) factor loadings, together with several related construct validity and reliability test results, revealed that there was a strong association between the four accounting and finance dimensions used in the study and the observed indicator variables assumed to measure them. The findings of this chapter also complement the results of the interviews carried out with fund managers in Chapter 6.

The computations involved could have been done by simple regression, but increasingly the more advanced technique of "structural equation modelling" (SEM) is being used by social science researchers. Notably, unlike regression models – which assume no error pertains to the measurement of observed variables or test results – it permits a more complex analysis of the data and the error that is inherent in the measurement of observed variables. By isolating the effects of this error, more accurate estimates of the direction and size of the relationships between variables can be obtained (Turner, 2006).

The SEM building steps outlined in this chapter began with a careful examination of the survey dataset. Data screening represents the essential ‘first-step’ in all structural equation modelling designs (Gaskin, 2017; Hair et al., 2014; and Kline, 2010). Firstly, the sample was checked for missing data. Then, cases and variables were screened and ‘cleaned’ before performing data imputation procedures in SPSS v.24. in order to derive a complete, representative and ‘usable’ dataset. Notably, various SEM related model-building steps will not run in SPSS AMOS when missing values are present in the dataset.

After conducting the data screening, cleaning and imputation steps, the ‘completed’ dataset was ready to undergo exploratory and confirmatory factor analysis. The exploratory factor analysis (EFA) procedures were used to examine the inter-correlations among the variables in the dataset with a view to observing how well these variables formed into groups, or more precisely how they "loaded" onto extracted factors with eigenvalues above 1.0. Subsequently, confirmatory factor analysis (CFA) procedures were used to assess the relationships between latent factor constructs and their corresponding indicators.

These SEM related procedures provided the framework needed to estimate the strength of various statistical relationships within the sample. These included the measurement of covariances and correlations, factor loadings, beta coefficients, standardised and unstandardised regression coefficients, and direct and indirect effect sizes (Hair et al., 2014). Some of the more notable adequacy, validity and reliability verification procedures that related to the questionnaire findings presented in Chapters 7 and 8 included checking that: normality was evident in the dataset; missing data was missing at random (MAR), missing completely at random (MCAR), or missing not at random (MNAR); common-method bias, which can arise when self-report questionnaires are used, was absent from the dataset; response bias resulting from attrition was absent from the dataset; Likert scale reliability pertaining to the structure of the questionnaire items was within acceptable thresholds when tested using Cronbach's alpha; the observed indicator variables in the dataset representing the EFA and CFA model constructs were within acceptable thresholds of 'Adequacy' when tested using the Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy, Bartlett's Test of Sphericity and related Communality criteria; and moreover Construct validity was within acceptable EFA and CFA thresholds when tested using the criteria of Convergent and Discriminant Validity and Composite Reliability.

Overall, the SEM modelling steps presented in this chapter provide a useful methodology for understanding and then expressing how a set of observed variables, correlations and factor constructs relate causally to each other (Kline, 2010). They served to confirm the validity and reliability of the factor structure and indicator items in the questionnaire, and the corresponding information in the dataset that was used to generate the study's quantitative findings. They also generated useful insights pertaining to the utility of accounting and finance theory within the investment management industry, which is one of the study's primary research questions.

These topics, as well as related structural equation modelling literature, are discussed in this chapter under 6 inter-connected headings which when taken together comprise the EFA, CFA and SEM quantitative analysis framework portion of the study. Section 9.2 examines the phenomena of missing data, case and variable screening and data imputation. Section 9.3 performs exploratory factor analysis (EFA). Section 9.4 performs confirmatory factor analysis (CFA). Section 9.5 discusses the phenomenon of Common Method Bias (CMB). Section 9.6 concludes the chapter with a presentation of the tentative structural equation model design that future researchers may find informative, but nonetheless is beyond the scope of the current study.

9.2 Missing Data Analysis, Case & Variable Screening and Data Imputation

Several important inferential statistical procedures and hypothesis testing routines will not run in SPSS when a sample contains missing data. For example, SPSS AMOS is unable to perform 'boot-strapping' or run the CFA and SEM 'modification indices' when the dataset contains missing values (IBM Knowledge Centre, 2018). Therefore, the standard advice is to replace missing values before conducting EFA, CFA or SEM analyses and testing. But here, as with the skewness and kurtosis threshold issues discussed below, the literature is often unclear when it comes to recommending specific guidance to researchers. Thus, the phenomenon of 'missingness' is frequently a problematic one for researchers, that often tends to be over-looked or at best afforded only cursory examination and discussion in many published papers (Kenny, 2011).

9.2.1 Options for Handling Missing Values – A Brief Review of the Literature

It is an almost universal theme within the literature that a researcher's choice of imputation method to replace missing data should depend on his/her assessment of whether the data is missing randomly (MCAR or MAR) or in a systematic way (NMAR) (Reifman, 2018; Gaskin, 2017; Hair et al., 2017, Kenny, 2011, and IBM Knowledge Centre). For example, the expectation-maximization (EM) technique is typically used when data are missing at random (MAR), and the multiple imputation (MI) technique using logistic regression is typically used when data are either missing at random or missing systematically (McKnight et al., 2007; and TheRMUoHP Biostatistics Resource Channel, 2017). Another option, often the simplest, is to impute to the mean or median value of the observed variable. However, when more than five to ten percent of the values on a single column or variable are missing (which happens often in survey data), simply imputing to the mean (continuous scales) or median (ordinal scales) can dilute the potency of the variable by pushing it too close to the centre. Thus, the effect sizes of correlations and the regression coefficients associated with that variable may be diluted (Gaskin, 2017). Alternatively, full information maximum likelihood (FIML) is a more advanced missing data method that does not replace or impute missing values but rather the missing data is handled by the FIML algorithm in such a way that it uses all of the available information to estimate the model (Eekhout et al., 2012). Notably, multiple imputation (MI) and full information maximum likelihood (FIML) usually produce similar results, provided the same information is incorporated in the multiple imputation model as in the full information maximum likelihood model (Collins et al., 2001). However, it is unfortunate that while SPSS AMOS does provide users with the option to handle missing data using the full information maximum likelihood (FIML) algorithm, the procedure does not run modification indices or provide significance statistics such as confidence intervals or p-values. Thus, the process of attempting to achieve an adequate model fit together with reliable and valid estimates can be more difficult and troublesome when using FIML in this way. Thus, this choice was not a viable option for 'solving' the missing data imputation dilemma faced by this researcher.

The other alternative was to use the theoretically superior multiple imputation (MI) technique to impute all missing data in the sample. Unfortunately, while MI has the advantage of producing pooled statistical estimates that are unbiased, it does not provide a pooled dataset. Therefore, it cannot be used to perform SEM. This apparent 'flaw' in the AMOS algorithm may help to explain why some researchers appear to sidestep the thorny issue of missing data imputation altogether, opting instead to simply impute to the mean and/or delete pairwise or listwise. However, these so called 'solutions' may be inherently flawed (Enders, 2010; Acock, 2005; Schafer & Graham, 2002; and Rubin & Little, 2002).

Moreover, these options can potentially create bias, which can in turn lead to unreliable statistical results.

Hair et al. (2014) advise researchers to be guided by the underlying data screening and imputation literature; their research objectives and the research questions driving the study; their comprehension of the subject matter; the type of questions asked in the survey (whether reflective, formative or latent); the extent of the missingness across cases and variables; and the methods and techniques the researcher anticipates using in order to conduct subsequent statistical inferential analysis.

In conclusion, questions pertaining to whether data values are missing at random (MAR), missing completely at random (MCAR), or missing not at random (MNAR) are critically important in survey research and the literature urges researchers not to carry out any form of inferential statistical analysis without firstly conducting a thorough literature-driven missing data review. In this way researchers should be better equipped to identify and select the missing data screening, cleaning and imputation method that is best suited to his or her uniquely specific research context. That said, no data cleansing or imputation procedure will ever be perfect.

9.2.2 Missing Values Overview

The following pie charts attest to the dataset's original state of completeness or alternatively, missingness.

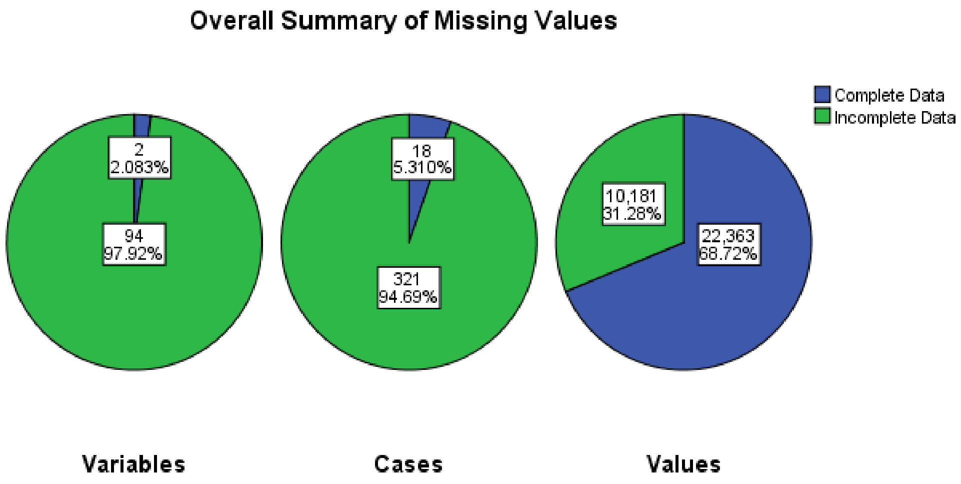


Figure 9.1: Summary of Missing Values

Source: Kelly (2019)
Developed by the author using IBM SPSS Statistics v.24

As indicated in Figure 9.1, plus Chapters 7 and 8, there were 339 cases and 96 variables in the original (uncleaned) data set. The 'Variables chart' highlights the level of missing data across all columns in the dataset. Almost all of the columns in the dataset (97.92%; n=94), which correspond to individual questionnaire responses, had some level of missing data. Only 2.083% (n=2) of the variables had complete cell values or data points. The 'Cases chart' indicates the missingness was distributed across 94.69% (n=321) of the rows in the dataset, which implies only 18 respondents (5.310%) completed the entire survey. The 'Values chart' indicates the total level of cells missing in the dataset was 31.28% (n=10,181). In conclusion, the 'Values chart' indicates 68.72% (n=22,363) of the survey contained complete data.

9.2.3 Missing Value Patterns

Figure 9.2 below (Missing Value Patterns) presents a graphical display of the manner in which the missing and non-missing values are dispersed across the rows and columns in the survey. The 10 most frequently occurring patterns or 'blocks of missingness' are shown in

Figure 9.3. Except for the evident clusters or blocks of 'missingness', the spread of the data appears largely random. If this simple observational heuristic were valid, then it would suggest the observed patterns are unrelated to either specific questions or cases within the survey (Hair et al., 2014).

Notably, when data are 'missing completely at random' (MCAR), the analysis performed on the data is unbiased. But, rarely in the real-world are data MCAR (Enders, 2010; Graham, 2009; Acock, 2005; Rubin & Roderick, 2002; and Alison, 2001). Nonetheless, it is impossible to reliably make such a judgement without further statistical pattern analysis and testing, in particular the 'blocks of missingness' indicated in Figure 9.2 and 9.3 below. That is, these blocks of missingness, all other things equal, indicate the values are not entirely 'missing completely at random' (MCAR). As a corollary, Little's MCAR Test is a frequently used statistical technique for determining the nature of 'missingness' in a dataset, and which is discussed in the next section.

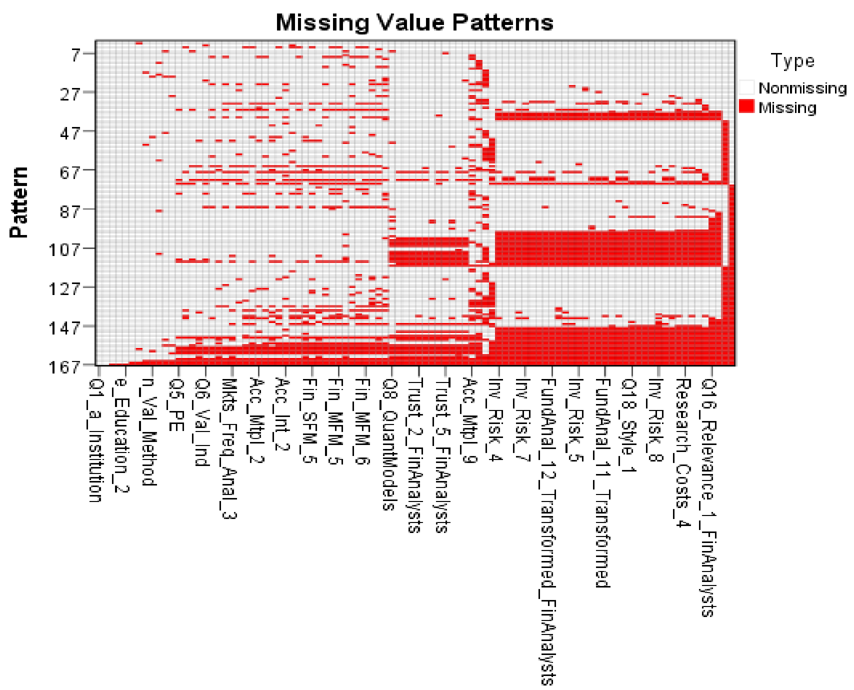


Figure 9.2: Missing Value Pattern #1
Source: Kelly (2019)
Developed by the author using IBM SPSS Statistics v.24

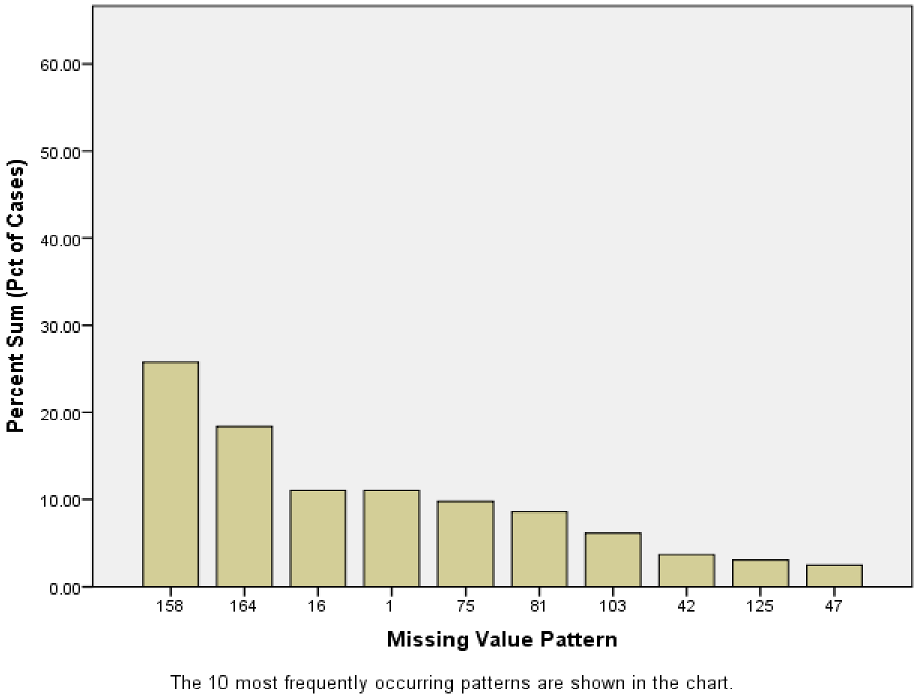


Figure 9.3 Missing Value Pattern #2

Source: Kelly (2019)
Developed by the author using IBM SPSS Statistics v.24

9.2.4 Little's Missing Completely at Random (MCAR) Test

MCAR is a special case of MAR (Dong & Peng, 2013). Little's MCAR Test tries to determine if data points in a dataset are missing randomly or non-randomly. It is a useful preliminary first step in the process of deciding how best to replace missing data. The procedure is designed to test the null hypothesis that the data is missing randomly (Hair et al., 2017; Brown, 2015; Kline, 2011, Byrne, 2010; and Schumacker & Lomax 2010). As indicated in Figure 9.4, Little's MCAR Test was not significant: χ^2= 9254.474 (df =9147) and p<.213 at the 95% confidence level, indicating the missing data were missing completely at random (MCAR). The full version of the SPSS Little's MCAR Test Output File was too wide to include with this document, so the researcher chose only to provide the selected 'snippet' shown. Notably, all variables and cases in the dataset were included in the test.

Little's MCAR test - EM Estimated Statistics

Q2_Acc_Int_1	Acc_Int_2	Acc_Int_3	Acc_Int_4	Acc_Int_5	Q2_Acc_Mtpl_1	Acc_Mtpl_2	Acc_Mtpl_3	Acc_Mtpl_4
3.44	2.57	3.66	2.28	2.49	3.78	3.34	3.84	3.65

a. Little's MCAR test: Chi-Square = 9254.474, DF = 9147, Sig. = .213

Figure 9.4: Little's MCAR Test

This is the ideal outcome from a researcher's perspective, albeit frequently unobtainable in practice. If the MCAR test result had turned out to be significant (p-value below .05) then this would have signalled the data was either MAR or NMAR. Nonetheless, it would have been impossible to know which of these two situations prevailed in the data (Brown, 2015; Byrne, 2010; Schumacker & Lomax 2010; and 'TheRMUoHP Biostatistics Resource Channel, 2017). In such circumstances, the null hypothesis is rejected on the basis that there is some sort of systematic bias in the dataset. For example, bias could arise if some respondents did not answer certain questions because they viewed them to be 'sensitive' in some way.

Finally, in light of the fundamental importance of the MCAR test, the MCAR test was also performed on all of the reflective observed indicator variables associated with each of the key latent accounting and finance constructs in the dataset. These included Q2 (Accounting models), Q3 (Financial models), Q4 (Global stock markets) and Q14 (Risk factors). These additional precautionary step provided the added assurance that highly correlated items within the dataset tended not to be biased.

9.2.5 T-Tests related to Systematic -v- Random Missingness

In addition to Little's MCAR test, T-tests were also performed to determine if the observed indicator variables were missing in a random (MAR) or systematic way, and what other variables might be predicting the variables with missing data. For example, if one of the two genders (males or females) had answered a particular question more often than the other, it might indicate females had answered the question at a lesser rate than males. Thus, t-tests can help the researcher to determine if any systematic patterns are evident in response and non-response (missing) data. The steps to performing the technique in SPSS are: Analyse Menu - Missing Value Analysis - Choose EM and then T-tests.

Levels of Missingness across the entire dataset are shown in the appendices accompanying this chapter. Specifically, Appendix A9.2 (Univariate Statistics) shows the mean and standard deviation of each variable in the dataset and highlights the level of missingness in every row. Appendix A9.3 (Variable Summary) presents on alternative perspective on the patterns of missingness in the dataset, whereby the levels of missingness are listed in descending order of relative missingness.

Notably, the range of missingness varies from less than 1% to a high of 70.1%. In some cases there is a logical explanation for the high % of missingness associated with some of the variables. For example, CFA years (missing=70.8%; n=99) is a variable that could only be answered by those respondents who were CFA members, otherwise it was left blank or missing. However, for many of the other variables the reason for their specific level of missingness was not so obvious, which is why the variance t-tests are useful.

The t-tests indicate the nature of the relationship between missing data and other variables in the sample. In the majority of cases the p-values on the third row of the t-test table below

(Figure 9.5) were greater than 5%, indicating there didn't appear to be any systematic predictors of missing data using the other outcome variables in the dataset.

Overall, the numbers appear to indicate the values in the dataset were not missing systematically, i.e. that the missingness was random. Nonetheless, a caveat is advisable. While the MCAR test results and the t-test results (MAR) were non-significant, it would be a mistake to assume the results were entirely conclusive.

Separate Variance t Tests[a]

		Q2_Acc_Int_1	Acc_Int_2	Acc_Int_3	Acc_Int_4	Acc_Int_5	Q2_Acc_Mtpl_1	Acc_Mtpl_2	Acc_Mtpl_3	Acc_Mtpl_4	Acc_Mtpl_5	Acc_Mtpl_6	Acc_Mtpl_7	Acc_Mtpl_8	Acc_Mtpl_9	Q3_Fin_SFM_1	Fin_SFM_2
Q2_Acc_Int_1	t	.	-.5	-1.5	-1.2	-1.5	-.3	-2.2	-2.7	-2.8	-.4	-1.4	-1.9	-2.0	-1.1	-.1	.8
	df	.	67.1	77.0	71.9	64.9	1.0	80.8	98.8	82.7	61.6	68.3	59.6	65.3	47.6	74.6	72.0
	P(2-tail)	.	.616	.128	.246	.150	.838	.032	.008	.007	.691	.165	.061	.048	.266	.947	.401
	# Present	205	195	198	194	187	161	196	198	199	197	198	194	195	178	202	196
	# Missing	0	45	48	40	45	2	46	49	49	41	44	40	42	34	49	45
	Mean(Present)	3.36	2.55	3.60	2.21	2.36	3.74	3.27	3.82	3.57	2.74	3.20	2.97	3.10	2.65	2.84	1.69
	Mean(Missing)	.	2.67	3.92	2.42	2.69	4.00	3.65	4.22	4.06	2.83	3.50	3.42	3.52	2.94	2.86	1.56
Acc_Int_2	t	2.2	.	-3.2	-9.0	-1.5	.5	-2.5	-3.3	-1.5	.6	-2.4	-1.6	-.6	-2.1	1.5	.6
	df	10.0	.	10.4	229.0	7.4	4.2	10.8	14.9	14.3	7.5	10.0	7.5	8.5	5.3	18.9	12.4
	P(2-tail)	.055	.	.010	.000	.172	.633	.028	.005	.149	.590	.038	.145	.595	.083	.143	.563
	# Present	195	240	237	230	224	158	232	236	236	230	233	226	228	206	234	229
	# Missing	10	0	9	4	8	5	10	11	12	8	9	8	9	6	17	12
	Mean(Present)	3.41	2.57	3.63	2.23	2.39	3.75	3.31	3.88	3.65	2.77	3.23	3.02	3.16	2.66	2.88	1.68
	Mean(Missing)	2.40	.	4.44	3.00	3.25	3.40	4.00	4.45	4.00	2.50	3.89	3.87	3.44	3.83	2.35	1.50
Acc_Int_3	t	.6	-6.1	.	.	-3.6	.4	-4.2	-2.0	-.5	-.1	-.8	-4.7	-2.3	-2.3	-.4	-.1
	df	6.4	2.3	.	.	6.6	5.3	4.9	4.7	5.7	4.2	3.6	2.3	3.2	2.1	10.9	6.3
	P(2-tail)	.546	.018	.	.	.010	.677	.009	.107	.616	.943	.463	.031	.104	.145	.729	.924
	# Present	198	237	246	234	225	157	237	242	242	233	238	231	233	209	240	234
	# Missing	7	3	0	0	7	6	5	5	6	5	4	3	4	3	11	7
	Mean(Present)	3.37	2.55	3.66	2.25	2.38	3.75	3.32	3.89	3.67	2.76	3.25	3.03	3.15	2.67	2.84	1.67
	Mean(Missing)	3.00	4.67	.	.	3.86	3.50	4.40	4.40	3.83	2.80	3.50	4.67	4.25	4.00	3.00	1.71
	t	.6	-2.4	-1.7	.	-3.7	.7	-3.0	-2.9	-1.7	.5	-1.2	-.8	-1.3	-2.4	.1	1.0

Figure 9.5: T-Test Results

9.2.6 Expectation Maximization (EM) Technique

A major assumption of the expectation maximization technique is that the data are missing randomly (i.e. MAR or MCAR), hence the importance of conducting the preliminary MCAR test and t-tests to determine if data are missing randomly or not.

Notably, EM imputed data is mostly used in situations that call for exploratory factor analysis, but it can also be used when performing inferential data analysis provided the amounts of missingness are small, usually from 2% to 5, but sometimes researchers extend this range to 10%. Therefore, because most of the observed variables in the dataset were missing more than 5% or 10% of their values, the EM method of imputation was not an immediately viable option for the researcher in this instance, i.e. at least not until the additional data screening, reduction and replacement procedures were firstly carried out.

In conclusion, EFA, CFA and SEM procedures will only work in SPSS AMOS if the dataset is fully complete, with no missing values present. Frequently, researchers simply impute missing values to their mean or median variable values, but doing this is potentially problematic and often creates bias in the dataset and test results. Moreover, as noted earlier, the MI algorithm in SPSS imputes missing data internally to generate statistically reliable and unbiased test results. But the MI procedure does not produce a complete dataset that the researcher can independently use afterwards. However, the expectation maximization (EM) technique does generate a separate dataset that the researcher can examine and test afterwards. Notably, EM replaced data is potentially acceptable for inferential statistical purposes once data screening and judicious cleaning steps have reduced levels of missingness to within the acceptable range of (say) 0 to 5% (TheRMUoHP Biostatistics Resource Channel, 2017).

Finally, the various data screening, cleaning and reduction procedures that were performed on the original unabridged dataset to prepare it for the EM imputation procedure used to replace the balance of the missing values in the original dataset are described in the next sections of this chapter.

9.2.7 Case and Variable Screening, and Cleaning

Data 'screening' is the process of ensuring the data is 'clean' and ready for statistical analysis (Gaskin, 2017). It corresponds to the essential first-step in all EFA, CFA and SEM designs. Without it, it is unlikely that any proposed CFA or SEM model will achieve identification and good model fit. Moreover, researchers are advised to expect some degree of 'missingness' in almost all primary survey data.

Appendix A9.1 contains a description of the steps involved in 'cleaning' the dataset in order to reduce the level of missingness to within acceptable thresholds so that any remaining missing values could be imputed in order to obtain the fully completed dataset. In total 139 cases and zero variables were trimmed from the original dataset (n=339). Subsequently, 49 variables were removed (not deleted) from the post-imputation dataset because the affected variables were not required to conduct the EFA and CFA model building, and testing procedures described in later sections of this chapter. Notably, the final 'cleaned' SEM-related dataset contained 200 cases (rows) and 50 variables (columns).

9.3 Exploratory Factor Analysis (EFA)

The previous section, together with the Appendices, describe how the 'missingness' in the dataset was screened and cleaned. Ergo, the reflective latent factor indicator items (observed variables) in the newly 'cleaned' dataset are now ready to undergo exploratory factor analysis (EFA). The aim of exploratory factor analysis is to examine the inter-correlations among the variables in the dataset, and then to propose or 'extract' the optimal factor structure in accordance with the criteria set into the computer program performing the EFA. Notably, EFA is said to be the most frequently used multivariate analysis technique in statistics (Asparouhov and Muthen, 2009).

In this vein, 'Maximum Likelihood' (ML) is one of 7 factor extraction methods available in SPSS v.24. The other 6 SPSS factor extraction methods include: Principal Components Analysis, Unweighted Least Squares, Generalized Least Squares, Principal Axis Factoring; Alpha Factoring and Image Factoring. Moreover, 'Promax' is one of 5 factor rotation methods available in SPSS v.24. The other 4 include: Varimax, Direct Oblimin, Quartimax, and Equamax.

Notably, even though principal component analysis (PCA) is the default EFA factor extraction method in SPSS 24, the researcher chose ML because ML is also the algorithm used by AMOS to perform confirmatory factor analysis (Joreskog, 1969) and structural equation modelling (Hair et al., 2017; Gaskin, 2017; Brown, 2015; Kline, 2011, Byrne, 2010; and Schumacker & Lomax 2010). Moreover, ML maximises differences between factors and provides goodness of fit estimates for the EFA factor solution. Promax was selected because the re-specified (cleaned) dataset was quite large (n=200), and Promax can account for the correlated factors in a dataset of this size (Gaskin, 2017 and Costello & Osborne, 2005).

Finally, the ML and Promax extraction algorithms grouped or 'loaded' the 36 empirically observed variable items in the dataset into 10 reflective latent factor constructs to create the proposed EFA factor structure shown in the 'Pattern Matrix' and 'Total Variances Explained' charts below, see Figures 9.6 and 9.7.

9.3.1 EFA Factor Structure

As shown in Figures 9.6 and 9.7 below, the ‘Pattern Matrix’ and ‘Total Variances Explained’ charts demonstrate how the 36 observed variables were arrayed into 10 groups. More precisely, the 36 observed reflective latent factor indicator variables loaded onto 10 extracted latent factor constructs with eigenvalues above 1.0, which conjointly explained 57% (56.8%) of the total variance in the dataset, correlation matrix or model (Gaskin, 2017, Costello & Osborne, 2005). Moreover, the Scree Plot shown in Figure 9.8 provides a useful alternative perspective on the EFA factor structure. However, the researcher had anticipated, based on his a priori reading of the theoretical accounting and finance literature, that the EFA Pattern Matrix and/or Scree Plot would propose 6 factors, not the 10 factors extracted shown in the Pattern Matrix.

Nonetheless, the loadings shown in Figure 9.6 are high and there are no major cross-loadings between the factors, i.e. the primary loadings are at least 0.200 larger than the secondary loadings appearing on the same factor (Gaskin, 2017, Reio & Shuck, 2015). Conspicuously, the pattern matrix contains some factor constructs that are measured by only 2 indicator variables. However, while factors should ideally have at least 3 variable items measuring them, 2 variables are sometimes permissible but can lead to unstable constructs. Notably, as a rule, factor reliability generally increases when more variables load onto the same construct (Ferguson & Cox, 1993). Therefore, on balance, the EFA factor structure appears ‘clean’, which subject to further testing indicates convergent and discriminant validity are evident in the dataset.

SPSS Pattern Matrix										
- Observed variables -	1	2	3	4	5	6	7	8	9	10
Q3_Please indicate how often you use Multi Factor Model_Carhart Momentum Model	0.885									
Q3_Please indicate how often you use Multi Factor Model_Inter-temporal Capital Asset Pricing Model (ICAPM)	0.872									-0.379
Q3_Please indicate how often you use Multi Factor Model_Other Multi Factor Model	0.837									
Q3_Please indicate how often you use Multi Factor Model_Arbitrage Pricing Model (APT)	0.795									
Q3_Please indicate how often you use Multi Factor Model_FF3F	0.732									
Q3_Please indicate how often you use Single Factor Model_CCAPM	0.633									
Q3_Please indicate how often you use Multi Factor Model_Shiller-Cape Momentum Model (CAPE)	0.621									
Q3_Please indicate how often you use Single Factor Model_Sharpe Ratio	0.579									
Q3_Please indicate how often you use Single Factor Model_Other SF Model	0.548					0.413				
Q3_Please indicate how often you use Single Factor Model_Momentum Pricing Model	0.407									
Q2_Please indicate how often you use EY Models		0.797								
Q2_Please indicate how often you use PE Models		0.766								
Q2_Please indicate how often you use DP Models		0.736								
Q2_Please indicate how often you use PB Models		0.454								
Q2_Please indicate how often you use EVEBITDA Models		0.335								
Q14_How likely are you to include Regional risk factors in your forecasts			0.976							
Q14_How likely are you to include Country risk factors in your forecasts			0.744							
Q14_How likely are you to include Global risk factors in your forecasts			0.731							
Q14_How likely are you to include Industry risk factors in your forecasts				0.905						
Q14_How likely are you to include Sector risk factors in your forecasts				0.85						
Q14_How likely are you to include Firm-specific risk factors in your forecasts				0.539						
Q4_Please indicate how often you analyse South American companies					1.074					
Q4_Please indicate how often you analyse Eastern European companies					0.586					
Q4_Please indicate how often you analyse Asian_Australian companies					0.434					
Q2_Please indicate how often you use the DCF Model						0.754				
Q3_Please indicate how often you use Single Factor Model_CAPM						0.677				
Q2_Please indicate how often you use the DDM										
Q4_Please indicate how often you analyse Western European companies							0.823			
Q4_Please indicate how often you analyse UK companies							0.635			
Q4_Please indicate how often you analyse US companies										
Q2_Please indicate how often you use PC Models								0.76		
Q2_Please indicate how often you use PS Models		0.37						0.401		
Q2_Please indicate how often you use the RIV Model						0.418			0.526	
Q2_Please indicate how often you use Other Intrinsic Accounting Models									0.437	
Q14_How likely are you to include Portfolio-specific risk factors in your forecasts										0.464
Q14_How likely are you to include 'Factor Relationship' factors in your forecasts										0.381
Extraction Method: Maximum Likelihood.										
Rotation Method: Promax with Kaiser Normalization.										
a Rotation converged in 8 iterations.										

Figure 9.6: Pattern Matrix[16]

[16] Pattern Matrix: Loadings below 0.5 are deemed insignificant (Gaskin, 2017).

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.586	21.071	21.071	2.528	7.022	7.022	6.237
2	4.336	12.043	33.114	5.532	15.368	22.389	3.855
3	2.415	6.709	39.823	4.424	12.288	34.677	3.641
4	2.306	6.406	46.229	2.118	5.885	40.562	3.145
5	1.869	5.191	51.419	1.411	3.918	44.48	3.21
6	1.559	4.331	55.75	1.275	3.541	48.021	2.911
7	1.261	3.502	59.252	1.139	3.165	51.186	2.248
8	1.187	3.296	62.548	0.704	1.954	53.14	1.798
9	1.142	3.173	65.721	0.676	1.878	55.018	1.215
10	1.048	2.911	68.632	0.642	1.783	56.801	1.619
11	0.953	2.647	71.279				
12	0.857	2.381	73.659				
13	0.849	2.358	76.018				
14	0.761	2.114	78.132				
15	0.714	1.984	80.116				
16	0.626	1.74	81.856				
17	0.573	1.591	83.446				
18	0.561	1.559	85.005				
19	0.528	1.466	86.471				
20	0.491	1.363	87.834				
21	0.488	1.357	89.191				
22	0.427	1.185	90.376				
23	0.357	0.99	91.366				
24	0.348	0.966	92.332				
25	0.325	0.904	93.236				
26	0.315	0.875	94.112				
27	0.296	0.823	94.934				
28	0.274	0.76	95.694				
29	0.259	0.719	96.413				
30	0.255	0.707	97.12				
31	0.207	0.576	97.696				
32	0.206	0.572	98.267				
33	0.187	0.519	98.786				
34	0.169	0.469	99.255				
35	0.163	0.454	99.709				
36	0.105	0.291	100				
Extraction Method: Maximum Likelihood.							
a When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.							

Figure 9.7: Total Variance Explained[17]

[17] % of variance explained: Over 50 is tolerable. Over 60 is good (Gaskin, 2017).

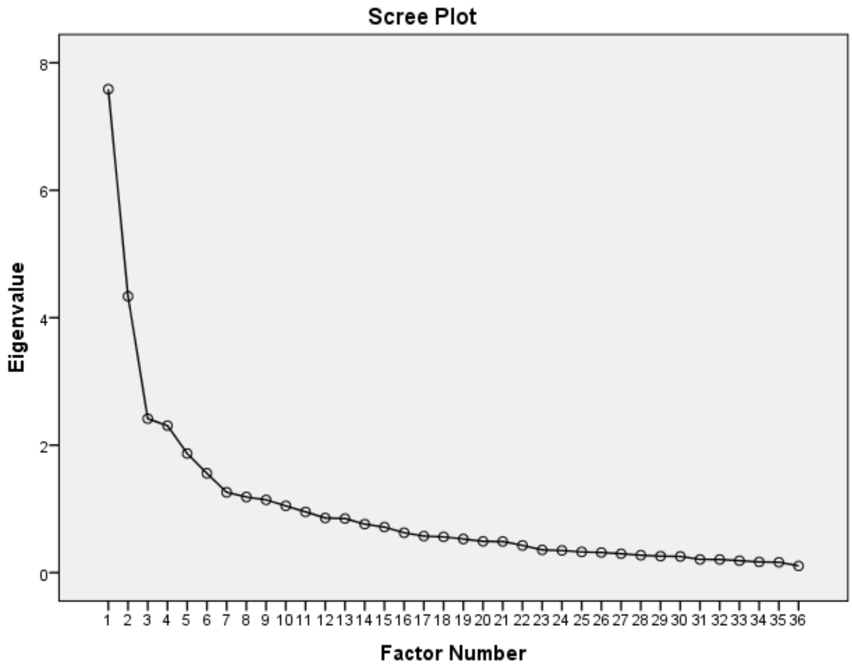


Figure 9.8: Scree Plot

9.3.2 EFA Model Fit Statistical Analysis

The observed indicator variables in the 'cleaned' dataset used to create the 10-factor EFA model depicted in the Pattern Matrix were assessed for model fit using the criteria of 'adequacy', 'validity' and 'reliability' recommended in the EFA-SEM literature, see for example Awang (2018), Oerlemans (2018), Reifman (2018), Gaskin (2017), Hair et al. (2014), Kenny (2011), Kline (2011), and Jarvis et al. (2003). Specifically, the following tests were performed:

1. Adequacy criteria:
    a. Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy;
    b. Bartlett's Test of Sphericity;
    c. Communality of the observed variables test.

2. Validity criteria:
    a. Face Validity (does the pattern matrix make sense);
    b. Convergent Validity (loading on pattern matrix, i.e. indicator items load on a single factor);
    c. Discriminant Validity (no major cross-loadings on pattern matrix and no major cross-loadings on factor correlation matrix).
3. Reliability criteria:
    a. Cronbach's alpha (Scale Reliability of Questionnaire Items + Extracted EFA Factor Reliability)

9.3.2.1 EFA Adequacy

The Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy (KMO) is a measure of the empirical data's suitability for exploratory factor analysis. It measures sampling adequacy for each variable in the model and for the model as a whole. The statistic measures the proportion of variance in the observed variables caused by the underlying factors in the model. High values (close to 1.0) indicate performing factor analysis may be useful. Low values (less than 0.50) indicate the results of factor analysis probably won't be very useful (IBM Knowledge Centre, 2018). As shown in Table 9.1 below, the Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy was 0.793, or just below 'meritorious' as described in Cerny and Kaiser (1977) and Kaiser (1974).

Bartlett's Test of Sphericity evaluates the hypothesis that the correlation matrix is an identity matrix. If true, an identity matrix would indicate the variables are unrelated and therefore unsuitable for structure detection. Small values of the significance level ($p<.05$) indicate the observed data may be suitable for factor analysis, see Snedecor and Cochran (1989) and IBM Knowledge Centre (2018). As shown in Table 9.1, Bartlett's Test of Sphericity was significant: χ^2= 3521.115 (df =630) and p<.01 at the 99% confidence level, implying the matrix was not an identity matrix, which in turn indicates the variables relate to one another enough to run a meaningful EFA (Gaskin, 2017).

Table 9.1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.793
Bartlett's Test of Sphericity	Approx. Chi-Square	3521.115
	Df	630
	Sig.	.000

Communality refers to the extent to which an item correlates with all other items in the dataset. Higher communalities are better. If communalities for a particular variable are low (say within a range of 0.0 and 0.4) then that variable may struggle to load significantly onto any factor in the model. Furthermore, if the pattern matrix reveals low communality values of say less than 0.200, indicating there may be kurtosis issues in the dataset, it is usually assumed those variables will later be problematic. Therefore, the SEM literature tends to advice removing them from further analysis (Gaskin, 2017). The communality values for each variable in the dataset are shown in Figure 9.9. All but one of the values was above 0.300 and most were above 0.500, indicating the chosen variables were adequately correlated for the researcher to conduct exploratory factor analysis.

	Initial	Extraction
Q2_Please indicate how often you use the DDM	.459	.359
Q2_Please indicate how often you use the DCF Model	.454	.522
Q2_Please indicate how often you use the RIV Model	.418	.495
Q2_Please indicate how often you use Other Intrinsic Accounting Models	.306	.206
Q2_Please indicate how often you use PB Models	.504	.348
Q2_Please indicate how often you use PE Models	.556	.566
Q2_Please indicate how often you use PC Models	.546	.748
Q2_Please indicate how often you use EY Models	.641	.699
Q2_Please indicate how often you use DP Models	.533	.586
Q3_Please indicate how often you use Single Factor Model_CAPM	.552	.582
Q3_Please indicate how often you use Single Factor Model_CCAPM	.529	.537
Q3_Please indicate how often you use Single Factor Model_Sharpe Ratio	.617	.596
Q3_Please indicate how often you use Single Factor Model_Momentum Pricing Model	.523	.402
Q3_Please indicate how often you use Single Factor Model_Other SF Model	.623	.638
Q3_Please indicate how often you use Multi Factor Model_FF3F	.696	.757
Q3_Please indicate how often you use Multi Factor Model_Carhart Momentum Model	.724	.727
Q3_Please indicate how often you use Multi Factor Model_Shiller-Cape Momentum Model (CAPE)	.478	.455
Q3_Please indicate how often you use Multi Factor Model_Arbitrage Pricing Model (APT)	.678	.655
Q3_Please indicate how often you use Multi Factor Model_Inter-temporal Capital Asset Pricing Model (ICAPM)	.649	.755
Q3_Please indicate how often you use Multi Factor Model_Other Multi Factor Model	.670	.678
Q4_Please indicate how often you analyse US companies	.461	.325
Q4_Please indicate how often you analyse UK companies	.465	.479
Q4_Please indicate how often you analyse Western European companies	.502	.686
Q4_Please indicate how often you analyse Eastern European companies	.563	.493
Q14_How likely are you to include Global risk factors in your forecasts	.613	.583
Q14_How likely are you to include Regional risk factors in your forecasts	.718	.877
Q14_How likely are you to include Country risk factors in your forecasts	.694	.712
Q14_How likely are you to include Sector risk factors in your forecasts	.804	.878
Q14_How likely are you to include Industry risk factors in your forecasts	.768	.814
Q14_How likely are you to include Firm-specific risk factors in your forecasts	.489	.373
Q2_Please indicate how often you use EVEBITDA Models	.425	.437
Q2_Please indicate how often you use PS Models	.469	.377
Q4_Please indicate how often you analyse Asian_Australian companies	.479	.225
Q4_Please indicate how often you analyse South American companies	.622	.999
Q14_How likely are you to include Portfolio-specific risk factors in your forecasts	.471	.407
Q14_How likely are you to include 'Factor Relationship' factors in your forecasts	.541	.473

Extraction Method: Maximum Likelihood.

Figure 9.9: EFA Communalities[18]

[18] Cross-loadings are acceptable if they have a difference of more than 0.2. Otherwise, the items/observed variables may prove problematic later-on during the SEM building process (Gaskin, 2017).

9.3.2.2 EFA Validity

Face validity requires a visual assessment of whether variables that are similar in nature appear to measure the construct or factor they are supposed to measure. That is, the observed variables in the pattern matrix are examined to see if they load together on the same reflective[19] latent factor, and whether those factors actually make sense. If there are exceptions, then the researcher should explain them. Factors that demonstrate sufficient face validity are usually easy to label. For example, in the pattern matrix above it is easy to see that Factor 1 relates to "Multi-factor Modern Finance" techniques. Likewise, it is easy to see that all of the risk measurement indicators load on one of two risk-related factors, i.e. Factors 3 and Factor 4. The remaining variable labels also load quite clearly onto their respective latent factors, although as discussed in the next sections there were some discriminant validity issues and one 'Hayward Case' that required 'tweaking' prior to, as well during, the first and second-order CFA stages (Reifman, 2018; Gaskin, 2017; and Hair et al., 2014).

Convergent validity is a measure of the correlation between the variables in a factor. The table below provides a list of commonly used thresholds found in the SEM literature. Generally, the smaller the sample size, the higher the required factor loading. As a corollary, the evidence presented in the above pattern matrix indicated there was convergent validity in the SEM dataset because the factor loadings are mostly greater than 0.400, i.e. higher than the minimum factor loading required for a sample size of 200 (Hair et al., 2014). However, Gaskin (2017) advises that regardless of sample size, factor loadings greater than 0.500 and averaging greater than 0.700 for each factor are preferable.

[19] Reflective factors tend to have indicators that are largely interchangeable and highly correlated (Jarvis et al., 2003).

Sample Size & Factor Loadings for Convergent Validity	
Sample Size	**Sufficient Factor Loading**
50	0.75
60	0.70
70	0.65
85	0.60
100	0.55
120	0.50
150	0.45
200	0.40
250	0.35
350	0.30

Figure 9.10: Sample Size & Factor Loadings for Convergent Validity

Discriminant validity refers to the extent to which factor constructs are distinct and uncorrelated. The rule is that variables should relate more strongly to their own factor than to another factor on the same row. Two primary methods exist for determining discriminant validity during an EFA. The first method requires a visual inspection of the pattern matrix to examine whether the variables load significantly on one factor. If cross-loadings exist (variable loads on more than one factor and possibly multiple factors) then the cross-loadings should differ by more than 0.2. The second method is to examine the factor correlation matrix, see for example Figure 9.11 below. The literature indicates the factor correlation between any two factors should not exceed 0.7. A factor correlation value greater than 0.7 may indicate the factor is too highly correlated with the other factor. Alternatively, if the product of two correlations is greater than 49% (i.e. the shared variance = 49% or 0.7*0.7) then this may also imply the two factors are too highly correlated for discriminant validity to hold.

As indicated in the factor correlation matrix below, there are no factor loadings that exceed 0.7 off-diagonal, which in turn implies that there are no factor loadings that are too highly correlated with other factors. Thus, there is evidence of discriminant validity among the factors in the dataset.

Factor Correlation Matrix										
Factor	1	2	3	4	5	6	7	8	9	10
1	**1**	0.197	0.28	-0.019	0.362	0.319	0.069	0.068	0.185	0.253
2	0.197	**1**	0.283	0.271	0.197	0.334	0.234	0.244	0.183	0.201
3	0.28	0.283	**1**	0.41	0.279	0.215	0.237	0.091	0.038	0.193
4	-0.019	0.271	0.41	**1**	-0.015	0.261	0.121	0.25	-0.002	0.096
5	0.362	0.197	0.279	-0.015	**1**	0.223	0.343	0.032	0.247	0.073
6	0.319	0.334	0.215	0.261	0.223	**1**	0.156	0.117	-0.072	0.073
7	0.069	0.234	0.237	0.121	0.343	0.156	**1**	0.22	0.167	0.151
8	0.068	0.244	0.091	0.25	0.032	0.117	0.22	**1**	0.061	0.078
9	0.185	0.183	0.038	-0.002	0.247	-0.072	0.167	0.061	**1**	-0.098
10	0.253	0.201	0.193	0.096	0.073	0.073	0.151	0.078	-0.098	**1**
Extraction Method: Maximum Likelihood.										
Rotation Method: Promax with Kaiser Normalization.										

Figure 9.11: Factor Correlation Matrix

However, the pattern matrix shown in Figure 9.6 above indicates there are four factors that could potentially pose discriminant validity problems at a later stage, i.e. either during the CFA or SEM development stages. For convenience, the related variable and factor extracts from the Pattern Matrix are presented in Figure 9.12 below.

Evidence of Cross-Loadings in Pattern Matrix	**Factor**					
	1	**2**	**6**	**8**	**9**	**10**
Q3_Please indicate how often you use Multi Factor Model_Inter-temporal Capital Asset Pricing Model (ICAPM)	0.872					-0.379
Q3_Please indicate how often you use Single Factor Model_Other SF Model	0.548		0.413			
Q2_Please indicate how often you use PS Models		0.37		0.401		
Q2_Please indicate how often you use the RIV Model			0.418		0.526	

Figure 9.12: Evidence of Cross-Loadings in Pattern Matrix

As shown in Figure 9.12, the four indicator items (questions or rows) each loaded onto more than one extracted factor (column) rather than just one extracted factor as required in the

SEM literature (Gaskin, 2017). Moreover, one of the cross-loadings differed by more than 0.2 (0.872 compared to -0.379) and was therefore ignored as a potential future problem. A second and third cross-loading differed by close to 0.2 (0548 compared to 0.413 and 0.526 compared to 0.418) and accordingly were likewise ignored. The remaining cross-loading (0.401 compared to 0.370) differed by only a small degree (0.31) and for simplicity the researcher decided to also ignore this potentially problematic cross-loading factor. Nonetheless, as an added precaution the researcher made a note to monitor the 'fit' of the item during the subsequent CFA analysis. Furthermore, the researcher anticipated that should any cross-loading issues fail to resolve themselves during the 1st order CFA measurement model development stages, they likely would resolve themselves during the 2nd order CFA stages, i.e. the researcher was assuming these four factors were probably just two dimensions or manifestations of some higher order factor that was influencing the results shown in the pattern matrix. Notably, the strict requirement of zero cross-loadings in an EFA or SEM has been questioned in Asparouhov and Muthén (2008). They argue that this requirement often does not fit the data well and has led to a tendency to rely on extensive model modifications to find a well-fitting model, often at the expense of sound a priori theoretical reasoning or practice-based knowledge and tradition. Moreover, Asparouhov and Muthén (2008) point out that the misspecification of zero cross-loadings can result in distorted factors with over-estimated factor correlations and subsequent distorted structural relations.

9.3.2.3 EFA Scale Reliability of Questionnaire Items plus EFA Factor Reliability

Cronbach Alpha (CA) is frequently used to test the scale reliability of questionnaire items during the pre-testing stages of a survey. It is also used to test the reliability of extracted factors in an EFA. Both of these perspectives are represented in the Cronbach's Alpha test results presented below. Firstly, Figure 9.13 demonstrates Scale Reliability of the questionnaire items (observed indicator variables) reflected in the EFA Pattern Matrix were in most cases adequate or near adequate, i.e. close to or above the customary SEM literature threshold of 0.7 (Hair et al., 2014; and Nunnaly, 1978). Notably, Factors 5 and 6 were very close to the formal 0.7 threshold of acceptability, i.e. .684 and .658, respectively. Factors 8 and 10 were also not far from their respective thresholds, i.e. .634 and .630, respectively. On the other hand, Factor 9 was so far removed from the threshold of acceptability (0.254) that it was later removed from the CFA model and further analysis (Jarvis et al., 2003). Secondly, Figure 9.14 demonstrates Scale Reliability of the 2^{nd} order CFA factor constructs were well above 0.7 as suggested by Nunnaly (1978).

When the results displayed in Figures 13 and 14 are viewed alongside the survey questionnaire, they provide post-hoc evidence of scale reliability across the questions (indicator items) posited in the questionnaire and among the extracted factors in the EFA dataset (pattern matrix). Moreover, when the indicator items and extracted EFA factors were re-arranged into a smaller number of more parsimonious 2^{nd} order EFA factor constructs, and the Cronbach's Alpha algorithm was re-run, their scale reliability statistics were all above the recommended thresholds of acceptability. Prima facie, the 2^{nd} order factor constructs appear to align well with the study's theoretical accounting and finance research framework. Nonetheless, an alternative and arguably superior (Sijtsma, 2009) measure of reliability, Composite Reliability (CR), will be used to further evaluate construct reliability in the next section.

	EFA Pattern Matrix / Survey Questionnaire Scale Reliability Analysis						
Factor #	Number of Items in Factor	Survey Question #	Cronbach's alpha (EFA Factor)	Cronbach's alpha (First-order constructs)	Number of 1st Order Items	A Priori Construct Label	Factor Label
Factor 1	10	Q3	.901	.542	4	Modern Finance (Single Factor Models)	Fin_SF
				.819	7	Modern Finance (Multi-Factor Models)	Fin_MF
Factor 2	6	Q2	.801	.775	N/A	Accounting Theory (Multiples' Models)	Acc_Mult
Factor 3	3	Q14	.858	N/A	N/A	Risk Analysis	Risk
Factor 4	3	Q14	.825	N/A	N/A	Risk Analysis	Risk
Factor 5	3	Q4	.684	N/A	N/A	Stock Market Investment Decision	Market_Oth
Factor 6	4	Q2 & Q3	.658	N/A	N/A	Finance & Accounting	Fin (SF) & Acc (Int)
Factor 7	2	Q4	.707	N/A	N/A	Stock Market Investment Decision	Market_EU
Factor 8	2	Q2	.634	N/A	N/A	Accounting Theory (Multiples' Models)	Acc_Mult
Factor 9	2	Q2	.254	N/A	N/A	Accounting Theory (Intrinsic Models)	Acc_Int
Factor 10	2	Q4	.630	N/A	N/A	Risk	Risk

Figure 9.13: Scale Reliability Analysis – 1st order CFA/SEM Factor Constructs

Scale Reliability Analysis – Second-order CFA/SEM Factor Constructs						
Survey Question #	Number of 2nd Order Items in Scale	Cronbach's alpha (Second-order constructs)	Cronbach's alpha (First-order constructs)	Number of 1st Order Items in Scale	A Priori Construct Label	Construct Specification
Q2	11	.781	.542	4	Accounting Theory (Intrinsic Models)	Reflective
			.819	7	Accounting Theory (Multiples' Models)	Reflective
Q3	10	.894	.775	5	Modern Finance (Single Factor Models)	Reflective
			.885	5	Modern Finance (Multi-Factor Models)	Reflective
Q4	6	.730	N/A	N/A	Risk Analysis	Reflective
Q14	8	.784	N/A	N/A	Stock Market Investment Decision	Reflective

Figure 9.14: Scale Reliability Analysis – 2nd order CFA/SEM Factor Constructs

In conclusion, this section examined the EFA factor structure with a view to assessing how well the observed indicator variables in the dataset related to one another and how well they grouped (loaded) onto their associated latent constructs (factors) based on their inter-variable correlations.

The validity and reliability analysis indicated some of the test results were weak or showed signs of low levels of acceptability. Nonetheless, the SEM literature illustrates how building 2nd order CFA constructs can potentially be a remedy whenever 1st order solutions appear weak or unacceptable, see for example Reifman (2018), Gaskin (2017), Hair et al. (2014), Kenny (2011) and Kline (2011). Moreover, the SEM literature advises researchers to always try to do everything in their power to retain factor constructs that are key to their theoretical research framework.

In the next section, CFA models are used to identify, modify and further confirm the validity and reliability of the study's proposed factor structure (structural model).

9.4 Confirmatory Factor Analysis (CFA)

CFA measurement models are used to assess relationships between latent factor constructs and their corresponding indicators (Gaskin, 2017; Brown, 2015; Hair et al., 2014; Kline, 2011; Kenny, 2011; Byrne, 2010; and Schumacker & Lomax 2010).

9.4.1 CFA Measurement Model Fit

Model fit refers to how well the proposed measurement model accounts for the correlations between the observed variables in the dataset. 'Good fit' occurs when all of the major correlations between the variables in the proposed model are accounted for. Conversely when a significant "discrepancy" between the correlations proposed and the correlations observed is indicated, the model is classified as a poor-fitting model (Gaskin, 2017). Numerous related, but different, fit statistics are used to evaluate (confirm) proposed factor models, for example the proposed EFA model described in the previous section and/or the structural equation model proposed in the next section. Therefore, in the interests of clarity of exposition, the metrics and recommended thresholds used to determine goodness of fit in this chapter are shown in Figure 9.15 below. The researcher assembled the list from a selection of prominent, but nevertheless varying, guidelines in the CFA and SEM literature, see for example Reifman (2018), Parry (2018), Gaskin (2017), Oerlemans (2017), Hair et al. (2010), Awang (2012), Kenny (2011), Hooper et al. (2008), Kline (2005), Hu and Bentler (1999), Ping (2004), Cote et al. (2001), Diamantopoulos and Siguaw (2000), Bagozzi and Yi (1988), Baumgartner and Homburg (1996), and MacCallum et al. (1996).

Notably, the metrics and thresholds indicated vary inversely to sample size and the number of variables in the model. They also vary depending on whom the researcher cites in the literature! As a corollary, there is much controversy surrounding model fit indices in the literature. According to Kenny (2018) some researchers do not believe that fit indices add anything at all to the analysis, and that only the Chi-square should be interpreted, see for example Barrett (2007). The concern is that fit indices allow researchers to claim that a mis-specified model is not a bad model. Moreover, Hayduk (2007) argues that cut-offs for a fit index can be misleading and are open to misuse. In the same vein, "cherry-picking" of fit indices is seen as a potentially problematic tactic that may likewise be open to abuse. That is, the researcher computes many fit indices and then picks the index(es) that best supports the point he/she wants to make. Nonetheless, our review of the related SEM literature indicated most analysts believe in the value of fit indices but caution against strict reliance on cut-offs. Moreover, if a researcher decides not to report a popular index, for example TLI or the RMSEA, then Kenny (2018) advises that the researcher should provide the specific reason for not reporting it. Kline (2005) suggests that at a minimum the following indices should be reported: 1) The model Chi-square, 2) RMSEA, 3) CFI, and 4) SRMR.

Metric	Name	Description	Recommended	Type of Fit
X^2	Model Chi Square	Assesses overall fit and the discrepancy between the sample and fitted covariance matrices. Sensitive to sample size. H_0: The model fits perfectly.	p-value for the model >.05	Acceptable model fit
Chi Sq./df (cmin/df)		Df = the number of observations (values, variables or factors) in the data or calculation of a statistic that are free to vary.	Between 1 & 3 < 5	Good model fit Sometimes acceptable model fit
CFI	Comparative Fit Index	A revised form of NFI. Not very sensitive to sample size. Compares the fit of a target model to the fit of an independent, or null, model.	>.95 great >.90 >.80	Great/Good model fit Traditional model fit Sometimes acceptable model fit
GFI	Goodness of Fit	GFI is the proportion of variance accounted for by the estimated population covariance. Analogous to R2.	>.95 >.90	Good model fit Acceptable model fit
AGFI	(Adjusted) Goodness of Fit	AGFI favours parsimony.	>.90 >.80	Good model fit Acceptable model fit
RMSEA	Root Mean Square Error of Approximation	A parsimony-adjusted index. Values closer to 0 represent a good fit.	<.05 <.08 .08 to .10 >.10	Good model fit Reasonable model fit Acceptable model fit Bad model fit
PCLOSE			>.05	Good model fit
RMR SRMR	(Standardized) Root Mean Square Residual	The square-root of the difference between the residuals of the sample covariance matrix and the hypothesized model. If items vary in range (i.e. some items are 1-5, others 1-7) then RMR is hard to interpret, better to use SRMR.	<.05 < .08 <.09 <.08	Great model fit Good model fit Acceptable model fit Good model fit
NFI NNFI TLI	(Non) Normed-Fit Index Tucker Lewis index	An NFI of .95, indicates the model of interest improves the fit by 95% relative to the null model. NNFI is preferable for smaller samples. Sometimes the NNFI is called the Tucker Lewis index (TLI)	>.95 >.90	Good model fit Acceptable model fit
AVE (CFA only)	Average Variance Extracted	The average of the R2s for items within a Factor		AVE >.5

Figure 9.15: Model Fit Statistics commonly reported for CFA and SEM

9.4.2 Latent Construct (Factor) Validity

In addition to the CFA model fit specifications described above, the SEM literature also affirms the importance of establishing construct validity. That is, the latent factors in the CFA model are examined with a view to gauging the extent to which the latent (unobserved) constructs share their variance or alternatively, how they differ from one another. Campbell and Fiske (1959) describe two dimensions of a construct, as follows:

- Convergent validity: refers to the degree of confidence that a factor construct is well measured by its indicators.
- Discriminant validity: refers to the degree to which individual factor constructs differ to one another, i.e. are unrelated.

Notably, in structural equation modelling, construct validity is usually determined during the confirmatory factor analysis stage (Jöreskog, 1969). According to Fornell-Larcker (1981), construct validity of the CFA measurement model can be assessed using the following two criteria: Average Variance Extracted (AVE) and Composite Reliability (CR). Specifically, AVE measures the level of variance captured by a construct versus the level due to measurement error. Values above 0.7 are considered very good, whereas values between 0.5 and 0.7 are viewed to be acceptable. The second criterion, composite reliability (CR), is considered acceptable when CR values are above 0.7. Notably, CR is regarded as a less biased estimate of reliability than Cronbach's Alpha.

More recently, the customary measures used in the CFA and SEM literature to assess (test) construct validity include: Average Variance Extracted (AVE), Maximum Shared Variance (MSV), Average Shared Variance (ASV) and Composite Reliability (CR), see for example Gaskin, (2017), Hair et al. (2014, 2010), Awang (2012), and Kenny (2011, 2005). Notably, if latent factors do not demonstrate adequate construct validity, then moving on to test a causal SEM model will be useless - garbage in, garbage out! (Gaskin, 2017). The recommended threshold values are displayed in Figure 9.15.

Description	Metric	Name	Recommended
Convergent Validity	AVE	Average Variance Extracted	AVE > 0.5
Discriminant Validity	MSV	Maximum Shared Variance	MSV < AVE
	ASV	Average Shared Variance	ASV < AVE
	Square root of AVE greater than inter-construct correlations		Square root of AVE greater than inter-construct correlations
Composite Reliability	CR	Composite Reliability	> 0.7

Figure 9.16: Construct (Convergent & Discriminant) Validity and Composite Reliability Statistics used to evaluate the CFA model.

To summarise; AVE, MSV and ASV are used to test different dimensions of a CFA or SEM model's construct validity. To test for convergent validity, the AVE of the regression factors should be compared to the minimum threshold of 0.50 specified in Figure 9.16 above. Failure to establish convergent validity indicates the variables do not correlate well with each other within their parent factor; i.e. the latent factor is not well explained by its indicator variables. If that happens the CFA model may be flawed (Gaskin, 2017). To test for discriminant validity, the square root values of the AVEs for each construct (on the diagonal line in the matrix below) are compared to the values of the other correlated constructs in the regression model, i.e. all inter-factor correlations. When the diagonal values are greater than the correlations it implies adequate discriminant validity exists between all of the factors in the measurement model. The result indicates a high degree of association among the model's measurement items for that parent factor construct. On the contrary, failure to establish discriminant validity indicates the variables correlate more highly with variables outside of their parent factor than with the variables within their parent factor; i.e., the latent factor is better explained by some other variables (from a different factor construct), than by its own observed variables. If that happens the model may be flawed (Gaskin, 2017; and Hair et al., 2014).

Finally, high factor reliability is indicated when the computed composite reliability (CR) of each factor is above the minimum threshold of 0.70. However, as Malhotra and Dash (2011, p.702) note: "AVE is a more conservative measure than CR. That is, based on CR alone the researcher may conclude that the convergent validity of the construct is adequate, even though more than 50% of the variance is due to error". Thus, when AVE and CR are combined, they provide greater assurance that the CFA model is adequately specified in terms of convergent validity, discriminant validity and composite reliability.

9.4.3 Model #1 – 8-Factor 1st Order CFA Measurement Model

The SEM literature indicates several CFA measurement model iterations and modifications are usually required before a researcher is likely to achieve a statistically acceptable CFA model fit (Hair et al., 2010; Awang, 2012; Kenny, 2011; and Hu and Bentler, 1999).

In this vein, Figure 9.17 represents the researcher's first CFA measurement model incarnation. The model comprises the 30 reflective latent factor indicator variables that are carried-over from the EFA, which the current CFA model is proposing load onto 8 unobserved conceptual investment management related constructs.

Notably, the researcher's pivotal a priori research interest pertains to evaluating the utility of accounting and finance theoretical methods in investment management decision-making. Hence, the 5 latent accounting and finance constructs shown in the CFA model, together with the 20 different variables indicated to measure them, arouse the greatest analytical curiosity (for now). The other 3 factors - market EU, market other and risk - serve no immediately apparent purpose viz the study's overarching research questions. Nevertheless, they remain in the model because the researcher (as yet) has no compelling reason to remove them. They simply arose during the EFA extraction stage described earlier. That said, the SPSS AMOS modification indices and/or the standardized residual covariances (SRCs) may yet prompt their removal from the model. Alternatively, they might transpire to be useful at a later point as the SEM model building process evolves.

Statistically, the model comprises a good cross-section of latent factor indicators (n=30), that in most cases had reasonable factor loadings (i.e., >.50). Nevertheless, as shown in Figure 9.18 and 9.19, the model failed to demonstrate adequate model fit, convergent and discriminant validity (AVE), or statistical composite reliability (CR). Therefore, even though the initial CFA model was identified, and in some instances had roughly decent model fit statistics, it nonetheless was abandoned. Later however, arising from further model modification and trial and error, the researcher developed the more parsimonious 4-factor 2nd order version shown in Figure 9.20.

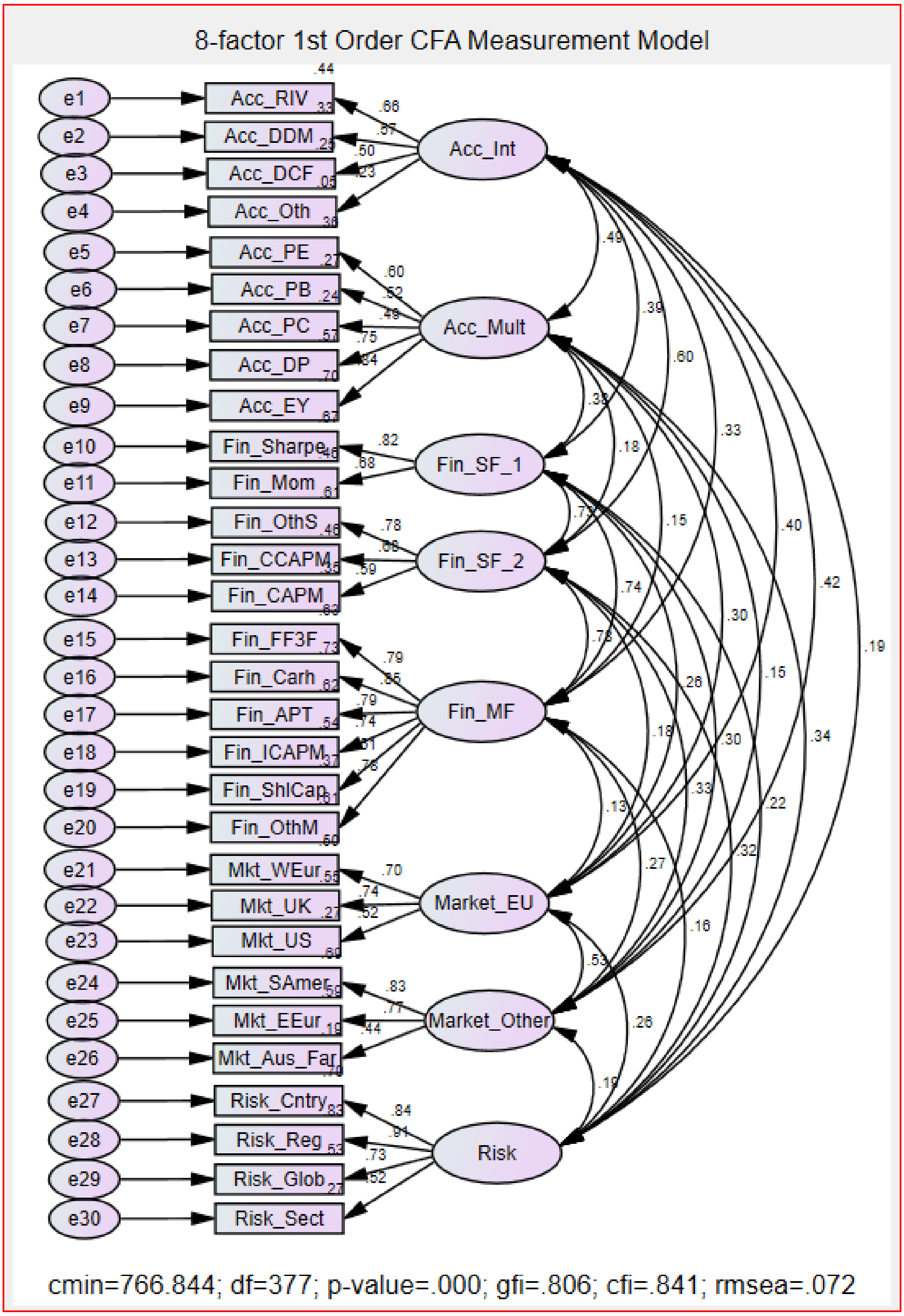


Figure 9.17: CFA Model #1

Source: Kelly (2019)

Developed by the author using IBM AMOS Graphics v.24

Metric	Observed	Description	Recommended	Type of Fit
X^2	766.844	Assesses overall fit and the discrepancy between the sample and fitted covariance matrices. Sensitive to sample size. H_0: The model fits perfectly.	p-value for the model >.05	Acceptable model fit
Chi Sq./df (cmin/df)	2.034 DF = 377	Df = the number of observations (values, variables or factors) in the data or calculation of a statistic that are free to vary.	Between 1 & 3 < 5	Good model fit Sometimes acceptable model fit
CFI	.841	A revised form of NFI. Not very sensitive to sample size. Compares the fit of a target model to the fit of an independent, or null, model.	>.95 great >.90 >.80	Great/Good model fit Traditional model fit Sometimes acceptable model fit
GFI	.806	GFI is the proportion of variance accounted for by the estimated population covariance. Analogous to R2.	>.95 >.90	Good model fit Acceptable model fit
AGFI	.760	AGFI favours parsimony.	>.90 >.80	Good model fit Acceptable model fit
RMSEA	.072	A parsimony-adjusted index. Values closer to 0 represent a good fit.	<.05 <.08 .08 to .10 >.10	Good model fit Reasonable model fit Acceptable model fit Bad model fit
PCLOSE	.000		>.05	Good model fit
RMR SRMR	.111 N/A	The square-root of the difference between the residuals of the sample covariance matrix and the hypothesized model. If items vary in range (i.e. some items are 1-5, others 1-7) then RMR is hard to interpret, better to use SRMR.	<.05 < .08 <.09 <.08	Great model fit Good model fit Acceptable model fit Good model fit
NFI NNFI TLI	.735	An NFI of .95, indicates the model of interest improves the fit by 95% relative to the null model. NNFI is preferable for smaller samples. Sometimes the NNFI is called the Tucker Lewis index (TLI)	>.95 >.90	Good model fit Acceptable model fit
AVE (CFA only)	N/A	The average of the R2s for items within a Factor		AVE >.5

Table 9.18: CFA Model #1 - SPSS AMOS Model Fit Statistics

Convergent & Discriminant Validity, and Reliability

	CR	AVE	MSV	MaxR(H)	Market_EU	Acc_Int	Acc_Mult	Fin_SF_1	Fin_MF	Market_O	Fin_SF_2	Rsk
Market_EU	0.694	0.436	0.158	0.718	**0.661**							
Acc_Int	0.566	0.266	0.358	0.808	0.398	**0.515621**						
Acc_Mult	0.782	0.429	0.239	0.901	0.300	0.489	**0.654931**					
Fin_SF_1	0.728	0.474	0.613	0.923	0.181	0.598	0.184	**0.688537**				
Fin_MF	0.892	0.582	0.613	0.955		0.333	0.149	0.783	**0.762635**			
Market_Other	0.730	0.489	0.174	0.962		0.417	0.148	0.329				
Fin_SF_2	0.722	0.568	0.154	0.966		0.393	0.377					
Rsk	0.843	0.583	0.112	0.974		0.192	0.335					

VALIDITY CONCERNS:

Discriminant Validity: the square root of the AVE for Acc_Int is less than one the absolute value of the correlations with another factor.
Discriminant Validity: the square root of the AVE for Fin_SF_1 is less than one the absolute value of the correlations with another factor.
Discriminant Validity: the square root of the AVE for Fin_MF is less than one the absolute value of the correlations with another factor.
Reliability: the CR for Market_EU is less than 0.70.
Convergent Validity: the AVE for Market_EU is less than 0.50.
Reliability: the CR for Acc_Int is less than 0.70.
Convergent Validity: the AVE for Acc_Int is less than 0.50.
Discriminant Validity: the AVE for Acc_Int is less than the MSV.
Convergent Validity: the AVE for Acc_Mult is less than 0.50.
Convergent Validity: the AVE for Fin_SF_1 is less than 0.50.
Discriminant Validity: the AVE for Fin_SF_1 is less than the MSV.
Discriminant Validity: the AVE for Fin_MF is less than the MSV.
Convergent Validity: the AVE for Market_Other is less than 0.50.

Table 9.19: CFA Model #1 - Convergent Validity, Discriminant Validity and Reliability Statistics

9.4.4 Model #2 – 4-Factor 2nd Order CFA Measurement Model

Moving from the 8-Factor 1st Order CFA Measurement Model to the 4-Factor 2nd Order CFA Measurement Model shown in Figure 9.20 resulted in a more parsimonious construct configuration that was more in keeping with the researcher's a *priori* idea of what the CFA measurement model should like in terms of its accounting and finance factor structure.

Statistically, the 4-factor model's construct validity statistics were a definite improvement on the 1st CFA model, i.e. convergent validity (AVE), discriminant validity (AVE) and composite reliability (CR) were achieved, see Table 9.2 below. However, the range of global and relative model fit statistics corresponding to the 4-factor CFA specification shown in Figure 9.21 fell short of what the SEM literature recommends a good-fitting CFA measurement model ought to achieve, see Kenny (2011). Nevertheless, despite its global and relative model-fit statistical shortcomings, CFA Model #2 paved the way for the researcher to engage more judiciously and creatively with the SPSS AMOS 'Modification Indices' and 'Standardized Residual Covariances' (SRCs) to create the third and final 4-Factor 2nd Order CFA Measurement Model shown in the next section.

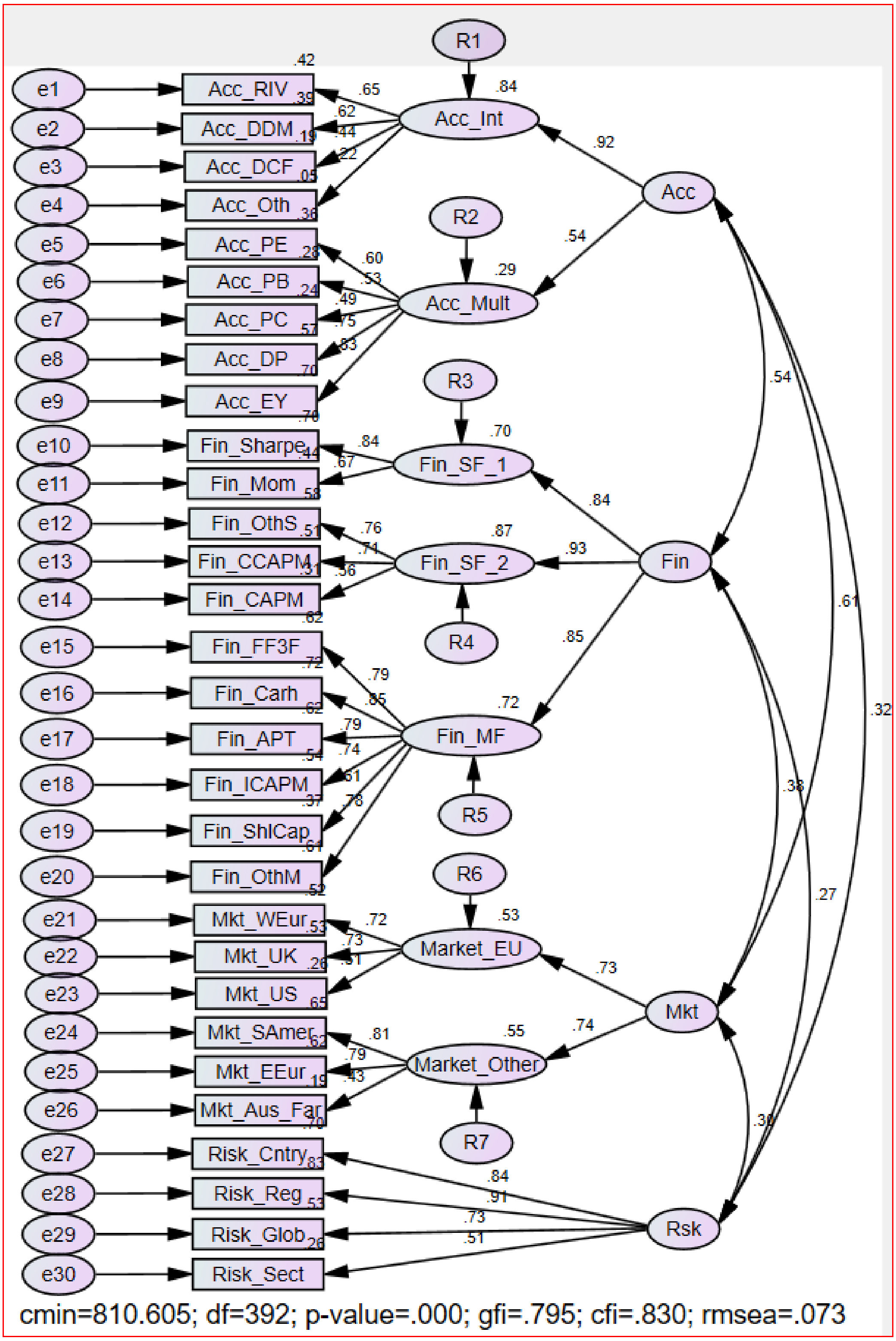


Figure 9.20: CFA Model #2

Metric	Observed	Description	Recommended	Type of Fit
X^2	810.605	Assesses overall fit and the discrepancy between the sample and fitted covariance matrices. Sensitive to sample size. H_0: The model fits perfectly.	p-value for the model >.05	Acceptable model fit
Chi Sq./df (cmin/df)	2.068 DF = 392	Df = the number of observations (values, variables or factors) in the data or calculation of a statistic that are free to vary.	Between 1 & 3 < 5	Good model fit Sometimes acceptable model fit
CFI	.830	A revised form of NFI. Not very sensitive to sample size. Compares the fit of a target model to the fit of an independent, or null, model.	>.95 great >.90 >.80	Great/Good model fit Traditional model fit Sometimes acceptable model fit
GFI	.795	GFI is the proportion of variance accounted for by the estimated population covariance. Analogous to R2.	>.95 >.90	Good model fit Acceptable model fit
AGFI	.757	AGFI favours parsimony.	>.90 >.80	Good model fit Acceptable model fit
RMSEA	.073	A parsimony-adjusted index. Values closer to 0 represent a good fit.	<.05 <.08 .08 to .10 >.10	Good model fit Reasonable model fit Acceptable model fit Bad model fit
PCLOSE	.000		>.05	Good model fit
RMR SRMR	.121 N/A	The square-root of the difference between the residuals of the sample covariance matrix and the hypothesized model. If items vary in range (i.e. some items are 1-5, others 1-7) then RMR is hard to interpret, better to use SRMR.	<.05 < .08 <.09 <.08	Great model fit Good model fit Acceptable model fit Good model fit
NFI NNFI TLI	.720 .811	An NFI of .95, indicates the model of interest improves the fit by 95% relative to the null model. NNFI is preferable for smaller samples. Sometimes the NNFI is called the Tucker Lewis index (TLI)	>.95 >.90	Good model fit Acceptable model fit
AVE (CFA only)	N/A	The average of the R2s for items within a Factor		AVE >.5

Table 9.21: CFA Model #2 - SPSS AMOS Model Fit Statistics

Table 9.2: CFA Model #2 - Convergent Validity, Discriminant Validity and Reliability Statistics

	CR	AVE	MSV	MaxR(H)	Fin	Acc	Mkt	Rsk
Fin	0.905	0.762	0.294	0.920	**0.873**			
Acc	0.711	0.568	0.377	0.945	0.542	**0.753**		
Mkt	0.702	0.540	0.377	0.952	0.382	0.614	**0.735**	
Rsk	0.842	0.581	0.099	0.966	0.266	0.315	0.302	**0.762**

9.4.5 Model #3 [final version] – 4-Factor 2nd Order CFA Measurement Model

The first-order CFA results revealed the factor loadings (regression weights) associated with each latent factor construct were reasonable, i.e. all of the standardized regression weights were > 0.50, except three that were marginal (PB=.48; Fin_CAPM=.46; and EV=.42) and one that was noticeably low (DCF=25). Similarly, the second-order CFA factor loadings indicated there was a strong relation between the four 2nd order latent constructs (Acc=Accounting; Fin=Finance; Mkt=Market; and Rsk=Risk) and their 1st order indicator variables (constructs). Moreover, all regression weights were statistically significant at $p < 0.001$.

Overall, after examining CFA model #3's indicator factor loadings and performing unidimensionality testing on the model's factor constructs, the final re-specified measurement model (Figure 9.22) was determined to have met a satisfactory number of the recommended global and relative model fit requirements listed in Figure 9.24, and specified in the SEM literature (Mueller, 1996).

Figure 9.23 demonstrates construct validity was indicated for all 2nd order factors in the final CFA measurement model. Specifically, construct validity was tested in concordance with the AVE, MSV and ASV guidelines and thresholds outlined in Figure 9.16 above. For example, to test for convergent validity the AVE of the regression factors exceeded the recommended minimum threshold of 0.50. In the same vein, the diagonal values of the correlation matrix were all greater than their correlations, which is an indication there is adequate discriminant validity between all factors in the measurement model. These results indicate there is a high degree of association across the CFA model's measurement items within their parent factor construct. To test for composite reliability, the table shows the CR values of each factor were above their minimum threshold value of 0.70, which is a sign the results have high factor reliability.

Moreover, as recommended in Hair et al. (2014), Awang (2012), Kenny (2011) and Kline (2005), modification indices were consulted with a view to improving and/or achieving model fit. The procedure calls for careful consideration of the covariance items listed in the modifications section of AMOS. Some of the modification steps taken included deleting the following variables from the model due to poor loading: 'Acc_Oth' (intrinsic accounting valuation models), 'Acc_PC' (accounting multiple: price to cash flow ratio), and 'Mkt_US' (market other: US stock market). In contrast, other indicator variables were retained rather than removed as suggested by the AMOS modification indices. For example, some variables were retained despite their low factor loadings because their removal might only weaken the explanatory power of the construct when compared to the factor's *a priori* theoretical make-up, for example DCF, RIV and DDM theoretically and conjointly comprise so-called intrinsic methods of accounting valuation. Therefore, removing one of these key indicators, e.g. DCF, might only weaken the explanatory power of the theoretical construct. Another reason for retaining variables was because the latent factor construct contained only three variable indicators to begin with, and therefore removing one of those items to create a two-indicator latent factor construct might weaken overall model stability (Gaskin, 2017). Standardized Residual Covariances (SRCs) were also consulted to help improve model fit (Kenny, 2011). Significant residual covariances decrease model fit. However, addressing significant SRCs to improve model fit usually requires the removal of items, which does not always suit the researcher's a priori objectives. Thus, the customary advice to researchers is to firstly look to the modification indices to obtain an acceptable model fit (Gaskin, 2017; Awang, 2012; and Kenny, 2011).

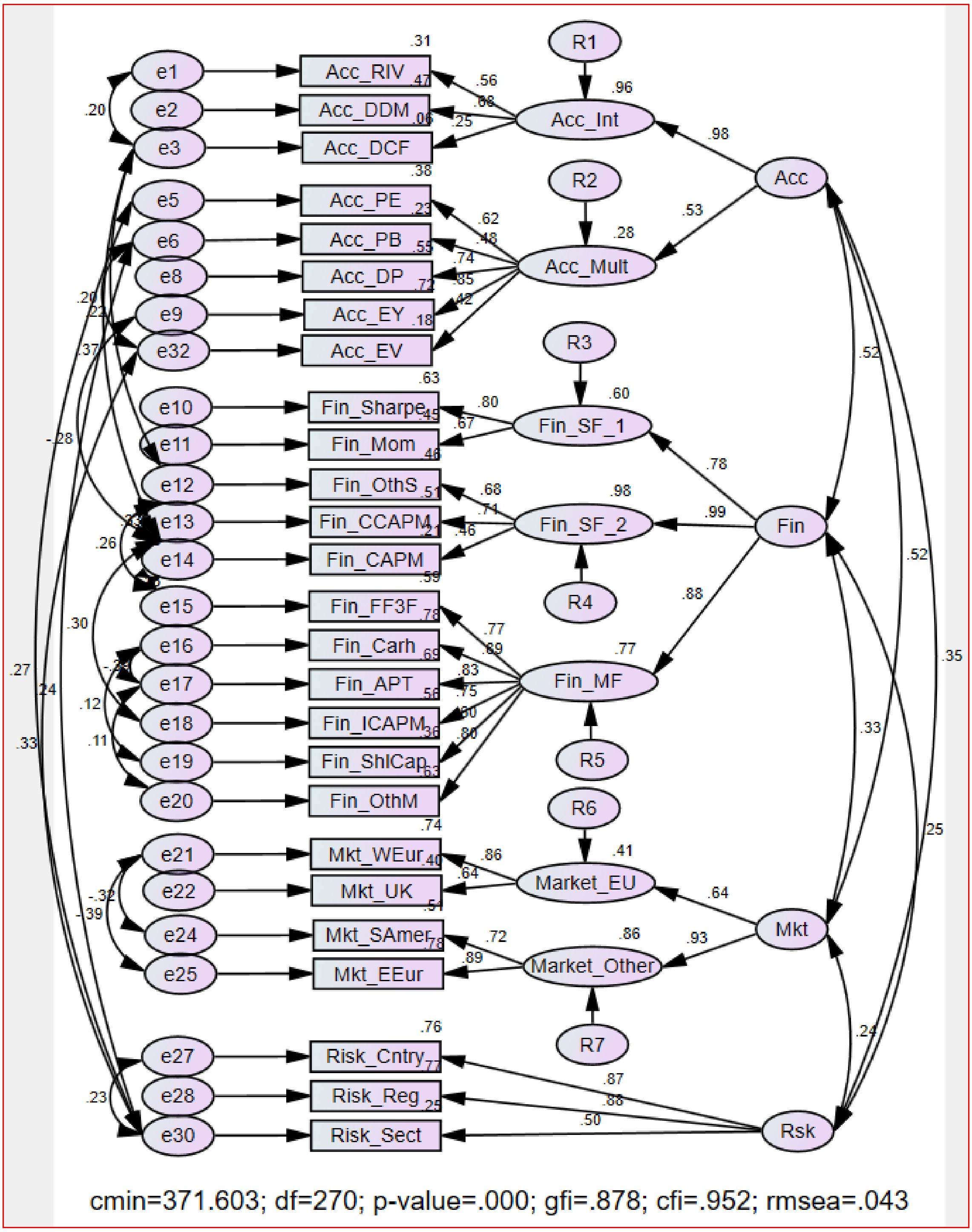


Figure 9.22: CFA Model #3 [Final Version]

	CR	AVE	MSV	MaxR(H)	Fin	Acc	Mkt	Rsk
Fin	0.915	0.784	0.275	0.985	**0.885**			
Acc	0.750	0.621	0.275	0.989	0.524	**0.788**		
Mkt	0.774	0.639	0.270	0.990	0.328	0.520	**0.799**	
Rsk	0.805	0.593	0.121	0.991	0.249	0.348	0.240	**0.770**

Figure 9.23: CFA Model #3 – Convergent Validity, Discriminant Validity and Composite Reliability Statistics

Metric	Observed	Description	Recommended	Type of Fit
X^2	371.603	Assesses overall fit and the discrepancy between the sample and fitted covariance matrices. Sensitive to sample size. H_0: The model fits perfectly.	p-value for the model >.05	Acceptable model fit
Chi Sq./df (cmin/df)	1.376 DF = 270	Df = the number of observations (values, variables or factors) in the data or calculation of a statistic that are free to vary.	Between 1 & 3 < 5	Good model fit Sometimes acceptable model fit
CFI	.952	A revised form of NFI. Not very sensitive to sample size. Compares the fit of a target model to the fit of an independent, or null, model.	>.95 great >.90 >.80	Great/Good model fit Traditional model fit Sometimes acceptable model fit
GFI	.878	GFI is the proportion of variance accounted for by the estimated population covariance. Analogous to R2.	>.95 >.90	Good model fit Acceptable model fit
AGFI	.841	AGFI favours parsimony.	>.90 >.80	Good model fit Acceptable model fit
RMSEA	.043	A parsimony-adjusted index. Values closer to 0 represent a good fit.	<.05 <.08 .08 to .10 >.10	Good model fit Reasonable model fit Acceptable model fit Poor model fit
PCLOSE	.841		>.05	Good model fit
RMR SRMR	.108 .072	The square-root of the difference between the residuals of the sample covariance matrix and the hypothesized model. If items vary in range (i.e. some items are 1-5, others 1-7) then RMR is hard to interpret, better to use SRMR.	<.05 < .08 <.09 <.08	Great model fit Good model fit Acceptable model fit Good model fit
NFI NNFI TLI	.847 .942	An NFI of .95, indicates the model of interest improves the fit by 95% relative to the null model. NNFI is preferable for smaller samples. Sometimes the NNFI is called the Tucker Lewis index (TLI)	>.95 >.90	Good model fit Acceptable model fit
AVE (CFA only)	N/A	The average of the R2s for items within a Factor		AVE >.5

Figure 9.24: CFA Model #3 – SPSS AMOS Model Fit Statistics

*** The SPSS AMOS Standardised RMR (SRMR) output was .0720

9.5 Common Method Bias or Common Method Variance

A final validity and reliability concern that potentially can adversely affect the integrity of the dataset, the results of the CFA model and/or the questionnaire findings discussed in Chapters 7 and 8 relates to what is described in the CFA and SEM literature as Common Method Bias or Common Method Variance.

Gaskin and Lim (2017) discuss how collecting data using a single (common) method, such as the online self-report questionnaire used in this research project, may be responsible for introducing systematic response bias that may either inflate or deflate respondents' answers.

There are many potential sources of CMV, including: the way items are presented to respondents; the position in which items on a questionnaire are placed; contextual influences (time, location and media); and where only one researcher has interpreted the survey's answers. The most worrisome example of CMV occurs when the data for both the predictor and criterion variable are obtained from the same person in the same measurement context using the same item context and similar item characteristics (SlideShare, 2018). Thus, common method bias may be present in the dataset when something external to the measures (IVs and DVs) has influenced participants' responses to the survey questions (Podsakoff et al., 2003).

Several tests are available to determine if common method bias has affected the results of the measurement model. These include: Harman's Single Factor Test, Common Latent Factor Test, Marker Variable Test, and the Zero and Equal Constraints Test (Gaskin, 2017).

Harman's Single Factor Test is arguably the simplest way to test for the presence of CMB in the dataset. The test examines whether a single factor has accounted for most of the variance in the model. The test procedure constrains the number of factors extracted in the EFA to one (rather than extracting via eigenvalues). The unrotated solution is then examined to see whether a single factor has accounted for a majority (> 50%) of the variance in the model. As shown in Figure 9.25 below, the maximum variance explained by a single factor is 21.07%. Consequently, there is no indication CMB is present in the dataset or the CFA model, because the maximum variance explained by a single factor is less than 50%.

Notably, Podsakoff et al. (2003) assert that Harman's single factor test is no longer widely accepted and moreover is considered an insensitive, outdated and inferior approach to testing data in a CFA model. Therefore, as an added precaution to determine whether common method bias had affected the questionnaire responses (ex-post) or the CFA measurement model, the Zero and Equal Constraints Tests and the Common Latent Factor Test were also performed in SPSS AMOS.

The CLF test procedure captures the common variance among the variables in the CFA model by connecting a common latent factor (CLF) to all of the indicator items in the CFA model. The test result (not shown) looks visually messy within the AMOS graphical interface. Nevertheless, the test procedure confirmed CMB was not a concern within the final CFA model.

The Zero Constraints Bias Test was performed in AMOS using a Gaskin (2017) AMOS plugin. Figure 9.26 indicates the Chi-square test results were significantly different from zero: χ^2= 371.603 (df =270) and p<.01 at the 99% confidence level, indicating there was no bias present in the dataset. Consequently, there was no need to perform the Equal Constraints Bias Test to see if a biased test result was evenly distributed.

In conclusion, no specific response bias was detected in the model. Thus, proceeding on to perform causal modelling is a statistically valid option for the researcher. However, using SEM to perform causal modelling was outwith the research scope of this thesis. Nonetheless, the researcher closes the chapter with an example of what a composite structural equation model (SEM) might otherwise look like.

Total Variance Explained

Component	Initial Eigenvalues Total	% of Variance	Cumulative %	Extraction Sums of Squared Loadings Total	% of Variance	Cumulative %
1	7.586	21.071	21.071	7.586	21.071	21.071
2	4.336	12.043	33.114			
3	2.415	6.709	39.823			
4	2.306	6.406	46.229			
5	1.869	5.191	51.419			
6	1.559	4.331	55.750			

Figure 9.25: Harman's Single Factor CMB Test

	X^2	DF	Delta	p-value
Unconstrained Model	371.603	270	X^2=0.000 DF=0	1.000

Figure 9.26: Zero Constraints Test (Specific Bias Test)

9.6 Structural Equation Model (SEM), Chapter Summary and Conclusion

Once CFA model fit and construct validity were confirmed as in the previous sections, the measurement model constructs for the four dimensions (accounting, finance, risk and market) can be linked together as shown in Figure 9.27 to create one overall composite structural equation model (SEM). The structural portion of the model is depicted with yellow ellipses connected by regression paths.

Building on this structural framework, alternative moderated SEM configurations can then be derived in order to conduct a series of hypothesis tests and effect size estimations, including for example mediation and interaction effects, multi-group analysis and model fit estimates. However, as mentioned earlier, using the SEM model to infer causality in the structural model is beyond the scope of our current research objectives. Thus, we leave it to future researchers to explore issues of causality in the SEM, perhaps by beginning from where we have ended the current discussion.

Notwithstanding the forgoing, the evidence presented in this chapter has demonstrated that assumptions about questionnaire validity and reliability are far reaching, spanning not only the measurement of the accounting and finance numbers that comprise the sample dataset but many additional qualitative and quantitative factor constructs also. For example, the notion of questionnaire adequacy, validity and reliability correspond to: assumptions about normality in the dataset; the nature of missing data and whether that data is missing at random (MAR), missing completely at random (MCAR) or not missing at random (NMAR); whether Likert scale reliability is evident in the design of the questionnaire and the measurement items used therein; whether common-method bias is present in the dataset, which arguably poses a far greater threat to the integrity, validity and reliability of the researcher's findings than the response bias associated with differences between early and late respondents; and finally whether the observed indicator variables in the dataset 'adequately' measure their related EFA, CFA and SEM factor constructs.

Overall, this chapter has demonstrated that the four latent accounting and finance dimensions (intrinsic accounting methods, multiples accounting methods, single-factor finance methods, and multi-factor finance methods) evident in the questionnaire design and subsequently used to generate the study's quantitative findings, are statistically adequate, valid and reliable. Moreover, the first and second-order CFA factor loadings reveal - both diagrammatically and mathematically - that there is a strong association between the four accounting and finance dimensions and the observed indicator variables used to measure them.

In conclusion, a valid and reliable instrument represents the first step to gain an understanding of the target group's beliefs, knowledge, and attitudes toward the role and utility of accounting and modern finance theory within investment management praxis. In this light, the statistical findings in this chapter serve to substantiate the findings in the two previous chapters. For example, the validity and reliability of the results that show the use of accounting appraisal methods are more influential among the respondents than modern finance methods are enhanced (Chapter 8). Moreover, with the exception of the DCF model, the assessment that accounting multiples are more influential than either single or multi-factor risk-adjusted return models are likewise statistically enhanced as a result of the construct validity and reliability findings in this chapter. Similarly, the findings that a strong statistically-significant relationship exists between the respondents' job title, employer, age and experience are also enhanced (Chapter 7).

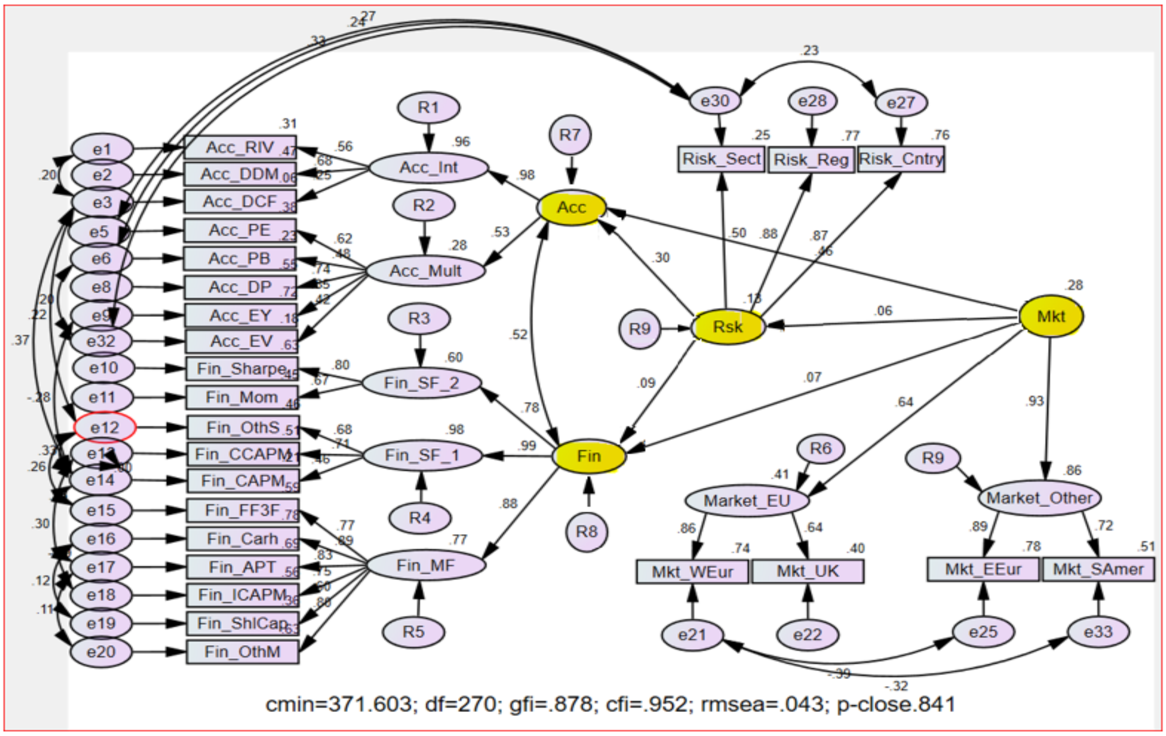


Figure 9.27: SEM Model #1 – Measurement and Structural Models Combined

Chapter 10

DISCUSSION, LIMITATIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

10.1 Introduction

This chapter considers a selection of the key questionnaire findings, compares them to the interview evidence and related accounting, finance and investment management literature, and then discusses their implications for fund managers, buy-side analysts and sell-side analysts. The chapter also considers some of the limitations associated with the conclusions drawn from the study and makes recommendations for future research. The structure of the chapter aligns with the aims of the thesis and the three overarching research questions that motivated the mixed-methods inquiry strategy that unearthed the findings. To recap, these were:

- **RQ1**: What personal attributes tend to exert the greatest influence over fund managers, buy-side analysts and sell-side analysts?
- **RQ2**: What accounting valuation and finance pricing factors tend to exert the greatest influence on investment management decision-making praxis?
- **RQ3:** How useful is sell-side equity research?

The chapter comprises the following sections: Section 10.2 discusses a selection of the findings that relate to the backgrounds and personal characteristics of the questionnaire and interview respondents. Section 10.3 discusses a selection of the findings that relate to the utility of accounting and modern finance theory in equity investment management praxis. Section 10.4 presents a synopsis of the research. Section 10.5 discusses the limitations in the design of the research. Section 10.6 considers the implications of the study for fund managers, buy-side analysts and sell-side analysts. Section 10.7 discusses the contribution the thesis makes to knowledge and outlines some suggestions for future research. Section 10.8 presents the closing thesis statement.

10.2 Respondents Characteristics: Questionnaires and Interviews

[Prior Studies]. Previous studies demonstrate that fund managers, buy-side analysts and sell-side financial analysts provide important intermediary capital market services for institutional clients as well as smaller, usually non-institutional, private retail clients (see for example Brown et al., 2015; Abhayawansa et al., 2015; Clatworthy and Lee, 2014; Groysberg and Healy, 2013; Litterman and Sullivan, 2012; Bradshaw, 2011; Imam et al., 2008; Ramnath et al., 2008; Asquith et al., 2005; Demirakos et al., 2004; Kothari, 2001; Fouche and van Rensburg, 1999; Block, 1999; Wong and Cheung, 1999; Barker, 1999b; Olbert, 1994; Brown, 1993; Vergoossen, 1993; Pike et al., 1993; Zmijewski, 1993; Schipper, 1991; Carter and Van Auken, 1990; and Arnold and Moizer, 1984).

While some of this literature alludes to the multifarious personal characteristics of investment managers and the influence that these traits exert on their investment management decision-making processes, the subject matter seldom receives more than superficial attention in the empirical survey research literature. This may be because of the nebulous nature of the behavioral factors involved. Nonetheless, there are some notable exceptions, see for example Fang and Wang (2015), Coleman (2015), Fang and Yasuda (2013), Loh and Stulz (2013), Ellis (2011), Bradshaw (2011), Cohen et al. (2010), Kumar (2009), Mehran and Stulz (2007), Cooper et al. (2001), Kothari (2001), Mikhail et al. (1997), Athanassakos (1992) and Lamont (1995).

To illustrate, Fang and Wang (2015) show that gender balance influences investment management practices that can lead to stronger returns. Kumar (2009) investigates whether there are systematic differences between the forecasting styles and abilities of female and male investment managers, and whether market participants recognise these differences. Mikhail et al. (1997) document that investment managers improve their forecast accuracy as they gain firm-specific experience. Their results suggest that knowledge of an analyst's experience can be used to improve the accuracy of consensus earnings forecasts. Fang and Yasuda (2013) show that 'star' analysts make buy and sell recommendations with up to 7% higher annualized risk-adjusted returns compared to 'typical' analysts. Cooper et al. (2001, p.384) show that "an analyst may have a comparative advantage in analysing certain stocks based on innate ability". They show that 'lead' analysts have a greater impact on stock prices than 'follower' analysts when they issue reports. Loh and Stulz (2013, p.12) document that "broker size has been used as a proxy for analyst ability and availability of resources." Fang and Yasuda (2013, p.1) assert that the annual election of All-American (AA) analysts by the 'Institutional Investor' magazine is the most visible and influential way in which analysts are evaluated in the USA. They show that 'leader' or 'star' analysts (AA analyst status — the product of institutional voting) make better investment decisions because they have better-than-average skill, which they define as innate ability and/or acquired knowledge. Lamont (1995), cited in Cooper et al. (2001, p.385), "finds that the magnitude of deviations from consensus forecasts increases with a forecaster's age. He argues that analysts with track records have less incentive to herd since their true ability can be inferred more accurately". Finally, Cohen et al. (2010) document that analysts connected with company boards (through school ties) generate more profitable stock recommendations.

[Current Findings: Age – Employer – Experience – Ability]. Informed by these prior studies, the questionnaire findings (Chapter 7) add value to the extant literature because they reveal corroborative evidence of a strong statistically significant relationship between the respondents' job title, age, employer and work experience. That is, the findings indicate that an investment manager's job title can validly and reliably be used to predict: his/her age; whether he/she is more or less likely to work for a multinational bank, pension fund company, stock-broker firm, investment fund company, life assurance company or private money management group; and how many years of investment management work experience a portfolio manager, buy-side analyst or sell-side analyst may likely have. Additionally, the interview evidence affirms that the attributes of 'experience' and 'ability' are inextricably linked to fundamental analysis and 'active' investment management. For example, most of the portfolio manager interviewees spoke decorously about how they depend on the collective skillset and experience of their in-house capital markets research teams to help them 'actively' manage the assets entrusted into their professional stewardship. They cited the importance of such valued competencies as experience in global stock market and sector valuation, asset allocation, value investing, contrarian investing, and quantitative finance. Interviewee #1 summed-up the pre-eminence of these related 'active' investment management competencies this way: "…so we of course believe in 'active' management, since we are one, and we think we can outperform, but we don't think everybody can outperform…" These results matter because, as the literature above indicates, knowledge of an investment manager's employer, job title, age, experience and ability can be used to improve firm/fund performance.

[Current Findings: Gender – Education]. The questionnaire findings highlight some interesting sample-specific relationships between the respondents' job title, gender identity, education and type of undergraduate/postgraduate course of study pursued while attending university. Even though these results are statistically non-significant and therefore cannot be used to make wider predictions about the population of investment managers as a whole, they nonetheless say a lot about whether a certain type of investment manager is likely to be male or female, whether he or she is likely to go to university, and what type of degree he or she is likely to pick when they get there. Thus, an awareness of the study’s gender and education findings can potentially help investment managers to ‘functionally’ allocate staff more effectively by (say) setting personnel targets based on industry gender performance ‘norms’, or (say) on the basis of educationally-derived performance expectations.

The questionnaire findings also highlight some notable behavioural investment management characterisations in the data, some of which are described below.

[Current Findings: Behavioural Characterisations in the dataset: Beliefs and Proclivities; Active – Passive debate; CAPM – EMH debate; Neoclassical – Behavioural Finance debate; ‘Value’, ‘Growth’ and ‘Momentum’ debate] .

[Active – Passive Investment Management]. When ‘active’ and ‘passive’ investment management styles were compared, a sizeable 14:1 majority of the respondents indicated they believe in ‘active’ investment management, which in turn implies they believe ‘active’ investment managers can potentially generate returns in excess of the stock market average(s). However, in the spirit of caveat emptor, this is a sample-specific finding that may have occurred by chance or as a result of sampling error. Thus, it would be wrong to view it as being generalisable across the wider population of investment managers as a whole. Although not a ‘significant’ result in the statistical sense, it still signals potentially important implications for capital markets theory and practice. To illustrate, according to the capital asset pricing model (CAPM) and the efficient-markets hypothesis (EMH), see Sharpe (1991) and Fama (1970), it is difficult – impossible in the case of perfect market efficiency – for ‘active’ investors to outperform the markets on a consistent basis over the longer-term. Nonetheless, the questionnaire findings reveal that the majority of the respondents are ‘active’ investors who do not believe the EMH is theoretically valid. But here it seems EMH proponents have an answer; they argue that when investors do manage to ’beat the market’ it is likely due to some sort of short-term imperfection in the marketplace. However, in contrast to this argument there are several well-known empirical investment management studies in the literature that show the superiority of ‘active’ paradigms of investing over ‘passive’ investment management styles, see for example Ang (2014), Huij and van Gelderen (2014), Ilmanen and Kizer (2012), Blitz (2012), Ang et al. (2009) and Carhart (1977). That said, EMH has its supporters, otherwise ‘passive’ investing wouldn’t continue to exist and flourish (Doeswijk et al., 2014).

Notwithstanding the evident empirical fact that EMH has its supporters, the rise of the behavioural finance paradigm also stands as a notable counter-argument to EMH because it assumes anomalous phenomena – market-wide deviations from full rationality – are manifestations of agents failing to update their beliefs correctly and/or failing to apply Bayes’ Law properly (Barberis & Thaler, 2003). Thus, investors are observed to make irrational choices – they have preferences – that are inconsistent with Expected Utility Theory (EU) as defined by Von Neumann and Morgenstern (1944). Therefore, in keeping with behavioural finance theory, as well as the anomalous extant neoclassical accounting and finance literature, the questionnaire and interview findings demonstrate that investment management praxis continues to be rooted in the belief that stock markets are inefficient. These findings are important because, prima facie, they serve to endorse the validity of ‘active’ over ‘passive’ investment management styles. Afterall, as the literature and the interview evidence reveal, fundamental analysis is for the most part an ‘active’ and not a ‘passive’ endeavour that takes a lot of time to do properly because it requires in-depth research on target companies together with focussed analysis of the information gathered. To illustrate, it necessitates the collection of both quantitative and qualitative information from multiple diverse sources that include the company’s annual reports, speaking with the management of companies over the telephone or on-site, participating in conference calls and speaking to sell-side financial analysts – albeit preferably when they possess ‘specialised’ knowledge of an industry and/or company that a portfolio manager or buy-side analyst is interested in obtaining and cannot readily acquire for themselves. Thus, ‘active’ investment management firms can take ‘comfort’ from the findings because the evidence indicates they are not acting alone when choosing the ‘active’ style of investment decision-making, which is all the more consequential when the costs associated with fundamental analysis can be so high. However, this is a ‘herding’ argument that does not necessarily signify sound investment management philosophy! Nonetheless, given that a 14 times majority of the survey respondents find ‘active’ styles to be more profitable than ‘passive’ ones, it seems unlikely that the dominance of the ‘active’ investment management school of thought within the asset management industry is about to change any time soon. Rather, in light of the recent growth of available new investment management technologies, it seems more plausible to assume the results might serve to embolden ‘active’ managers to commit more resources towards enhancing the economy, efficiency and effectiveness of their fund management operations. And if such tactics promise higher returns, this would seem to make sense - provided the industry doesn’t suddenly switch its ‘active’ stance to a ‘passive’ one!

[Industry Typologies; Modern Portfolio Theory; ‘Value’, ‘Growth’ and ‘Momentum’ phenomena]. The questionnaire findings show that investment managers’ decisions about which industries to invest in is also an indispensable facet of ‘active’ investment management, and by association, fundamental analysis. When the 302 survey respondents were asked to indicate which of the major industry typologies listed in Table 7.9 they preferred to invest in, the findings revealed, in descending rank order, that they favoured: 1) Electric, Oil, Gas and Coal Energy activities, 2) Water supply, Sewerage and Waste management services, 3) Financial and Insurance activities, 4) Pharmaceutical and Health Care sectors, 5) Wholesale and Retail trade activities, 6) Agriculture, Fruticulture, Forestry and Fishing, 7) Metals, Iron, Steel and Artificial Limbs sector, 8) Air, Road Transport

Hauliers and Storage sector, and so on. These results ought to be of interest to certain segments of academia and practice. For instance, the findings suggest that most 'active' managers do not believe in holding only portfolios that lie along the 'efficient frontier' (Markowitz, 1952). In fact, the interview evidence highlights many alternative sector-based 'active' investment management philosophies that are only loosely related to the concept of holding well-diversified portfolios. Specifically, investment managers make choices for all sorts of valid reasons that may stem from familiarity with an industry, geographic region, technology or simply their self-ascribed investment management philosophy (style). To illustrate, the questionnaire findings indicate that 'active' investment managers have preferences, i.e. they make behavioural choices that impact the industries they invest in. For example, the survey respondents indicated, in descending rank order, that they tend to favour: 1) 'value' stocks, 2) stocks that combine 'value' with 'momentum', and 3) 'growth' stocks. Taken together, these findings are important because they demonstrate that most of the investment managers in the study do not comply with many of the theoretical assumptions underpinning neoclassical finance theory. Specifically, the evidence suggests that the efficient markets hypothesis (EMH) and modern portfolio theory (MPT) exert only limited influence on the real-world 'art' of 'active' investment management praxis, although clearly the concepts are occasionally utilised when the circumstances fit the narrative.

In summary, the descriptive questionnaire survey findings serve to affirm the dominancy of 'active' investment management and fundamental analysis within the European investment management industry, and beyond. Moreover, all of the high-ranking European portfolio manager interviewees affirmed that they too were predisposed to 'active' fund management strategies within fund categories where their companies possessed unique competencies. Consequently, the findings do not fit with many of the well-known non-behavioural neoclassical accounting and finance theoretical arguments outlined in the literature.

[Ad-hoc Behavioural Factors: Employer, University and CFA influence on decision-making; The ‘Big Data’ phenomenon and the Quant – Qual debate]. One notable finding relates to four somewhat subtle, but no less powerful, motivational factors that the survey indicates influence the decision-making behaviour of investment managers. In descending rank order, the portfolio managers, buy-side analysts and sell-side analysts indicated these were: 1) the investment management industry’s latest innovations and alpha insights, 2) pressure to conform to employer prescribed company policies on valuation, 3) accounting and finance techniques learned at university, and 4) the CFA program course of study. Regarding point #3 for example, it is conspicuous that the majority of the sample indicated that they studied ‘finance’ in preference to ‘accountancy’ when first attending university. Specifically, ‘finance’ studies (43.8%; n=148) was ranked highest 1st preference from amongst the 10 undergraduate courses available to choose from in the questionnaire, while ‘accountancy’ studies (1.8%; n=6) was ranked 8th lowest. These are surprising findings that arguably will be of interest to programme directors, amongst others, in academe and practice. Unfortunately, the results do not reveal the quantitative-qualitative orientation within these courses, nor do they reveal the degree to which big data, natural language processing, computer algorithms, computer modeling, machine learning, data analysis and/or related decision-making skills-training formed components of these courses. Nonetheless, they are important findings because they are an indication (albeit subtle) of a movement away from qualitative to quantitative finance paradigms; which if true at the undergraduate level will no doubt subsequently permeate the real-world realms of investment management behaviour and practice. Moreover, the extant literature reveals that these four behavioural factors merely touch the surface of what is otherwise a rapidly expanding multi-disciplinary behavioural finance literature, see for example Shiller (2015), Barberis & Thaler (2003), Ricciardi & Simon (2000), Mahajan (1992), Gul (1991), Segal (1989, 1987), Yaari (1987), Dekel (1986), Chew (1983), Loomes and Sugden (1982), Quigginm (1982), Bell (1982), Weinstein (1980), Kahneman and Tversky (1979, 1974), Chew and MacCrimmon (1979), Fischhoff et al. (1977), Ellis (1962, 1957) and Festinger (1957).

Notably, a related survey question asked the respondents to indicate whether they prefer using 'qualitative' or 'quantitative' tools and techniques to manage investments and make decisions. Nearly half of the sample (48.9%; n=162) indicated they use 'qualitative' appraisal methods compared to the 5.4% (n=18) that indicated they prefer 'quantitative' decision-making methods. But concurrently, a sizeable proportion of the sample (45.6%; n=151) indicated they utilise a mixture of both 'qualitative' and 'quantitative' methods to make investment decisions. Arguably, these findings also serve to signal that a movement away from what historically has been a preference for 'qualitative' methods of analysis in favour of more 'quantitative' approaches that tend to better fit with the range of au courant computerised multi-factor models and trading algorithms seen entering the investment management field of late is under away. Correspondingly, the interview evidence avows that a growing number of investment managers are adopting state-of-the-art investment management technologies that seemingly offer fast-moving and highly efficient ways to analyse stocks and/or make investment decisions. This matters greatly because as technology advances it will become more difficult for 'active' investment managers to generate sustainable 'alpha' on their portfolios. That is, the big implication for investment managers that arises here relates to the risk that ultramodern investment management technologies could render their 'old ways' of doing things competitively obsolete; hence the evident impetus for 'active' investment managers to jump on the 'technology train' lest they get left behind!

In conclusion, it is clear from the forgoing discussion that investment managers' backgrounds, together with their personal characteristics and proclivities, exert a significant influence on investment management praxis. Moreover, the findings affirm that the investment management industry is heavily invested in the belief that 'active' investment management can generate abnormal stock market returns. Yet, there is an underlying theme running through this study that hints of an impending seismic shift from active to passive investment management styles. To recap, this view is predicated on the belief that should the rate of technological transformation that is currently permeating the investment management industry continue unabated then it seems only a matter of time before the stock markets become so 'informationally efficient' that investors no longer view 'active' investment management to be economically sustainable. And if this were to happen, the ensuing flow of funds out of 'active' portfolios and into 'passive' funds would likely be a very significant event for investors, analysts and academics. Synchronously, EMH would probably re-take centre stage amidst the theoretical shakeup that likely would ensue.

10.3 Utility of Accounting and Modern Finance Theory in Equity Investment Management Praxis

This section discusses the structured questionnaire and semi-structured interview evidence as it relates to the accounting, modern finance and investment management literature. Invoking the language of Brown et al. (2015), Bradshaw (2011), Ramnath et al. (2008) and Arnold and Moizer (1984), the empirical research findings discussed in this chapter are the outcome of the study's attempts to penetrate the so-called 'black box' of largely hidden investment management decision-making practices (Figure 1.1) more thoroughly than prior research efforts have accomplished to-date, recent examples of which include Clatworthy and Lee (2018), Mukhlynina and Nyborg (2016), Abhayawansa (2015), Cascino et al. (2014), Schreiner (2011), Imam et al. (2008), Demirakos et al. (2004), Fouche and van Rensburg (1999), Vergoossen (1993), Carter & Van Auken (1990), Arnold & Moizer (1984) and Moizer and Arnold (1984).

Overall, the research findings highlight the pre-eminence of fundamental analysis within the investment management industry. However, 'fundamental analysis' represents something of a catch-all phrase that per se is not that helpful, aside from the evident fact that it infers all data is relevant if it potentially influences the investment management decision-making process. Therefore, at the outset of this study it was considered more effective to investigate various 'black box' phenomena via three separate but related investment management lenses, rather than assume the investment management industry was united in its understanding of what is meant by the term 'fundamental analysis'. To recap, these three related 'black box' perspectives are: 1) the influence that backgrounds and personal attributes have on fund manager, buy-side analyst and sell-side analyst investment management decision-making; 2) the role of the theoretical accounting and finance paradigms in asset pricing, and; 3) the utility of sell-side equity research when viewed through the eyes of buy-side analysts and portfolio managers.

Point 1 was covered in the previous section. Therefore turning to point 2, the research findings indicate that the respondents prefer accounting techniques over the neo-classical techniques of modern finance when evaluating equity investments. Moreover, the results demonstrate that, with the exception of DCF methods, the respondents prefer accounting multiples over intrinsic methods of valuation.

Aside from revealing generalised proclivities about the appraisal methods, types and sources of information portfolio managers, buy-side analysts and sell-side analysts use to make investment decisions, the literature teaches us that using questionnaires alone in order to uncover insightful findings is unlikely to yield meaningfully fruitful results, i.e. questionnaires alone are unlikely to reveal the 'hidden' decision-making processes investment managers engage in whilst deriving valuations prior to making stock recommendations and/or buy/sell decisions. Notably, some 35 years ago Arnold & Moizer

(1984) also referred to the weaknesses of questionnaires in this light. As a corollary, the interview findings are an indispensable part of the research project's insights and conclusions, not least because they shed light on a range of black box phenomena that otherwise would not have come to light using questionnaires alone. Upon reflection, it was only when the interview results were compared to the questionnaire results that the full extent of the merits of developing a mixed-methods research strategy to address the research questions (the three related black box phenomena) became apparent.

The next sections describe some of the key insights, beginning with the discussion on the utility of accounting theory within investment management praxis.

10.3.1 **Utility of Accounting Theory: Questionnaires and Interviews**

Equity valuation is a primary application of accounting theory. Consequently, the typical business school curriculum devotes substantial time to this topic. The theoretical emphasis usually focuses on intrinsic valuation methods, such as discounted cash flow (DCF) and residual income valuation (RIV) models. However, these models are often cumbersome to use and sensitive to various exiguous assumptions. Consequently, investment management practitioners regularly use valuations based on multiples, such as the price to earnings (P/E) ratio instead of or as a supplement to DCF analysis (Brown et al., 2016; Imam et al., 2008; Ramnath et al., 2008; Schreiner, 2007; Bradshaw, 2004; Demirakos et al., 2004; Lie & Lie, 2002; Arnold and Moizer, 1984).

10.3.1.1 **Intrinsic Valuation Appraisal Methods**

Three well known intrinsic or 'fair' value accounting model types that are used to price equity stocks are discussed in this section: discounted cash flow (DCF) model, dividend discount model (DDM) and residual income valuation (RIV) model.

Of the three choices available, the questionnaire evidence indicated that the majority of the investment managers in the sample (78.86%; n=194) use discounted cash flow (DCF) models either frequently or sometimes to price equity stocks (Figure 8.1A). However, some inconsistencies were evident in the DCF cross-tabulations, which highlighted the existence of some notable schisms between the buy-side and sell-side cohorts in the sample (Figure 8.4). For example, more than twice as many portfolio managers (29%) compared to sell-side analysts (11%) reported 'seldom' using DCF methods. Nonetheless, the descriptive DCF results were largely as expected a priori given the evidence described in Chapters 2 and 3 of the literature review. To illustrate, Imam et al. (2008) concluded that DCF and P/E are the only two models which are generally highly rated by analysts from all sectors. Similarly, Demirakos et al. (2004) concluded that analysts typically use either a P/E model or a multiperiod DCF model as their dominant valuation model.

In contrast, the RIV results were surprisingly atypical because they revealed the majority (59.8%; n=140) of the sample seldom, if ever, use RIV models to value stocks (Figure 8.3A). As outlined in Chapter 3, the literature review demonstrates that DCF and RIV models are closely related; both stem from the dividend discount model (DDM) and theoretically both should, ceteris paribus, yield the same valuation. However, unlike 'traditional' DCF approaches to valuation, RIV models express intrinsic firm values using accounting numbers, i.e. book values and earnings gathered directly from current and future financial statements (Kothari, 2001; Dechow et al., 1999; Lee, 1999; Ohlson, 1995; Feltham & Ohlson, 1995; Peasnell, 1982; and Edwards and Bell, 1961). Therefore, RIV models make it potentially easier for investors and financial analysts to use intrinsic equity valuation methods in practice. Hence, it was surprising that the survey findings failed to mirror these theoretical insights. Moreover, according to Penman (2005, p.367) "…Residual income valuation (RIV) has become the centrepiece of accounting-based valuation…". Therefore, given the current findings, Penman's (2005) assertion in this regard is puzzling. Subsequently, Muhlynina & Nyborg (2016) reported even poorer RIV results, i.e. their RIV frequency statistics showed RIV usage was 9% for n=228.

Synchronously, the questionnaire findings reveal that 52.08% of the sample use dividend discount models (DDMs) either frequently or some of the time (Figure 8.2A). This result is higher than was expected a priori based on the literature review. Comparatively, Muhlynina & Nyborg's (2016, p.45) results were generally more in keeping with the extant literature, i.e. their "Table 6: Multiperiod models" findings revealed DDM was used by only 18% (n=232) of their survey respondents. Moreover, Barker's (1999) findings, which also utilised a mixed methods research approach involving interviews and questionnaires with fund managers and investment analysts, demonstrated both groups regarded dividend discount models as unimportant. In this light, the somewhat anomalous current DDM findings are partially explained by the backgrounds and personal proclivities of the questionnaire respondents, wherein Chapter 7 reveals that 22.8% (n=69) of the sample ranked "Financial and Insurance activities" as their 3rd industry preference from among the 28 different industry typologies available to them to choose from. So, evidently a sizeable proportion of the respondents surveyed were evaluating financial services companies, which in turn helps to explain the atypical nature of the DDM results. And as interviewee #6 explained: "… the way you analyse some companies… you adapt it to the conditions of the markets…. for banking, you don't do a DCF. You could do DDM, dividend discount model, which is a little bit similar".

In conclusion, Penman (2005, p.367) aptly describes the utility of intrinsic methods of valuation this way: "It is of course imperative that a valuation model be consistent with valuation theory, but it is not sufficient. Valuation models are utilitarian – they serve to guide practice – so the choice between competing technologies ultimately comes down to how useful they are for the practical task of evaluating investments." This explanation is helpful, but it does not explain the anomalous RIV findings. As a corollary, the RIV questionnaire results remain something of an empirical conundrum. Nonetheless, an awareness of these findings may serve to prompt practitioners to re-evaluate why they are not taking full advantage of RIV models in the workplace. Likewise, future researchers may feel motivated to investigate this matter further.

10.3.1.2 **Relative Valuation Appraisal Methods**

Numerous well-researched studies have investigated valuation ratios as part of the prediction process (see for example Forte et al., 2018; Mukhlynina and Nyborg, 2016; Bunn, et al., 2014; Clatworthy and Jones, 2008; Ramnath et al., 2008; Wilcox, 2007; Asquith et al., 2005; Bradshaw, 2004, 2002; Demirakos et al., 2004; Block, 1999; Barker, 1999; Fouche and van Rensburg, 1999; Miles & Nobes, 1998; Pike et al., 1993; Arnold and Moizer, 1984; and Moizer and Arnold, 1984). Adopting a black box perspective, this section extends the analysis of accounting valuation theory by examining the extent to which the following eight 'relative' valuation model types are used in practice to price equity stocks: i) price-earnings multiple (P/E model), (ii) enterprise value-EBITDA multiple (EV/EBITDA model), (iii) price-cash flow multiple (P/C model), (iv) price-book multiple (P/B model), (v) dividend yield multiple (D/P model), (vi) earnings yield multiple (E/Y model), (vii) price-sales multiple (P/S model) and (viii) Shiller-CAPE multiple (CAPE model).

Of the eight choices available, the questionnaire evidence reveals that the P/E model is the most frequently used valuation method in practice (Figure 8.7, Panel C). Almost ninety percent (89.9%; n=222) of the investment managers in the sample indicated they use it 'frequently' (71.3%; n=176) or 'sometimes' (18.6%; n=46). In keeping with the DCF results described in the previous section, and based on the literature review evidence discussed in

Chapters 2, 3 and 8, the P/E findings were largely as expected a priori. Although in light of P/E's many documented flaws, it was surprising to find that the closely related cyclically adjusted price earnings (CAPE) results did not mirror the P/E findings. In fact, the P/E and CAPE model results were polar opposites, i.e. CAPE was ranked the least preferred valuation multiple (almost two-thirds [65.27%; n=156] of the sample indicated they 'seldom' use it in practice) whilst P/E was ranked the most preferred multiple (almost three-quarters [71.3%; n=176] of the sample's respondents indicated they 'frequently' use it in practice).

These results appear even more surprising when they are considered alongside the extant literature on the Shiller-Cape model. As outlined in Keimling (2015), Bunn et al. (2014), Shiller (2005) and Campbell & Shiller (2001, 1998), the 'classic' P/E model has two major disadvantages. Firstly, corporate earnings are extremely volatile and in practice are almost impossible to predict. For example, S&P 500 earnings fluctuated between 7 and 77 points from 2009 to 2010. Thus, the prevailing level of returns (as say represented by the P/E ratio) are not necessarily representative of their future development. Secondly, P/E ratios seem to be particularly unattractive in years of crisis when low or negative corporate earnings provide lucrative buying opportunities. At such times the P/E model does not consider the potential for earnings growth after the crisis.

Moreover, the interview evidence (Chapter 6) tends to accentuate the anomalous P/E vs. Shiller-Cape questionnaire results. For example, interviewee #1 – who is featured in the "Great Minds of Investing" (Leber, 2015) – highlighted the potential mistakes that can arise from using the classic P/E multiple; he states: "… there's high P/E stocks that we think are the most dangerous thing you can own on earth, because you can lose a lot of money. There are some where we're so convinced of the business model and the future growth prospects…

we will buy at multiples that we normally wouldn't… in this case we will make an exception".

As a corollary, the available empirical evidence clearly indicates that P/E ratios are not a panacea for predicting future returns; hence the literature usually advocates that they are used in conjunction with other factors in order to mitigate the risks inherent in using them. For example, Graham & Dodd (1934) even warned 85 years ago that cyclical fluctuations in earnings could adversely affect the validity of the P/E. As a result they recommended using an average of earnings for the last 7 to 10 years to calculate the P/E. Following this advice, Campbell and Shiller (1998) developed the cyclically adjusted price-earnings ratio (CAPE), which puts the current market price in relation to the average inflation-adjusted earnings of the previous 10 years. The purpose of the 10-year observation period is to ensure that the profits are averaged over more than one earnings cycle. The adjustment for inflation ensures the comparability of profits even at times of high inflation. Thus, the CAPE model measures whether the value of an equity market is high or low compared to its earnings level adjusted for an economic cycle – to which it will very likely return. Thus, given the inherent weakness of P/E ratios nested with the mitigating power of CAPE ratios, it seems to make no sense, prima facie, that almost two-thirds (65.27%; n=156) of the sample should indicate they 'seldom' use them.

In contrast to the Shiller-Cape questionnaire findings, the interview evidence presents a somewhat more positive picture of CAPE's usefulness to practitioners, especially when used as a valuation and portfolio management tool by portfolio managers or to a lesser degree by buy-side analysts. For example, as interviewee #4 asserted: "… We know the most important factor [critical success factor] of the portfolio is asset allocation. That means… if I invest in stocks… cash… sector and [or] country allocation. So I think the most important research we did [is]… on CAPE ratio, Schiller-Cape and other fundamental indicators…"

Additionally, the cross-sectional CAPE results (Figure 8.16, Section 8.2.2.1) tend to corroborate interviewee #4's assertion. That is, they show that nearly three times as many portfolio managers compared to sell-side analysts use the Shiller-Cape multiple on a frequent basis in practice (i.e. 17% vs. 6%). Moreover, there is a sizeable 19% gap between these portfolio managers and sell-side analysts that seldom use it (58% vs. 77%). Nonetheless, for now this apparent Shiller-Cape theory/practice schism remains something of an empirical black box conundrum. In this light it is notable that Imam et al. (2008, p.531) also observed that investment managers' preferences are "multi-dimensional, reflecting both technical and contextual considerations". In a related vein Ramnath et al. (2008, p.35) observed that "much of the analysts' decision processes and the market's mechanism of drawing a useful consensus from the combination of individual analysts' decisions remains hidden in a black box."

The EV/EBITDA model was ranked the second most popular valuation multiple; 84.3% of the sample indicated they use it 'frequently' (63.3%; n=157) or sometimes (21.0%; n=52). Comparatively, these results align with what it says in the recent empirical investment management literature. For example, Mukhlynina and Nyborg (2016) reported EV/EBITDA was the most popular ratio (overall) in their valuation survey, whilst indicating asset managers were also heavy users of PE. Specifically, their results showed that 84% of their sample used the EV/EBITDA multiple 'always' or 'almost always' when performing a multiples valuation analysis. These findings are also consistent with Clatworthy and Jones (2008), who in keeping with the current research approach also adopted a mixed methods research methodology incorporating questionnaires and semi-structured interviews with fund managers and analysts. Their results revealed 8 out of 11 analysts (73%) relied on EBITDA, but only 50% of fund managers referred to it. They explained that analysts (who typically are industry specialists) need to compare companies, whereas fund managers (who typically are country specialists) use comparative data less. Moreover, the interviews likewise indicated EV/EBITDA was a useful valuation metric.

The P/C model (price to operating cash flow ratio) was the third most popular valuation multiple; 71.5% of the sample indicated they use it ‘frequently’ (52.48%; n=127) or ‘sometimes’ (19.01%; n=46). Correspondingly, Brown et al. (2015, p.4 and p.15) ranked cash flow models second in order to PE ratios. They explained their result as follows: “The factors analysts believe are most indicative of high-quality earnings include that earnings are backed by operating cash flows, are sustainable and repeatable, reflect economic reality, and reflect consistent reporting choices over time”. In contrast, Demirakos et al. (2004) reported that analysts seldom if ever consider the P/C model to be their dominant valuation model.

The P/B model was ranked the fourth most popular valuation multiple; 77.65% of the sample indicated they use it ‘frequently’ (51.65%; n=125) or sometimes (26.0%; n=63) to price equity stocks. However, some inconsistencies were evident in the PB cross-tabulations, which highlighted the existence of some sizeable schisms between the buy-side and sell-side cohorts in the sample (Figure 8.13). For example, more than twice as many sell-side analysts (32%) compared to portfolio managers (15%) reported ‘seldom’ using P/B models. Nonetheless, compared to the related extant literature (Chapters 2, 3, 4 and 8), the results were generally less favourable than had been expected a priori, see for example Almumani (2014), Malhotra and Tandon (2013), Hossain and Nasrin (2012), Kothari (2001), Piotroski (2000), Dechow et al. (2000), Agarwal et al. (1996), Fama & French (1993,1992), Basu (1983) and Graham & Dodd (1934, 1949).

Even so, as described in Chapter 8, Imam et al. (2008) reported similar findings in their financial and industrial sectors’ survey, i.e. their stated PB multiple score was likewise ranked just above mid-rating. Hence, the historical emphasis placed on book values in the accounting and finance literature appears to have waned in recent years – regardless of whether they are used as standalone multiples or in combination with other ratios or factors. Notably, Penman (2005) intimated that the recent decline in the popularity of the P/B multiple may be due to investors turning their attention to earnings per share rather than earnings and book values. Moreover, Ohlson (2005) and Ohlson & Juettner-Nauroth (2005) critique the emphasis placed on earnings and book values when valuing a firm. That is, their abnormal earnings growth (AEG) model advocates earnings per share rather than earnings and book values as the focus of value.

In a similar vein, the related interview findings (Chapter 6) indicated that portfolio managers are no longer inclined to rate PB models as highly as the extant literature suggests. For example, interviewee #3, who is featured in the "Great Minds of Investing" (Leber, 2015), stated "… We've tested about 1 million factors and come up with about 80 that are useful. There are unusual factors… we aren't academics, we simply look at them; do they work, or don't they work…We tested everything that we could get our hands on". So just there, based on what this world-renowned value investor has asserted, it appears the decision-making relevance of PB models is waning vs. the multiplicity of alternative signals that investment managers can utilise. Thus, rather than make investment decisions based solely on standalone PB multiples and/or simplistic two, three, four or five factor combinations of same with other multiples (Fama and French, 2017, 2016, 2015, 2012, 1995, 1993, 1992; Novy-Mark, 2015, 2012; and Carhart, 1997), it seems more likely, considering today's new hi-tech/big-data investment management reality, that investment managers are evaluating investments and portfolios using increasingly more sophisticated multi-factor valuation models. And as discussed in Chapter 8, Imam et al. (2008) likewise asserted that investment managers seem to be turning to alternative, more sophisticated, valuation methods when these are perceived to better meet their needs.

The DY multiple was ranked the fifth most useful multiple overall; 70.5% of the sample indicated they use it 'frequently' (45.2%; n=107) or sometimes (25.30%; n=60). Comparatively, Imam et al. (2008, p.512) likewise indicated DY's "use as a primary valuation model is very limited". DY was ranked tenth among thirteen valuation models listed on their 'Table 2. Panel B: Valuation model usage (content analysis)'. Similarly, Moller and Sander (2017) argue that the dividend yield by itself is a poor predictor of performance. In contrast, Barker (1999) – in a comparable study of UK analysts and fund managers – ranked the dividend yield model the most important valuation measure alongside the PE model. Thus, the DY findings are a further reminder that investment managers' preferences are "multi-dimensional, reflecting both technical and contextual considerations" (Imam et al., 2008, p.531).

The EY multiple was ranked the sixth most useful multiple overall; 64.5% of the sample indicated they use it 'frequently' (44.02%; n=103) or 'sometimes' (20.5%; n=48). This result was expected a priori based on the study's review of the literature, see for example Chapters 2, 3, 4 and 8. Correspondingly, Wilcox (2007), Greenblatt (2006), Siegel (2005) and Kothari (2001) characterise the earnings yield as a reasonable approximation of the real expected return to equity. However, the EY model – just like the P/E model – is an earnings-based model that suffers from the same weaknesses that P/E models suffer from. So even though the earnings yield model represents a reasonable approximation of the real expected return to equity, there are also time periods when it provides a poor estimate of the true worth of a stock (Wilcox, 2007). As a corollary, Rangvid (2017), Lewellen (2004), Campbell and Shiller (1988a) and Shiller (1984) demonstrate that an adjusted EY ratio (1/CAPE) – which is analogous to the renowned Shiller-Cape (price-earnings) multiple – represents a powerful alternative predictor of the real return on a stock, particularly when the return is measured over several years. Nonetheless, compared to the other multiples metrics described herein, the findings indicate that the traditional EY model is a relatively less popular performance measure than some of the others that are available to users.

The PS multiple was ranked the seventh most useful multiple overall; 58.4% of the sample indicated they use it ‘frequently’ (33.61%; n=80) or ‘sometimes’ (24.8%; n=59). Comparatively, Herrmann and Richter (2003) show that metrics based on sales are the least reliable, while those built on earnings are the most reliable. Nonetheless, Armstrong et al. (2011) argue that the market capitalization to revenue model (price/sales ratio) is of central interest in many areas of capital markets investment analysis and research, not least valuation research.

The Shiller-Cape multiple (aka the P/E 10 ratio) was ranked eight most useful valuation multiple overall; 34.74% of the sample indicated they use it ‘frequently’ (13.4%; n=32) or ‘sometimes’ (21.34%; n=51). As discussed in Chapter 8 and at the beginning of this section, this is a surprising finding considering the many positive comments attributed to it in the extant investment management literature (Siegel, 2016; Keimling, 2016; Bunn, et al., 2014; Shiller, 2005; Campbell & Shiller, 1988, 1998, 2001; and Graham and Dodd, 1934).

In conclusion, aside from the surprise Shiller-Cape findings, the accounting multiples evidence presented in this section demonstrates that the majority of practicing investment managers ‘frequently’ and/or ‘sometimes’ use accounting multiples to price equity stocks, while only a relatively small portion of the sample ‘seldom’ use them. In essence, the findings align with what is already known in the accounting literature (see Chapters 2, 3 and 8). For example, in keeping with the eloquent remarks of Penman (2005) in the previous section, Bradshaw (2004) likewise reports that most empirical studies show that investors and analysts frequently rely on at least some of these models to support their investment decisions and recommendations. The implied inference is, irrespective of whether investors are rational, markets are efficient, or returns are random, the investment community still requires standards of comparison to justify their latest trading decisions. In this respect, despite their deficiencies, accounting multiples have much to offer investors [fund managers] and financial analysts [buy and sell-side]. Conspicuously, these were also the views expressed by Interviewee #5, who offered the following advice when using multiples valuation models: "… I mean you shouldn't rely on one, that's my point. You should try to COMBINE them and take the best out of everything, and that's how I view it… and if you can tick the box in more than one, then you might have a pretty good case [Investment Case]".

Finally, these results matter because despite the sometimes-dissonant nature of the evidence in the literature and the current findings, together with the noted inconsistencies between the buy and sell-side cohorts, knowledge of these findings can help practicing investment managers to choose between alternative accounting techniques when appraising investments. Ultimately, what matters is that these findings can be used to improve firm/fund performance. Thus, in the context of the Ramnath et al. (2008, p.35) black box appeal to future researchers, it could be said that we have learned much about the "heuristics relied upon by analysts and the market."

10.3.1.3 **Closing Remarks on the Utility of Accounting Theory**

As the discussions in the previous two sections demonstrate, broad-based non-situational rankings of descriptive accounting numbers (such as those described in Chapters 7 and 8) offer only limited research value. So even though the current findings seem to align with what it says in the accounting literature, and with what the interviewees reveal in Chapter 6, investment opinion concerning how well specific intrinsic and relative accounting models fit into the broader comparative performance analysis of companies and/or equities is still far from unequivocal in praxis.

This was also the view of Imam et al. (2008) who contend in their study that an analyst's choice of valuation method reflects technical factors related to firms' industrial and business characteristics plus contextual considerations related to the institutional setting of the valuation process, in particular the valuation preferences of fund managers. Moreover, Imam et al. (2008, p.517) report that "A comparison of sectors shows that analysts in industrial, media, retail and technology stocks had similar preferences in relation to most valuation methods, while financial sector analysts' preferences differed from those of other analysts in several important respects, consistent with the findings of Barth et al. (1998)". Specifically, they showed that financial sector analysts were distinctive in terms of higher ratings for P/B and DDM and substantially lower ratings for Cash flow and EV/EBITDA. Furthermore, they showed that the model preferences of analysts in other sectors had substantial similarities, although some had specific differences in relation to particular models. For example, P/B was only favoured among industrial analysts (in addition to financial sector analysts), while DY was lowly rated by technology analysts. Overall, their findings indicated that: (i) DCF and PE are the only two models which are generally highly rated by analysts from all sectors; (ii) financial sector analysts have very different preferences, but analysts covering all the other sectors have similar preferences; (iii) some models are somewhat sector specific, such as DDM and P/B for financial firms, and; (iv) cash flow models, and in particular DCF, are rated highly in all sectors and may be preferred by analysts in technology and media sectors. In essence, the overall view of Imam et al. (2008, p.531) is that analysts' preferences are "multi-dimensional, reflecting both technical and contextual considerations".

Correspondingly, Demirakos et al. (2004) indicated that: (i) analysts typically use either a PE model or a multiperiod DCF model as their dominant valuation model; (ii) analysts seldom if ever use the PC (price to cash flow multiple) as their dominant valuation model;

(iii) the use of valuation by comparatives is higher in the beverages sector than in electronics or pharmaceuticals sectors, and; (iv) some ratios may not be suitable in high-growth, intangibles-rich industries due to the accounting treatment of R&D expenditures and intangible assets.

Similarly, the interview evidence reveals that market sentiment regarding the usefulness of intrinsic and relative valuation models varies a lot across investment managers, which typically is tailored to the circumstances of the target industry. For example, interviewee #5 stated he liked EV/EBITDA but didn't like PB. However, his views on P/E's utility were generally more circumspect. To illustrate, he commented: "One has to accept that it [PE] is probably the most divisive valuation method in the markets…. [but] you can't just reject it, even though… one have the opinion … it's have a lot of... you say.... weakness….". In the same vein, interviewee #1 commented: "… there's high P/E stocks that we think are the most dangerous thing you can own on earth….". Alternatively, interviewee #7 stated he liked PB more than PE because "… the price to book is taken from the balance sheet, and the balance sheet I think it's a stronger, more robust, and less prone to creativity instrument than the income statement, where the price to earnings comes from. So of course I have to look at the price-earnings. Of course, I compare P/E's… but … mostly, when you're talking about highly leveraged companies... when you're talking about financial companies, the price to book… looking at the balance sheets… it's the most robust place that you can look at…" Nevertheless, as interviewee #5 cautioned: "… you shouldn't rely on one… You should try to COMBINE them [multiples] and take the best out of everything… and if you can tick the box in more than one then you might have a pretty good case [Investment Case]". But it was interview #1 who seemed to capture the broad spectrum of current opinion, plus what it says in the literature, with the following remark: "the theoretical framework around them [multiples] has improved over the years… but we still go back to the P/E ratio and things like that [DCF]".

In conclusion, the evidence presented herein, plus the literature, indicates that investment managers typically tailor their accounting valuation methodologies to the circumstances of the industry, their familiarity with a specific valuation model and/or its acceptability to clients.

10.3.2 **Utility of Modern Finance Theory: Questionnaires and Interviews**

As it is with accounting theory, equity valuation is also a primary application of finance theory. Consequently, the typical business school curriculum devotes substantial time to this topic. The theoretical emphasis usually focuses on market efficiency, portfolio diversification and single-factor asset pricing models, such as the capital asset pricing model (CAPM) and the consumption capital asset pricing model (CCAPM). However, these models are often cumbersome to use and sensitive to various exiguous assumptions. Consequently, the literature advocates the use of multi-factor asset pricing models instead of or in conjunction with the single-factor asset pricing models (Fama and French, 2014, 1992, 1993; Cochrane, 2005; Carhart, 1997, Sharpe, 1964; Markowitz, 1952). As a corollary, the empirical evidence indicates that buy-side investment managers regularly use diverse, often bespoke, versions of multi-factor asset pricing models to determine valuations and make asset allocation decisions, whereas sell-side investment managers seemingly use them only occasionally.

10.3.2.1 **Single-factor Risk-adjusted Return Appraisal Methods**

Four well-known single-factor risk-adjusted return model types that are used to price equity stocks are discussed in this section: the capital asset pricing model (CAPM), the consumption-based capital asset pricing model (CCAPM) and the Sharpe ratio and momentum models.

Of the four choices available, the questionnaire evidence reveals CAPM is the most frequently used single-factor finance model in practice. Circa 40% of the sample (40.64%; n=102) reported 'frequently' using it to price equity stocks. Concurrently, a slightly larger portion (41.04%; n=103) of the sample reported 'seldom' using it. These were unexpected findings considering the vastness of the available accounting and finance literature on CAPM. However, while the results appear atypical in light of the literature, they nonetheless are largely explained by the interviews. For example, as interviewee #3 stated: "… Capital Asset Pricing Model… I used to do that some 25 years ago until I realized that it doesn't make sense". Also, the interview evidence reveals that the majority of portfolio managers prefer to use market-based interest rates or some alternative rule of thumb, rather than the CAPM discount rate, to calculate the cost of equity capital when (say) evaluating investments intrinsically. Furthermore, the interview findings underscore the importance of such qualities as 'believability' and 'trust' to justify their preference for market rates vs. the CAPM discount rate when calculating the cost of capital. And as this researcher attested to in Chapter 8; anyone who has completed a DCF valuation before will attest to the importance of the discount factor: even a small difference in the discount rate makes a big difference to the present value calculations and/or the price of equity. Furthermore, when an investor is (say) concerned about a 'value-trap', as all 'value investors' are/should be at some point in their careers, then the discount factor may rightly be a big concern for him/her, which in turn implies that if he/she distrusts the source of the available information or model (in this instance the CAPM), then they'll rightly want to discard it in favour of more reliable measures.

The Sharpe ratio questionnaire findings, like the CAPM results, were also atypical in light of what is frequently reported in the modern finance literature, and the media. Specifically, the evidence revealed that 53.3% (n=130) of the sample 'seldom' use the Sharpe model to price equity stocks. Not only did the questionnaire findings on the Sharpe ratio fail to espouse what it says in the literature, they also fail to reflect the evident fact that the Sharpe formula represents a convenient and practical tool for calculating risk-adjusted fund performance relative to the total risk undertaken by the portfolio manager (Bacon, 2008; Bruce, 2003; Sharpe, 1994, 1966; Gibbons, et al., 1989; Jobson and Korkie, 1981). Aside from depicting the atypical nature of the Sharpe findings, the questionnaire results, per se, offer no further clue as to why the frequency distributions turned out the way they did. That is, they do not reveal why the inherent appeal of an intuitively simple way to measure investment risk relative to portfolio performance is not reflected in the findings.

The greater a portfolio's Sharpe ratio, the better its risk-adjusted performance. Adding diversification should increase the Sharpe ratio compared to similar portfolios with a lower level of diversification. For this to be true, investors must also accept the assumption that risk is equal to volatility which is not unreasonable but may be too narrow to be applied to all investments. Moreover, portfolio theory assumes investors are innately rational, risk-averse beings who will only choose from among the most optimal combinations of securities, what Markowitz (1952) termed 'Efficient Share Portfolios', which can be an unrealistic assumption. Nevertheless, aside from the rationality arguments, Markowitz (1952) was unable to provide specific guidance as to how a rational risk-averse investor should go about identifying the 'optimal' investment portfolio that is best suited to his/her personal risk-return preferences. Later however, both Tobin (1958) and Sharpe (1964) solved this asset allocation or 'optimisation problem', and the CAPM was born.

But was the asset allocation and portfolio optimisation question really solved by Sharpe? Perhaps not, because according to the portfolio manager interviewees, there are many other real-world phenomena that must also be taken into consideration when making asset allocation and portfolio optimisation decisions. That is, it is not simply a choice of where to locate along the capital market line (CML) or as portfolio theory assumes a case of maximising investment returns for any given level of risk, and vice versa. Afterall, not every portfolio manager will have the same profitability targets nor share the same constraints; for example, their behaviour is frequently curtailed by fund mandate rules or other forms of corporate control.

Nonetheless, the interview evidence presented in this study infers that modern portfolio theory's more rudimentary assertion that diversification tends to improve return/risk outcomes is, prima facie, a tractable one. To illustrate, interviewee #09 stated: "… when I make the diversification, I'm not looking for the highest possible return. I look for the reduction of the risk, improvement of the liquidity of the portfolio, and catching some other markets that are going to perform better than my domestic market. From my specific experience, I had many portfolios that… [I was]… invested in… specific sectors… markets… in specific countries that did not do well in the years after the crisis… the period 2010-2014. And other portfolios with broad diversification had performed better… provided better liquidity… risks were reduced… returns higher. Of course, this is when you talk about the risk and return ratio [Sharpe ratio]; when you talk about pure returns [maximising returns]… it's not working".

In short, while the majority of the interviewees agreed that diversification is important and may potentially reduce an assortment of portfolio risks, it does not identify which specific risks are important, nor how these should be measured. Nonetheless, the interview evidence has a simple answer here too: which is 'it depends'. As Imam et al. (2008, p.531) remarked about accounting models, portfolio managers' and analysts' preferences are "multi-dimensional, reflecting both technical and contextual considerations". Or, as Penman (2005, p.367) so eloquently describes the utility of intrinsic methods of valuation – which is also applicable in this modern finance context: "It is of course imperative that a valuation model be consistent with valuation theory, but it is not sufficient. Valuation models are utilitarian – they serve to guide practice – so the choice between competing technologies ultimately comes down to how useful they are for the practical task of evaluating investments." However, while this explanation is illuminating, it does not explain the anomalous Sharpe questionnaire findings. Thus for now, the less than expected Sharpe ratio questionnaire results remain something of an empirical conundrum. It may be that portfolio managers find simple yardsticks like the Sharpe ratio, which measures total risk or volatility, are not as compelling as CAPM which measures systematic risk, or as useful as multi-factor risk-adjusted management techniques that also measure systematic risk. Hence, the anomalous Sharpe questionnaire results may partially be explained by these considerations, albeit the hidden influence of other multifarious real-world black box phenomena are undoubtedly factors also.

The Momentum pricing model questionnaire findings, like the foregoing CAPM and Sharpe ratio findings, are also atypical. Specifically, the evidence revealed that 54.3% (n=132) of the sample 'seldom' use them to price equity stocks. Nonetheless, the merits of momentum pricing models are widely accepted across the modern finance literature, see for example Geczy and Samonov (2013), van Dijk and Huibers (2002), Cooper and Gutierrez (2004), and Chan et al. (1999). Additionally, the behavioural finance literature contains numerous studies that describe how momentum models can be used to capture momentum related phenomena such as past winners and losers, price reversals, mean-reversion and investor over-reaction and under-reaction.

Not only do the momentum model questionnaire findings fail to espouse what it says in the literature, they also fail to reflect the evident practical appeal inherent in using models that try to capture stock returns that tend to continue rising when they are going up, or alternatively that tend to continue falling when they are going down. In this light, the interview evidence proved helpful. For instance, one of the portfolio managers (interviewee #3), who is featured in 'The 'Great Minds of Investing' (Leber, 2015), stated that he uses momentum models to track movements in stock prices following sell-side analyst earnings revisions or other updates. Perhaps in this instance the term 'post-announcement momentum model' might be an apt description for this evidently important capital markets indicator. Alternatively, other interviewees stated that they use momentum pricing models to evaluate whether a market might be overbought or oversold, which seems similar to how momentum traits are used in technical analysis. Therefore, even though the momentum model questionnaire results appear atypical when compared to the literature, it seems conceivable in light the qualitative interview evidence that investment managers may be using them more often than is otherwise indicated by the quantitative questionnaire findings alone.

Finally, the consumption capital asset pricing model (CCAPM) findings (questionnaires and interviews) were as expected a priori. This is because, as discussed in Chapters 6 and 8, CCAPMs are more typically used by financial economists rather than investment managers (Cochrane, 2005).

10.3.2.2 **Multi-factor Risk-adjusted Return Appraisal Methods**

Four well-known multi-factor risk-adjusted return model types that are used to price equity stocks are discussed in this section: the Fama-French 3-factor model (FF3F model), the Carhart 4-factor model (Carhart model), the Inter-temporal capital asset pricing model (ICAPM) and the Arbitrage Pricing model (APM).

The questionnaire evidence revealed that multi-factor finance models are not widely used within the investment management industry. Overall, +75% of the respondents surveyed indicated they 'seldom', if ever, use them in practice. Considering the number of studies that are devoted to multi-factor risk-adjusted return models in the extant modern finance literature, these were not the results that had been expected a priori. Additionally, the extant accounting literature contains some notable research on multi-factor models, but this coverage is far less extensive than what is contained in the modern finance literature. Notable multi-factor accounting studies include Penman (2011), Penman and Reggiani (2009) and Fairfield (1994). By way of illustration, Fairfield (1994) adopted a 'no-risk' multi-factor [multiples] modelling approach to demonstrate how combinations of accounting ratios (P/E, P/B, ROE and E/P metrics) can be used to uncover over/under-valued shares. In contrast, Penman (2011) adopted a 'risk-inclusive' accounting-based multi-factor [multiples] modelling approach that utilised P/E and P/B metrics to identify anomalous patterns in the returns and risks associated with so-called value and growth stocks. Notable multi-factor finance studies include Novy-Mark (2015, 2012), Fama and French (2015, 2012, 2008, 1998, 1996, 1993, 1992), Jagadeesh and Titman (1993) and Carhart (1997).

These accounting and finance asset pricing studies combine P/E and P/B ratios plus other risk factors, over time and across stocks, in an attempt to predict future abnormal equity returns. Notably, while Penman (2011) and Fama and French (1996, 1993, 1992) both identified so-called value and growth stocks in their respective analyses, their conclusions regarding the underlying causal factors associated with the so-called 'value premium' differed substantially to one another. On the one hand, financial theory [represented by Fama and French (1996, 1993, 1992)] argues that 'value stocks' yield higher returns and are riskier than 'growth stocks', while growth stocks yield lower returns and are less risky than value stocks. On the other hand, accounting theory [represented by Penman (2011)] holds that growth stocks yield higher returns and are riskier than value stocks. According to Penman (2011), the difference between the two approaches relates to Fama and French's (1993) mis-labelling of value stocks. Penman 2011 uses earnings yield and book/price ratios to show that value stocks are inherently growth stocks in disguise! Penman's (2011) explanation necessities understanding that 'value premiums' stem from deferred earnings, i.e. future growth. Hence, he argues that the risks associated with the 'value premium' have less to do with so-called 'financial distress' (Fama's 1993 explanation) and more to do with the risks inherent in strategic business decisions that defer earnings in the hope of achieving future growth (in earnings).

Clearly, the two competing academic paradigms cannot be correct at the same time. Moreover, there is the danger that theoretical accounting-finance differences of this type could potentially mislead fund managers and/or investment analysts when making asset allocation and portfolio optimisation decisions. Consequently, it is important that fund managers and analysts are informed of the preceding value premium findings, plus the caveats that accompany them, because knowledge of them may deter fund managers from engaging in the kind of dysfunctional decision-making behaviour that can arise from myopic adherence to the extant research literature. However, Phalippou (2004, p.33) would seem to disagree with this assertion, he writes: "Nonetheless, the value premium appears to be a relatively small phenomenon, and has, therefore, less empirical and theoretical relevance than often granted to it. In particular, when constructing an asset pricing theory, treating the value premium as a stylized fact of stock price dynamics might be unwarranted." Even so, given the huge volume of extant research on the value premium in the literature, plus continuous ongoing media coverage of same, it appears, prima facie, that it is a relatively larger phenomenon than Phalippou (2004) professes it to be. Consequently, an awareness of the value premium findings described herein, plus the caveats that accompany them, may in fact represent a worthwhile contribution to the literature.

Turning next to the multi-factor finance model findings, specifically the FF3F, ICAPM, APM and Carhart 4-factor questionnaire results. Overall, more than 75% of the respondents surveyed indicated they 'seldom', if ever, use them in practice. And as indicated earlier, these were not the findings that had been expected a priori. Nevertheless, the interview evidence explains why the findings do not seem to mirror their almost ubiquitous popularity across the extant modern finance literature. Specifically, the interview evidence argues that multi-factor finance models were more popular in the 80's and 90's because this was a period when the stock markets were informationally less efficient than they are now. Since then, the valuation framework surrounding multi-factor modeling has gotten considerably more sophisticated, while correspondingly the markets have grown significantly more efficient. The downside to greater market efficiency is that portfolio managers may find they are no longer able to harness sufficient 'alpha' from their portfolios using outdated Fama/French style multi-factor asset pricing models. The problem for the Fama/French and Carhart style of model stems from the fact that signals tend to lose their edge over time, and if too few common accounting/finance multiples and factors are used, their ability to consistently deliver that elusive 'edge' that active portfolio managers crave is weakened or lost altogether. This is a profoundly important issue facing portfolio managers because sufficient 'alpha' tends to be the yardstick by which their performance and compensation is judged. Therefore, to compensate for greater market efficiency, some of the fund managers spoke enthusiastically about how they had recently begun to employ big data analysis techniques, machine learning and AI (artificial intelligence) to process more information and test more factors than ever before. For example, as interviewee #3 explained: "We've tested about 1 million factors and come up with about 80 that are useful. There are unusual factors… we aren’t academics, we simply look at them; do they work, or don’t they work…We tested everything that we could get our hands on”.

In essence, asset pricing models are most effective when the signals and factors used in the models are unique, and predictive of future performance. In this light, the interviews allude to an alternative multi-factor risk-return modeling platform, known as ‘Random Forests’ (Breiman, 2001), that is gaining traction within the investment management industry in the past 10 years. In a nutshell, Breiman’s decision-tree framework encompasses data-reduction, machine learning, data mining, multi-factor prediction and regression-based decision-making. As interviewee #3 intimated, these techniques describe a new generation of sophisticated post-modern investment management tools that offer portfolio managers interesting new ways to manage investments and generate excess portfolio returns. Thus, the interview evidence demonstrates that because of recent advances in technology, fund managers now possess unprecedented power to test multi-factor models of unlimited size, conceivably even test one million factors if needed.

10.3.2.3 Closing Remarks on the Utility of Modern Finance Theory

In conclusion, this section of the research study has offered a timely and insightful, interview-based, explanation for why more than 75% of the questionnaire respondents indicated they do not use multi-factor risk-adjusted return models to price equities or optimise their portfolios. Symptoms of paradigm polarity that revolve around discussions about the nature of the ‘value premium’ or other accounting-finance differences only seem to detract attention away from what seemingly are more pressing issues for investors and analysts: the emerging impact of technology on investment management decision-making praxis.

Finally, the results matter because an awareness of the study's wider multi-factor findings may serve to entice portfolio managers to re-evaluate the robustness of their asset pricing strategies and allocation procedures in the face of a rapidly changing investment management marketplace. Moreover, as discussed in Chapter 6, the notion that a new actor has just entered onto the investment management stage – in the guise of 'self-driving' funds – that often require no human input – ought to give every investor and analyst further reason to pause and reflect!

10.3.3 Closing Remarks on the Utility of Accounting and Modern Finance Theory in Equity Investment Management Praxis

In light of the study's overarching research objectives, it is evident from the empirical research findings that the utility of accounting and modern finance theory in equity investment management and decision-making is a contentious topic. Intrinsic valuation models are an essential theoretical component in any valuation framework. After that, whether an investment manager uses accounting multiples and/or single or multi-factor finance models will depend on the objectives and skillset of the individual investment manager.

Finally, it appears from this study's examination of the questionnaire and interview evidence that present-day investors require greater sophistication in order to test more and more factors amidst their ongoing quest for worthwhile alpha for their stakeholders. In this regard the interview evidence points to the importance of big data, machine learning and multifarious computer analysis techniques that together are fast re-shaping the investment management industry. Seen through the lens of this researcher, the potential for interesting new research possibilities seems enormous.

10.4 Thesis Synopsis

This study demonstrates that the job of the investment manager [portfolio manager, buy-side analyst and sell-side analyst] requires the judicious processing of a range of multitudinous exogenous and endogenous investment management factors. In this capacity, these roles ordinarily require easy access to timely and reliable internal and external contextually relevant information pertaining to the valuation and/or decision-making tasks at hand.

The study discusses the key findings of the thesis in relation to the background characteristics and behaviour of investment managers (Chapters 6, 7 and 10), the utility of accounting and modern finance techniques in investment management plus some cross-sectional differences between the buy and sell-side cohorts of the industry (Chapters 6, 7, 8 and 10). Additionally, the study highlighted a range of contemporaneous 'big-data processing' issues related to missing data analysis, data reduction, factor analysis and structural equation modelling (Chapters 9 and 10).

In this light, the study reviewed a range of accounting and modern finance 'pricing tactics' that are in common use across the investment management industry. The results demonstrate that theoretical accounting methods of investment appraisal, whether predicated on intrinsic or relative values, are by no means the only way to evaluate businesses and predict their future performance. Modern theoretical finance methods, whether based on behavioural or classical assumptions, also have a role to play; particularly in areas of risk assessment at the market, portfolio, industry and firm level. Overall, formal valuation models play only a limited role in the valuation of equities. The price/earnings model represents a useful first screen, for example as a test of whether or not the share price is assuming higher or lower growth or risk. Beyond this first screen, the analyst or fund manager explores mostly subjective, company-specific, information that in most cases is not formally fed back into the valuation model of choice, such as the DCF model. In other words, valuation models –

and in particular the PE ratio and DCF models – are used as a point of departure, that is as a basis from which to conduct wide-ranging macro-economic, fundamental accounting and/or multi-factor financial analyses. In essence, they are seldom the only means used to value shares.

The study also shows that an investment manager's choice of one technique over another is influenced by contextual and institutional factors that relate to the gender, education, skill, experience and personal investment proclivities of the investment manager, team or firm in question. Moreover, the interview evidence shows that buy-side analysts seldom work independently, as sell-side analysts often tend to do. Instead, they work very closely within 'fund-specific' management teams that portfolio managers in particular rely on for timely day-to-day decision-relevant information. Notably, the interview evidence indicates that portfolio managers rely far more heavily on their buy-side team(s) of 'fund-specific' analysts for contextually relevant decision-making information compared to external sell-side information sources. What's more, the evidence indicates that trust in sell-side investment management advisory services is currently in a state of decline, so much so that the implications for the sell-side's existing business model appear ominous. Specifically, the fund manager interviews highlight some worrisome credibility concerns facing the sell-side. For example, the sell-side stand accused of being out-of-step with the informational needs and wants of their buy-side customers; which is never a good thing in business. For example, the sell-side tend to use generic accounting and finance metrics that cannot easily be compared to, or absorbed into, (say) buy-side excel spreadsheets or their multi-factor business models. This sometimes has the effect of rendering sell-side outputs/inputs unusable. Additionally, the interview evidence indicates that sell-side analysts frequently concoct price targets simply to justify their ex-post buy–sell recommendations. Bradshaw (2002) also cited this unfortunate tendency. Moreover, the statistical questionnaire survey findings highlight the existence of some notable frequency-based distribution schisms between the buy and sell-side paradigms of the investment management industry, which serve as a further indication that the sell-side are routinely using accounting and finance metrics that do not hold much sway with buy-side decision-makers. Left unchecked, being out-of-sync with one's customer base usually begets fatal implications!

The interview evidence also highlights portfolio managers' and buy-side analysts' growing use of sophisticated computer models and algorithms to analyse competitive market environments and firm financial statements, as witnessed for example by the rise in popularity of AlphaSense, Thomson Reuters StarMine, Investars Light, and so on. The obvious implication for the sell-side industry is that an era of significant change is rapidly approaching, the impact of which will be either positive or negative depending on how individual sell-side firms respond. In any event, the unwelcome historical practice of informationally over-loading the buy-side with superfluous and often useless sell-side marketing materials, in the guise of analyst reports, is probably on the cusp of ending; which the evidence indicates can only be viewed as a positive change outcome by those on the buy-side, who are normally the ones accustomed to receiving this information.

Based on the interview evidence, the contention of the study is that sell-side analysts should re-direct their efforts towards the things that not only matter to the buy-side, but that they are better at doing than the buy-side, i.e. the things that they possess a strategic advantage in. One such area relates to the provision of 'specialised industry knowledge', which the interview evidence indicates is something that buy-side investment managers cannot readily obtain by themselves. To illustrate, portfolio managers might unexpectedly require specific information about the impact that a local strike or fire is having on a foreign production facility belonging to one of their companies. In essence, 'specialised knowledge' has many forms but invariably tends to derive from the specific contextual needs of individual buy-side managers.

More generally, predicated on the science of 'impression management', this study suggests that the sell-side industry ought to introduce remedial programmes that serve to restore its credibility in the eyes of the buy-side, most notably as far as the believability of its various research outcomes are concerned, such as the perceived trustworthiness of sell-side analyst reports, the reliability of its forecasts and the validity of its stock recommendations. The implications of failure here are ominous in the sense that the buy-side practice of 'binning' sell-side analyst reports will only continue in the future unless the sell-side adopt more customer-orientated business models.

These plus some additional implications that specifically relate to fund managers, buy-side analysts and sell-side analysts are considered in Section 10.6, albeit only briefly because of the structural limitations (time and space) of the thesis.

10.5 Limitations of the Research

When considering the findings of the current research, a number of methodological limitations are relevant. The first relates to the number and proportion of portfolio managers, buy-side analysts and sell-side analysts responding to the questionnaire. Whilst the researcher managed to successfully overcome many of the constraints that frequently discourage academic researchers from investigating accounting and finance phenomena within the investment management industry (Schipper, 1991), the findings should nevertheless be treated with caution. For example, even though the sample size and response rates are comparable with similar published research, the findings cannot be conclusively proven to be representative of the population of investment managers, either in Europe (the main focus of the study) or across the rest of the world. As discussed in Chapter 5, tests of non-response bias that look for material differences between early and late respondents were not appropriate. However, several other arguably more relevant 'missingness' tests that related to attrition and bias were performed – for example 'missing completely at random' (MCAR) and 'common method bias' (CMB) tests – and they did not reveal any material concerns about the completeness, usability, reliability or validity of the sample-set for testing causal theory, making statistical inference or otherwise proposing sample-specific associations in the data. Nevertheless, it is important to bear in mind the imperfect nature of these tests when interpreting the findings of the research.

The findings that arose from the interviews, although more detailed and comprehensive than the questionnaire survey findings, are unlikely to be generalisable to the population of fund managers and analysts in Europe and/or across the rest of the world. This is one of the key limitations of conducting interview-based research in general. However, in order to mitigate the risk of interviewing non-representative portfolio managers, the researcher undertook a range of methodologically associated due diligence steps to ensure (as far as possible) that the interview findings were generated in consonance with academically approved procedures and standards for conducting qualitative data collection, processing and analysis. For example, because Europe (the main focus of the study) ranks as the second largest market in the global asset management industry – managing 33% of global assets under management (Figure 5.2) or circa EUR 14.0 trillion at year end 2010 – purposeful steps were undertaken by the researcher to ensure (as far as possible) that the final interviewee sample, although it appears small, would nonetheless comprise firms that were sufficiently diverse in size and interest to suggest that a reasonable cross-section of investment appraisal techniques would be covered (Arnold & Moizer, 1984). As a corollary, firm size and geographic location were diverse; some were large, medium or small-sized firms, and they variously spanned Northern, Western, Eastern and Southern Europe. Moreover, some of the interviewees that agreed to participate in the interview study are featured in “The Great Minds of Investing” (Leber, 2015). Thus, in light of the overarching importance attached to ‘credibility’, ‘dependability’ and ‘believability’ in qualitative research studies - which pertains to the ‘validity’, ‘reliability’ and ’objectivity’ criteria traditionally used in positivistic quantitative research (Creswell and Creswell, 2018), this arguably notable scholarly achievement served to enhance the soundness and representativeness of the qualitative research findings, conclusions and recommendations derived from the study (Adu, 2016; Morrow, 2008; Trochim, 2006; and Lincoln and Guba, 1985).

Finally, the principles of ‘triangulation’, cross-substantiation and cross-validitation were often invoked during the data collection, processing and analysis stages of the research so as to inform and otherwise verify the qualitative and quantitative research findings. Notably, triangulation is a much lauded approach to validating mixed-methods research findings (Bryman, 2011). Moreover, it imparts a measure of resassurance with respect to the validity of the implications and recommendations of the research.

10.6 Implications for Practice

This study affords portfolio managers, buy-side analysts and sell-side analysts the opportunity to compare and contrast alternative ways of evaluating investments. Moreover, different cohorts can examine whether their firms compare favourably or otherwise to industry ‘norms’ on (say) gender and education and then act accordingly on the information. Furthermore, investment management firms and/or individual investment managers are afforded the opportunity to compare self-ascribed company/personal investment management styles and proclivities to industry ‘norms’ and then act accordingly on the information. The following sections describe some of these implications as they relate to portfolio managers, buy-side analysts and sell-side analysts.

10.6.1 Implications for Fund Managers

An awareness of the study's Chapter 7 findings will enable active portfolio managers, who regularly oversee multiple business models within one investment institution, to determine whether the management of their investment portfolios reflect the optimal balance of gender diversity, age, experience, education and valuation metrics commensurate with their assigned portfolio mandates and corporate profit targets. For example, the study cites specific research that found women significantly outperform men and are more likely to be designated as All-Stars. Additionally, the study indicates that portfolio managers tend to be older, more experienced and more likely to outperform their younger and less experienced buy or sell-side analyst colleagues. Although the evidence also indicates they tend to be less skilled in technology industries than their younger buy or sell-side analyst colleagues. Thus, an awareness of the findings can help active portfolio managers to determine whether they are utilising the optimal experience, gender and age mixes within their buy-side teams vs. what the findings indicate are industry-wide 'norms'.

An awareness of the Chapter 8 findings will afford portfolio managers the opportunity to evaluate how their use of alternative accounting valuation techniques and/or multi-factor finance models compares to the rest of their investment management community. For example, the findings reveal that DCF and P/E are the most frequently used accounting metrics. But what about RIV? Thus, portfolio managers might feel persuaded by the findings to re-evaluate the merits of using RIV (as well as other intrinsic and relative value indicators) as part of their accounting valuation frameworks. Moreover, the study describes the utility of several influential two, three, four and five factor-based asset pricing models (for example Novy-Mark, 2012; Carhart, 1997; Jagadeesh and Titman, 1993; and Fama and French 1992/3). Whilst most of this discussion focussed on the risk-adjusted multi-factor finance models that stemmed from the study's review of classical finance theory, some notable accounting models were included in the discussion also, for example Penman, (2011) and Fairfield (1994). Notwithstanding the descriptive value of Chapters 8's quantitative findings, the salient message to emerge from the more insightful interview discussions was that some or all of these multi-factor accounting/finance models may no longer be capable of harnessing sufficient 'alpha' for firms or their clients. Notably, 'alpha' represents the elusive 'edge' that so often is the yardstick by which the performance of portfolio managers is judged, i.e. how capable their buy-side teams are at generating year-on-year excess risk-adjusted portfolio returns. In this light it makes sense that portfolio managers should want to be au-fait with the latest investment management innovations because over time 'signals' lose their edge, which ceteris paribus could signal a manager has lost his/her effectiveness. So an awareness of this study's questionnaire and interview findings may help portfolio managers to evaluate how their proclivities for certain asset pricing models compares to others in their investment management community. To illustrate, the findings reveal that 'value' and 'momentum' are the most frequently used accounting and finance factors. Yet, the study reveals that combinations of these factors are seldom investigated/examined. Hence, portfolio managers might feel persuaded by the study's evidence that asset pricing models that use innovative combinations of value and momentum factors can generate abnormal returns that exceed the excess returns generated by value or momentum multi-factor models on their own. To reiterate, asset pricing models are most effective when the signals and factors used in the models are unique and predictive of future performance. In essence, the study's findings may help portfolio managers to achieve greater portfolio out-performance. Moreover, in light of recent advances in technology, fund managers now possess unprecedented power to test multi-factor models of unlimited size, even conceivably test one million plus factors if needed. In essence, the findings imply that fund managers should not look to outdated multi-factor models that were popular in the 80's and 90's for out-performance, because doing so could prove fatal in this evidently fast-approaching new era of investment management sophistication. What's more, this technologically-driven search for new signals (factors) will likely result in the stock markets becoming rapidly more informationally efficient in the very near future. The implications for 'active' portfolio managers, who incidentally comprise the majority of global investors, could be profound if it becomes harder for them to find and secure 'alpha' on their active investments. Conceivably, funds could flow out of 'active' investment management and into 'passive' portfolios instead, should levels of market efficiency continue to climb. Given such an event, the career implications for portfolio managers would likely be unwelcome. However, the counter-argument suggests that advances in big-data collection and high-tech investment analysis will help to empower independently-minded portfolio managers to be privately creative when developing computerised multi-factor decision-making models that elicit unique ways of predicting future performance. The contention being that portfolio managers, even in the midst of stock-markets that have become markedly more efficient, may find that advances in technology enable them to operate independently (separate to the market as a whole) when searching to find and extract alpha from their varied portfolios.

An awareness of the study's Chapter 9 findings can help active portfolio managers to evaluate the recent media hype surrounding the phenomena of 'big data' and computer algorithms in stock market analysis. Significantly, there is a notable paucity of research on these and related topics within the accounting, finance and investment management paradigms of the literature. Consequently, portfolio managers may find it informative to consider how this study used missing data analysis, data cleansing and data reduction techniques, exploratory (EFA) and confirmatory (CFA) factor algorithms, plus structural equation modeling (SEM), to derive a series of computer-generated multi-factor investment management and/or decision-making models. Specifically, the study affords portfolio managers the opportunity to examine how the researcher used the algorithms embedded in the EFA, CFA and SEM regression procedures within SPSS to reduce thousands of pieces of accounting and finance data, plus hundreds of variables, into circa 10 easy to manage latent factor model constructs. Fundamentally, the researcher's unique work on this area of investment management research (possibly first in the world) may help portfolio managers to accept the philosophy that there is perhaps less to fear about the array of new technologies entering the investment management workspace than the popular media would otherwise have us believe. Afterall, there may be nothing worse for an 'older' portfolio manager than the fear of obsolescence in the face of rapid technological change, often made worse when younger buy-side co-workers appear only too eager to herald the technology industry's latest panacea for out-performance. In short, Chapter 9 conveys in a practical accounting/financial sense how SEM and related software applications can empower portfolio managers to create diverse in-house regression-based, risk-adjusted, decision-making models that can help them to better manage their investment funds and potentially generate excess portfolio returns. Moreover, Chapter 6 alludes to an alternative decision-tree framework known as 'Random Forests' (Breiman, 2001). Breiman's machine learning and data-mining prediction procedures represent an alternative approach to data-reduction and risk-return regression-based decision-making that is gaining traction within the investment management industry, most noticeably in the past 10 years. As interviewee #3 intimated, these techniques describe a new generation of sophisticated post-modern investment management tools that offer portfolio managers potentially interesting new ways to 'beat the market'. The consequences (potentially) for portfolio managers who fail to embrace these new technologies in a timely fashion, or simply choose to ignore them, seem significant given they risk being over-taken competitively, the career implications of which are unlikely to be favourable.

10.6.2 Implications for Buy-side Analysts

The known closeness of the working relationships between fund managers and buy-side analysts implies that the portfolio manager implications cited in the previous section, more or less, apply in this section also. However, there are some distinguishing characteristics of the typical buy-side analysts' role that are different in many ways to the typical role of portfolio managers. Thus, to more readily appreciate the significance of some of the buy-side implications to come, it seems worthwhile taking a moment to reiterate some of their common job specifications. To illustrate, buy-side analysts primarily engage in financial statement and competitive environment analysis as a way to evaluate businesses and predict their future performance. In this regard, they examine different industry typologies, compare companies, identify risks for each activity and rationalise their different financial and operational performances. They also analyse information stemming from sell-side analyst reports, media reports, trade journals, forecast revisions, stock recommendations and so forth. Put simply, their in-house systems and intelligence networks are designed to filter-out superfluous market information, leaving only the information that is relevant to the specific valuation tasks at hand. Overall, compared to sell-side analysts, the information provided by buy-side analysts tends to have a bigger impact on portfolio managers. This makes sense because ordinarily it is more profitable for fund managers to respond to a signal if it is from a private source rather than a public source such as sell-side analysts. Essentially, the private nature of buy-side recommendations implies they tend to have less impact on market prices, assuming markets are 'inefficient'.

Notwithstanding these customary buy-side analyst tasks, the study's interview findings indicate that the spectrum of new technologies currently entering the investment management industry, for example AlphaSense, Investar and StarMine, are poised to radically enhance the buy-side analysts' performance capabilities, not least regarding financial statement and competitive environment analysis. Consequently, when buy-side analysts become well-practiced in these advanced investment management technologies, it seems likely they will then use these same technologies to perform many heretofore sell-side functions that previously they did not have the time or resources to do in-house themselves. Afterall, it is well known that buy-side analysts are ordinarily required to analyse many more firms, per capita, than their sell-side counterparts are expected to appraise. Thus the implications arising from greater processing speed and efficiency will likely have a transformative effect on their customary buy-side duties. By further implication, the effect on the sell-side business model is expected to be even more widely felt. Relatedly, there will likely be re-training implications that emerge as new technologies are adopted. Finally, depending on the degree of buy-side sophistication adopted, the role of buy-side analyst vs. portfolio manager may become less delineated in the future.

10.6.3 Implications for Sell-side Analysts

Proper financial communication between the buy and sell sides of the investment management divide is critical for the dynamics of valuation practice to operate efficiently. Notwithstanding this evident truism, the portfolio managers in this study, together with the related literature, have expressed mixed views regarding the quality of sell-side equity research, particularly the reliability of their analyst reports, earnings forecasts and stock recommendations. One high-ranking portfolio manager even asserted that the buy-side practice of 'binning' analyst reports was commonplace! If true, this is a terrible indictment of the sell-side business model. Left unchecked, the implications for its future sustainability seem ominous. Consequently, there is a clear message here for the sell-side, which is they must reform their business model or else they run the risk of obsolescence!

Synchronously, the questionnaire and interview evidence demonstrates that routine interactions between fund managers and buy-side analysts show no signs of a 'disconnect' between the two parties. For example, the related cross-tabulations in Chapter 8 show that both cohorts tend to use the same valuation metrics. However, this was not the case when the sell-side was compared to the buy-side. In this instance, the related cross-tabulations highlight the existence of some sizeable schisms between the two sides with respect to their use of accounting/financial valuation metrics. The implications that arise from such differences are more worrisome for the sell-side, because as stated at the outset of this section, without clear communication the dynamics of valuation practice fail to operate efficiently, which in turn implies the value of their sell-side services may be lost to investors. Therefore, this thesis affords sell-side investment managers the opportunity to examine whether the valuation metrics they routinely use in analyst reports and other communications with the buy-side appear fit for purpose when judged against buy-side valuation norms and proclivities. They can then institute timely ameliorative action where necessary.

Whilst the buy-side interview evidence indicates that sell-side earnings forecasts, stock recommendations and analyst reports are generally not to be trusted, this is usually not true of their forecast revisions and stock recommendation changes. On the contrary, the interview evidence indicates that buy-side analysts pay close attention to these signals. The implication here is that sell-side firms should consider spending more time actively disseminating earnings and stock price updates, plus provide reliable information underlying their estimation, so that users can judge their validity for themselves. Additionally, the findings seem to imply that sell-side firms should consider developing a new style of analyst report, to (say) target the needs of specific buy-side customers or else something more generic that informs and educates about useful new technologies. In any case, their reporting needs to be trustworthy.

The interview findings reveal that it is ‘specialised’ industry knowledge, and not sell-side industry knowledge per se, that represents a valuable tradeable commodity in the eyes of the buy-side. This suggests that sell-side investment managers could benefit from meeting with their buy-side clients to explore how they can best acquire bespoke ‘specialist’ knowledge for them. Moreover, the interview findings reveal that any form of knowledge can be regarded as ‘specialised’ if the buy-side are unable to easily obtain it by themselves. It is in this light that it has value. Invoking the science of ‘impression management’ (Merkl-Davies et al., 2011; and Brennan, 2006), it also seems reasonable to expect that discussions of this kind can only help to restore damaged sell-side reputations. More tangible implications are possible also, for example the opportunity to (say) tender for more buy-side business. In any event, the evidence suggests that sell-side firms should take pro-active steps to improve their customer relations with investors, which in turn will help to restore/improve their relative market share and competitive market positions vs. competitors.

Finally, as noted in the preceding sections, the interview evidence shows new technologies are already having a transformative effect on the investment management industry. Consequently, aside from the obvious threat that these new technologies pose for employment, they also represent interesting new business opportunities for the sell-side industry which, prima facie, they appear well-placed to take advantage of. For example, depending on the expertise of the sell-side firm, they may find they can offer buy-side clients an expanded range of ‘specialised’ and/or tailor-made advisory and training services, which conceivably could include firm/industry updates, bespoke online/offline training services, bespoke forecasting, portfolio analysis, competitive analysis and more. The point is, the sell-side should strive to provide whatever the buy-side client needs, not what they don’t need.

In conclusion, the impetus for a market-wide sell-side paradigm shift is already in motion. Undoubtedly, there will be many winners and losers left in its wake.

10.7 Thesis Contribution and Areas for Future Investment Management Research

While the current research has provided an insight into equity analysis and investment decision-making processes in Europe and internationally, it nevertheless has also raised several further questions. One such question relates to the use of big data and the impact of automation within the investment management industry. Their combined effect on investment management information processing and decision-making is already being felt, which only adds to the complexity of future research efforts that aim to deepen our knowledge of the so-called investment management 'black box'.

While this researcher has arguably made a reasonable effort to investigate various 'black box' phenomena, there remains much more work to be done; especially now that the era of big data analysis, self-driving funds, machine learning, AI (artificial intelligence) and automation of many hitherto time-consuming and labour-intensive buy/sell-side functions is upon us. Already, portfolio managers, buy-side analysts and sell-side analysts no longer perform many once familiar investment management tasks in the same way as they were doing until very recently. Concurrently, the breadth of potential investment appraisal methods and sources of available decision-relevant information has expanded rapidly, so much so that nothing looks quite so familiar as it once did. In a nutshell, the industry has suddenly become much more fluid; everything is changing, and everything looks new. In essence, the status quo – for practitioners and researchers – has literally been shattered. There are now myriad new ways of performing investment management tasks, which in turn has created scores of new challenges for investment managers and researchers. Thus, the once familiar conceptual and empirical investment management research framework, that academics historically relied upon to inform their investment management research objectives, no longer seems fit for purpose given today's arguably more efficient investment management marketplace. Consequently, a blank canvas of unfettered research possibilities now await tomorrow's investment management researchers. These remarks are not meant to sound benign and passive. Rather, the interview evidence in this thesis highlights a genuine need/urgency for researchers to adopt radically new ways of investigating the investment management industry. By following this advice, researchers stand to contribute to the literature in ways that are meaningful to academia and investment management practitioners alike. For now, the advice for future researchers is to not just consider the nuances of individual finance and accounting appraisal techniques, but rather to consider their influence on the investment management industry within the broader context of a research framework that incorporates big-data automation and multi-factor computer modelling technologies. In this way it may be possible for researchers to penetrate the 'black box' of how investment managers actually process information and make investment decisions in more fruitful ways than heretofore.

Specific investigation of the effects of information asymmetries arising from buy and sell-side differences would also be worthwhile. The interview evidence highlights several examples of the kinds of dysfunctional buy and sell-side decision-making behaviour that can arise as a result of such asymmetries, the most striking example of which is probably the buy-side practice of 'binning' analysts' reports. As indicated in the thesis, the sell-side business model is rapidly unravelling and is regarded by many on the buy-side as no longer fit for purpose. Numerous comments in the interviews cited difficulties obtaining decision-useful sell-side information, for example meaningful analyst reports that are compiled with a transparent customer orientated focus in mind (from the perspective of the portfolio manager and/or buy-side analyst) rather than the current sell-side practice of freely disseminating too many marketing materials that often serve no real purpose aside from promoting unwanted sell-side advisory services - but nevertheless are disguised as analyst reports. This practice alone has done enormous damage to the image and credibility of the sell-side (according to the interviewees). Consequently, the interview evidence indicates that several hitherto 'paid-for' sell-side investment management functions are now being performed in-house by buy-side analysts rather than outwith as before. Moreover, the interview evidence indicates portfolio managers have become 'picky' about whom they appoint on the sell-side to fill their information and decision-making needs, even more so now in light of the EU's new 'Mifid 11' (2018) rules governing transparency of research costs and their separate disclosure from transaction fees. Conceivably, these issues represent potentially useful topics for future research effort. For example, does reliance on internally based resources enable buy-side analysts and portfolio managers to overcome the difficulties associated with the sell-side business model?

Notably, Bradshaw (2011, p.43) calls upon researchers to be open to alternative methodologies of data collection and analysis if the literature is to advance in any meaningful way. In this light she makes a direct appeal to researchers for "any kind of penetration of the 'black box' of how analysts actually process information….". However, for the reasons stated in this thesis, and as underscored in Arnold & Moizer (1984), questionnaire surveys alone are unlikely to make much head-way tackling the aforementioned research challenges. Instead, mixed-methods or multi-strategy research approaches are more likely to be successful in unravelling the much heralded and inherently enigmatic phenomena associated with the so-called investment management 'black box'. Moreover, various new social media platforms are now opening up new possibilities for reaching-out to investment managers that did not exist 5 to 10 years ago.

In conclusion, there has arguably never been a better time for new kinds of research approaches, perhaps even ones that are not dissuaded from embracing the philosophy implicit in 'Closing the Doors on the Past' (Napoleon Hill, 1967) if the literature is to advance. Otherwise, if history repeats itself, prominent academics will only continue appealing to researchers to do things differently for another 35 years!

10.8 Closing Thesis Statement

In closing, the advice for future researchers is to take-up where this study leaves-off, to take what is relevant and discard the rest. In particular, researchers should speak firstly to portfolio managers – and preferably spend time with them in-situ.

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Appendix to Chapter 3

VALUATION PARADIGMS IN ACCOUNTING THEORY

List of Contents

A3.1 Absolute (Intrinsic) Accounting Valuation Theories

3.1 Introduction

This section demonstrates how share prices can be derived using the dividend discount model (DDM) or discounted cash flow (DCF) analysis of prospective earnings or cash flows, rather than historical data drawn from published financial accounts. Moreover, these methods represent the ideal (theoretical) wealth maximisation criterion that is accepted across all paradigms of the academic and practicing investment community (Kothari, 2001). Alternatively, according to Palepu et al. (2004, p.7-1) 'shareholder value can be framed by recasting dividends in terms of earnings and book value, or in terms of free cash flows to shareholders.'.

Schreiner (2007) also refers to the same intrinsic valuation methods and affirms the following four intrinsic accounting models are typically covered in valuation textbooks and business school classes: dividend discount model (DDM), discounted cash flow (DCF) model, residual income valuation (RIV) model, and the abnormal earnings growth (AEG) model. The latter two models represent the more recent development of Ohlson (2005) and Ohlson & Juettner-Nauroth (2005). As a corollary, we describe the development of these models in this section, and discuss their pros and cons.

3.2 [Cash Distribution] - Dividend Discount Model (DDM)

Penman (2001, p.107) states: 'Most investment texts focus on the dividend discount model in their fundamental analysis chapter.' At first sight, the model is very appealing because dividends are the cash flows that investors receive from the firm. 'From a theoretical perspective, shareholder value is the present value of future dividend payoffs. This definition can be implemented by forecasting and discounting future dividends directly' (Palepu et al., 2004, p.7-1). So, when valuing stocks it seems only logical to forecast the cash flows from the stocks (Penman, 2001). Shareholder value maximization also represents the overarching objective of traditional financial theory (Damodaran, 2012).

A shareholder's payoffs from holding shares in a firm consist of the dividend payments during the holding period plus the market value of the shares when selling them. Therefore, a shares value should be based on the stream of dividends $D_1, D_2, D_3, \ldots, D_T$ it is expected to pay in the future plus the market value of common equity P_T^{Equity} at the end of the forecast horizon T. If the forecast horizon is assumed to be infinite, the DDM, which is generally attributed to Williams (1938), defines the intrinsic value of the firm as the present value of the expected future dividends discounted at their risk adjusted expected rate of return (Schreiner, 2007).

Formally, using summation notation, the dividend discount model (DDM) values equity by forecasting the dividends as follows:

$$V_t^{Equity} = \sum_{n=1}^{\infty} \left(\frac{E_t(D_{t+n})}{\prod_{n=1}^{n}(1+r_{t+n}^{Equity})} \right) \tag{3.1}$$

where V_t^{Equity} is the firm's intrinsic value of common equity at time t, $\sum$ is the summation operator, $E_t(D_{t+n})$ is the market's (i.e. financial analysts') expectation of future cash dividend in period $t+n$ conditional on information available at time t_t , r_{t+n}^{Equity} is the cost of equity in period $t+n$, and $\prod$ is the product operator.

Schreiner (2007, p.24), citing Spremann (2005, pp.59-61), observes that a further condition of the DDM states that 'the expected (terminal) market value discounted at the appropriate cost of equity converges to zero as time goes to infinity', as follows:

$$\lim_{t \to \infty} = E_t\left(P_{t+T}^{Equity}\right) / \left(1 + r_{t+T}^{Equity}\right)^T = 0 \tag{3.2}$$

As seen in formula (3.1), value is dependent on the forecasts of future dividends and discount rates. In the perpetuity case, that is, a company from which we expect constant dividends every year, this value can be expressed as follows:

$$V_t^{\mathrm{Equity}} = \frac{D_t}{K^e} \tag{3.3}$$

Where: V_t^{Equity} = Equity value; D_t = dividend per share distributed by the company in the last year, and K^e = required return to equity (Fernandez, 2015).

Gordon (1962) makes some simplifying assumptions about both the dividend process and discount rates (cost of equity to derive a simple valuation formula, which is referred to as the Gordon growth model (GGM). Specifically, if the cost of equity remains constant through time and dividends are expected to grow geometrically indefinitely at a constant annual rate g, as follows (Palepu et al., 2004):

$$V_t^{\mathrm{Equity}} = \frac{D_{t0}(1+g)^1, D_{t0}(1+g)^2, D_{t0}(1+g)^3, \ldots, \; D_{t0}(1+g)^n}{(1+K^e)^1, \; (1+K^e)^2, \; (1+K^e)^3, \ldots, \; (1+K^e)^n} \tag{3.4}$$

Where, $g^D < r^e$,

Solving mathematically, this geometric progression provides the universally recognisable DDM, in the form of the GGM (Fernandez, 2015; Damodaran, 2012; Schreiner, 2007; Palepu et al., 2004; and Penman, 2001) as follows:

$$V_t^{\mathrm{Equity}} = \frac{D_1}{K^e - g^D} \qquad \text{-Or-} \qquad [V_t^{\mathrm{Equity}} = \frac{D_{t0}\,(1+g)}{r^{\mathrm{Equity}} - g^D}\;] \tag{3.5}$$

Dividend discount models, including the GGM, have several well-known weaknesses:

First, dividends are irrelevant; ‘dividends are distributions of value, not the creation of value’ (Penman, 2001, p.110). The Miller & Modigliani (1961) dividend irrelevance proposition ‘states that value is unrelated to the timing of expected pay-outs prior to or after any finite horizon' (Schreiner, 2007, p.24). That is, shareholders are insensitive to the dividend component of the payoffs because if the firm pays out cash the price will drop by this amount to reflect that value has left the firm, such that in present value terms the net effect is zero. 'In other words, paying dividends is a zero-NPV activity. It doesn't create value.' (Penman, 2001, p.110).

Second, dividends disregard internal growth through retained earnings. Citing Spremann (2002, pp.155-160), Schreiner (2007, p.24) states that 'In practice, many young firms with a high growth potential tend to retain most of their earnings or, sometimes, do not plan to pay any dividends within a finite forecast horizon'. Likewise (Penman, 2001) asserts that, in the short run at least, dividend forecasts ignore the capital gain component of the payoff. Thus, 'dividends are not relevant to returns or value' (Penman, 2001, p.110). In practice, it is the market values of such firms which tend to serve as the proxy for their intrinsic values Schreiner (2007).

Thirdly, dividend forecasts cannot be verified until after the fact, when the dividend payments may be observed and validated empirically. Thus the dividend discount model fails to provide financial analysts with a practical and robust analysis of valuation (Penman, 2001).

In summary, as noted in Schreiner (2007, p.24) 'Both weaknesses stem from a common problem: the DDM targets the actual cash distribution to shareholders but, unfortunately, cash distribution is not necessarily tied to value generation. For example, firms can simply borrow money to pay dividends, which has nothing do to with creating value through investing or operating activities (Penman, 2004, p.90).'

3.3 [Cash Generation] - Discounted Cash flow Model (DCF model)

Feltham and Ohlson (1992) assert that the DCF model estimates firm value by discounting the cash flows generated by the firm. The approach involves the production of detailed, multiple-year forecasts of so-called free cash flows (FCF). These are the cash flows after tax that are left over for the shareholders after meeting all financial obligations, including debt payments, and after covering capital expenditure and working capital needs. As Fernandez (2015).asserts, they are the cash flows generated by operations without taking borrowing (financial debt) into account. In fact, FCF's 'reflect the cash flow generated by a company that is available to all providers of the company´s capital, both debt and equity.' (Copeland et al., 1990, p.100). 'The forecasts are then discounted at the firm's estimated cost of capital to arrive at an estimated present value' (Palepu et al., 2004, p.7-1). 'Thus, the present value of free cash flows equals the market value debt plus market value of equity minus cash. One can view free cash flows as "enterprise dividends" and view their present value as enterprise value.' (Gode & Ohlson, 2006, p.3). The DCF model represents a move away from wealth distribution (dividends) to wealth generation (cash) (Gode & Ohlson, 2006). 'However, by considering only cash and ignoring other assets and liabilities, the DCF model deals with a narrow aspect of a firm's wealth. That is, instead of focusing on wealth generation, DCF focuses only on cash generation.' (Gode & Ohlson, 2006, p.3).

'In reality, firms use the free cash flows to pay debt holders, invest in fixed asset and working capital requirements, distribute dividends, or simply retain the cash' (Gode & Ohlson, 2006, p.3). However, unlike operating cash flow (OCF) reported in the cash flow statement, FCF is independent of financing and therefore is not affected by capital structure; even though capital structure may affect a firm's discount rate, the weighted average cost of capital (r^{WACC}) and thus the intrinsic value of the firm (Schreiner, 2007 and Copeland et al., 2000).

Palepu et al. (2004) provide a convenient summary of their DCF approach to estimating the intrinsic value of equity. In keeping with the above discussion it is based on the insight that dividends can be recast as FCF's, as follows: Dividends = Operating cash flow - Capital outlays + Net cash flows from debt owners. Operating cash flows (OCF) to equity holders are net income plus depreciation less changes in working capital accruals. Capital outlays are capital expenditures less asset sales. Finally, net cash flows from debt owners are issues of new debt less retirements less the after-tax cost of interest. By rearranging these terms, the free cash flows to equity can be written as follows:

$$\text{Dividends} = \text{Free Cash flows to equity} = \text{NI} - \Delta\text{BVA} + \Delta\text{BVND} \tag{3.6}$$

where NI is net income, ΔBVA is the change in the book value of operating net assets (including changes in working capital plus capital expenditures less depreciation expense), and ΔBVND is the change in book value of net debt (interest-bearing debt less excess cash).

The dividend discount model (DDM) can therefore be written as the present value of free cash flows to equity. Under this formulation equity value is estimated as follows:

Equity value = PV of free cash flows to equity claim holders.

$$V_t^{\text{Equity}} = \frac{\text{NI}_1 - \Delta\text{BVA}_1 + \Delta\text{BVND}_1}{(1+r^{\text{Equity}})} + \frac{\text{NI}_2 - \Delta\text{BVA}_2 + \Delta\text{BVND}_2}{(1+r^{\text{Equity}})^2} + ,\ldots \tag{3.7}$$

Alternatively, the free cash formulation can be structured by estimating the value of claims to net debt and equity holders and then deducting the market value of net debt. This approach is more widely used in practice because it does not require explicit forecasts of changes in debt balances. The value of debt plus equity is then:

Debt plus equity value = PV of free cash flows to net debt and equity claim holders.

$$V_t^{Equity+Debt} = \frac{NOPAT_1 - \Delta BVA_1}{(1+r^{WACC})} + \frac{NOPAT_2 - \Delta BVA_2}{(1+r^{WACC})^2} + , \ldots \quad (3.8)$$

Thus, as was previously mentioned above, 'the present value of free cash flows equals the market value debt plus market value of equity minus cash. One can view free cash flows as "enterprise dividends" and view their present value as enterprise value.' (Gode & Ohlson, 2006, p.3). Formally,

$$V_t^{Entity} = \sum_{n=1}^{\infty} \left(\frac{E_t(FCF_{t+n})}{(1+r_{t+n}^{Wacc})^n} \right) \quad (3.9)$$

Where V_t^{Entity} is the entity value at time t, $E_t(FCF_{t+n})$ is the expected future FCF in period $t+n$ conditional on information available at time t, and r^{WACC} is the weighted average cost of capital, indicated as a constant.

Schreiner (2007) asserts that in order to obtain the equity value at time t [V_t^{Equity}] from the entity value [V_t^{Entity}] it is necessary to deduct the market value of debt, including preferred stock less cash & equivalents at time t (defined as the market value of net debt $P_t^{Net\ Debt}$ at time t), such that:

$$V_t^{Equity} = \sum_{n=1}^{\infty} \left(\frac{E_t(FCF_{t+n})}{(1+r_{t+n}^{Wacc})^n} \right) - P_t^{Net\ Debt} \quad (3.10)$$

Given that the DCF model is a derivation of the DDM (Palepu et al., 2004) it is anticipated that a number of forecasting difficulties will be evident when using the model:

Firstly, it is difficult to measure FCF directly, especially when the separation between operating, investing, and financing activities is nebulous (Schreiner, 2007 and Gode & Ohlson, 2006). For instance, in order to calculate future free cash flows after-tax that are available to all investors of a firm (debt holders and equity holders) in a certain period t, it is necessary to forecast the cash that will be received and paid in each period. This is basically the approach used to draw up the typical cash budget. In company valuation though the forecast period is usually much longer than the typical cash budget, which in turn heightens the level of uncertainty surrounding the estimation processes involved (Fernandez, 2015).

Secondly, 'free cash flows are not wealth flows because wealth is more than just cash, which prompts accountants to use the concepts of recognition and matching to create a metric – earnings – that is contemporaneously matched with wealth generation.' (Gode & Ohlson, 2006, p.4). Furthermore, accounting cannot provide the information directly as on the one hand it uses the accrual approach, and on the other hand it allocates its revenues, costs and expenses using what are essentially arbitrary mechanisms (Fernandez, 2015). Thus, to obtain the FCF's it is necessary to make several adjustments to the accounting figures in the financial statements (Copeland et al., 2000). For example, 'if a company invests in PP&E, its cash flows can be negative. Yet, earnings will not be hit immediately with an expense because accountants allocate the capital spending as depreciation expense over the life of the asset.' (Gode & Ohlson, 2006, p.4).

Thirdly, free cash flow does not measure value added in the short run; value gained is not matched with value given up. For example, investment is treated as a loss of value. Therefore, free cash flow is partly a liquidation concept because firms can increase free cash flow by cutting back on investments (Penman, 2001).

Fourthly, Penman, 2001, p.117) states that 'Another practical problem is that free cash flows are not what professionals forecast. Analysts usually forecast earnings, not free cash flows, probably because earnings, not free cash flow, is a measure of success in operations'

In summary, because free cash flows are not contemporaneous with wealth generation, it is more commonly expected that financial analysts will use earnings per share metrics rather than cash flow per share alternatives in their analyses (Schreiner, 2007). ‘A valuation model must connect popular accounting metrics to value’ (Gode & Ohlson, 2006, p.5). The residual income valuation method incorporates accounting metrics and is discussed in the next section.

3.4 [Value Generation] - Residual Income Valuation Model (RIV model)

‘The Ohlson (1995) and Feltham & Ohlson (1995) residual income valuation models have become hugely popular in the literature’ (Kothari, 2001, p.175).

Palepu et al. (2004) refer to the ‘Discounted Abnormal Earnings Valuation Method’ when speaking about the RIV model, while Stowe et al. (2007) observe that the residual income valuation model has also been called the abnormal earnings (AE) model, discounted abnormal earnings (DAE) model and the Edwards-Bell-Ohlson (EBO) model after the names of researchers in the field, see for example Ohlson (1995), Feltham & Ohlson (1992), Ohlson (1991), Brief and Lawson (1992), Peasnell (1982), Edwards and Bell (1961) and Preinreich (1938).

Palepu et al. (2004) assert that if all equity effects (other than capital transactions) flow through the income statement, then the expected book value of equity for existing shareholders at the end of year 1 (BVE_1) is simply the book value at the beginning of year 1 (BVE_0) plus expected net income (NI_1) less expected dividends (Div_1). The relation is known as the clean surplus relation and can be written as follows:

$$\mathrm{BVE}_1 = \mathrm{BVE}_0 + \mathrm{NI}_1 - \mathrm{Div}_1 \tag{3.11}$$

Alternatively, can be rewritten as follows

$$\mathrm{Div}_1 = \mathrm{NI}_1 + \mathrm{BVE}_0 - \mathrm{BVE}_1 \tag{3.12}$$

Ohlson (1995) shows that the RIV model is obtained by substituting this clean surplus identity for dividends into the dividend discount formula and rearranging the terms. The outcome then states that the share value can be rewritten as follows:

$$\text{Equity value} = \text{Book value of Equity} + \text{PVof expected future abnormal earnings (i.e. RI)}$$

This description of a share valuation model is applicable for a going concern with an infinite forecast horizon, which is impractical for use in a real-world sense but serves as an example of the principle that the value is the sum of the book value of common equity plus discounted residual earning (Penman, 2010). Nevertheless, as outlined in Fernandez (2015), Pinto et al. (2010), Stowe et al. (2007), Schreiner (2007), Palepu et al. (2004), O'Hanlon & Peasnell (2002), Ohlson (1995) and Ohlson (1991), the key steps involved in achieving this outcome may be summarised as follows:

Step 1 Establish clean surplus relation, Eq. (3.11) above: $\text{Div}_1 = \text{NI}_1 + \text{BVE}_0 - \text{BVE}_1$

Step 2 Substitute equation Eq. (3.11) into the DDM below, i.e. the formula used to derive the intrinsic value of a firm's equity based on the present value of future expected dividends:

$$V_t^{\text{Equity}} = \frac{D_1}{(1+r^{\text{Equity}})} + \frac{D_2}{(1+r^{\text{Equity}})^2} + \frac{D_3}{(1+r^{\text{Equity}})^3} + ,\ldots, \tag{3.13}$$

This step provides the geometric clean surplus formulation for the intrinsic value of equity as follows:

$$V_t^{\text{Equity}} = \frac{\text{NI}_1 + \text{BVE}_0 - \text{BVE}_1}{(1+r^{\text{Equity}})} + \frac{\text{NI}_2 + \text{BVE}_1 - \text{BVE}_2}{(1+r^{\text{Equity}})^2} + \frac{\text{NI}_3 + \text{BVE}_2 - \text{BVE}_3}{(1+r^{\text{Equity}})^3} + ,\ldots, + \tag{3.14}$$

Step 3 Mathematically solve the geometric progression to provide the two-component version of the RIV model as follows:

$$P_t^{Equity} = B_t + \sum_{n=1}^{\infty} \left(\frac{NI_{t+n} - (\, r^{Equity}.\ B_{t+n-1})}{(1+r^{Equity})^n} \right) \quad (3.15)$$

where P_t^{Equity} is the estimated intrinsic value of equity at date t , B_t is the expected book value at date t, $\sum$ is the summation operator, NI_{t+n} is the forecasted net income or earnings after tax for the period ending at time t, r_t^{Equity} is the cost of equity capital at date t , B_{t+n-1} is the forecasted book value of common equity at time $t-1$.

Ohlson (1995) defines Residual income [RI] as the amount that net income exceeds the capital charge on the book value of equity, as follows:

$$RI_t \;=\; NI_t - r^{Equity} . B_{t-1} \quad (3.16)$$

where RI_t = residual or abnormal earnings at time t, i.e. value is only created if the earnings exceed the amount of earnings required by shareholders. The remaining terms are as outlined above.

Alternatively, residual income [RI] is written across much of the literature [see for example Ohlson (1991)] as follows:

$$RI_t \;=\; (ROE_t - r^{Equity}) . B_{t-1} \quad (3.17)$$

where $(ROE_t - r^{Equity})$ is the expected excess return on equity (ROE) over the cost of equity capital (Gode & Ohlson, 2006). The remaining terms are as outlined above.

Step 4 Finally, Ohlson (1991) shows that, given the dividend discount formula (Eq. 3.1) and the clean surplus relation condition (Eq. 3.11 or Eq. 3.12), the value of shareholders' equity P_t^{Equity} can be written as a function of net book value and the discounted expectations of future abnormal earnings, as follows:

$$P_t^{Equity} = B_t + \sum_{n=1}^{\infty} \frac{E_t(RI_{t+n})}{(1+r^{Equity})^n} \quad (3.18)$$

As Stowe et al. (2007) observes, the dividends based Residual Income Valuation (RIV) model of intrinsic valuation has two components:

1. The current book value of equity, plus
2. The present value of future residual income

However, Kothari (2001, p.177) observes that while Eq. (3.18) 'expresses price in terms of forecasted book values and abnormal earnings, those forecasts have precisely the same information as forecasts of dividends, which are implicit in analysts' forecasts of earnings. Stated differently, the residual income valuation model is a transformation of the dividend-discounting model (Frankel and Lee, 1998; Dechow et al., 1999; and Lee et al., 1999).'

Furthermore, Stowe et al. (2007, p.262) observe that 'The appeal of residual income models stems from a short-coming of traditional accounting. Specifically, although a company's income statement includes a charge for the cost of debt capital in the form of interest expense, it does not include a charge for the cost of equity capital. A company can have positive net income but may still not be adding value for shareholders if it does not earn more than the cost of equity capital.'

However, Bernard (1994) observes that the DDM equation (Eq. 3.1), like the DCF formula (Eq. 3.7), is silent with respect to how the expectations are generated. Thus, such expectations could differ across individuals, including managers and investors, thus leading them to different estimates of the value of the firm. Additionally, applying the DDM and DCF approaches, most of the value is in future dividends and in the terminal value computation. The longer the forecast period the higher the uncertainty that will exist regarding these future cash flows. However, in applying the RIV model, most of the value lies in the opening book value. Obviously, it is easier to know the current BV then it is to predict uncertain future cash flows. In the words of Kothari (2001), the Ohlson (1995, p.

668) 'model imposes a time-series structure on the abnormal earnings process that affects value. The linear information dynamics in the model (i) specifies an autoregressive, time-series decay in the current period's abnormal earnings, and (ii) models "information other than abnormal earnings" into prices'…' The economic intuition for the autoregressive process in abnormal earnings is that competition will sooner or later erode above-normal returns (i.e., positive abnormal earnings) or firms experiencing below-normal rates of returns eventually exit.'

Lastly, Gode & Ohlson (2006, P.5) observe that 'The Residual Income Valuation (RIV) model moves the focus away from cash to book value of equity, because the latter is a comprehensive measure of a firm's net wealth'. Here, Gode & Ohlson (2006) are referring to the cash generating focus of the DCF model viz the book value of equity and the net income focus of the RIV model. Thus, in their combination as residual income, they measure the generation of value.

In practice, the RIV model derives forecasts for its key measure, residual income (RI) – abnormal earnings (AE), DAE, or EBO – from the financial statements (Penman, 2010) or directly from analysts' earnings forecasts (Kothari, 2001). The obvious advantage of this approach is that it enables the analysts to derive value from what is already publicly known in the financial statements as opposed to discounted cash flow valuation methods, which don't have this feature. This principle underpins Penman's (2010, p.19) advice to would-be investors to 'anchor a valuation on what you know rather than speculation'. However, in general, the EBO valuation formula delivers the same estimate of firm value as the DDM-based valuation approaches discussed earlier (Schreiner, 2007; Kothari, 2001; and Bernard, 1994). In addition, Bernard (1995) argues that another appealing property of the residual income valuation model is that the choice of accounting method does not affect the model's implementation.

More recently, residual income [RI] has experienced something of a revival amongst Financial Analyst practitioners, albeit under the guise of such names as abnormal earnings, economic profit, economic value added (EVA®) or market value added (MVA) (Pinto et al., 2010). In a nutshell, these variants may be described as follows:

- Abnormal Earnings: are any earnings in excess of the cost of capital (from all sources) Palepu et al. (2004). AE is just another name for RI discussed above.
- Economic Profit (EP): is the profit after and tax after deducting the cost of all sources of capital, debt and equity. That is, EP equals profit after tax (PAT) less equity book value (EBV_{t-1}) multiplied by required return to equity (K_e). According to Fernandez (2015), the concept of economic profit is not new; Marshall (1890) was already using the term in his book 'Principles of Economics'.
- Economic Value Added (EVA®): is the net operating profit after tax (NOPAT) less the charge on total capital employed. That is, $\text{EVA®} = \text{NOPAT} - (\text{r x Total Capital})$. This is a commercial application of the RI concept popularized by Stewart (1991) and today it is used by many large firms as the standard tool for value-based management. See also Stowe (2007) and Lee (1996).

- Market Value Added (MVA): Fernandez (2015, p.7-2) states that 'The MVA (market value added) seeks to measure a firm's value creation, and is the difference between the market value of the firm's equity (or market value of the new investment) and the equity's book value (or initial investment).'

- Market The RI model and the DDM provide the same results, so long as the clean surplus relation holds and the assumptions in each model are consistent, e.g. same discount rate, constant ROE, constant informational expectations (Bernard, 1994).

Although the RIV model identifies residual income as a measure of a firm's ability to create value, it has several major problems in practical applications:

Firstly, RIV anchors valuation on book values by deriving the intrinsic value as book value plus a premium over book value for expected growth in book value (i.e., discounted future residual income). Such an emphasis on book values is only justified when book values of equity approximate market values reasonably well, e.g. as may be seen in the accounting methods employed by firms in the financial industry or when the financial assets of non-financial firms are marked to market (Schreiner, 2007 and Gode & Ohlson, 2006). Secondly, difficulties can occur in applying the residual income model in practice when violations of the clean surplus accounting relation occur. This can happen when accounting standards permit charges directly to shareholders' equity, bypassing the income statement (Stowe et al., 2007). Thirdly, RIV models are based on accounting data, the inputs of which may require significant adjustments or can be manipulated by management (Stowe et al., 2007). Lastly, few practitioners view current book value of equity as a starting point in valuation; the majority tends to focus on (future) earnings and earnings growth (Ohlson 2002, p.248; cited in Schreiner, 2007).

3.5 [Value Generation] - Abnormal Earnings Growth Model (AEG model)

Recent empirical survey research studies highlight the evident fact that expected earnings and earnings growth are popular equity performance metrics amongst financial analysts working in the investment industry in the U.K., see for example Demirakos et al. (2004) for the UK; Pike et al. (1993) for Germany and the U.K.; Block (1999) for the U.S.; and Fouche and van Ren burg (1999) for South Africa. Surprisingly however, according to Schreiner (2007), theoretical cognition on earnings-based valuation is rare.

Schreiner (2007, p.29) asserts that the Ohlson (2005) and Ohlson & Juettner-Nauroth (2005) abnormal earnings growth (AEG) model 'legitimizes the common practice of using earnings estimates. Indeed, it shows how to convert analysts' earnings forecasts to a valuation formula, which rely neither on the clean surplus relation nor on book value of equity.'

Given the clean surplus relation of equation (Eq. 3.11 or Eq. 3.12), AEG may be defined as the change in residual income between time t and time $t-1$, as follows:

$$AE_{t} = RI_t - RI_{t-1} \tag{3.19}$$

Furthermore, for a constant cost of equity r_t^{Equity} and assuming the clean surplus relation holds, it is possible to rewrite the AEG model without the book value of equity by rearranging terms as follows (Schreiner, 2007):

$$= NI_t - r_t^{Equity}.B_{t-1} - (NI_{t-1} - r_t^{Equity}.B_{t-2})$$

$$= NI_t - r_t^{Equity}.B_{t-1} - (NI_{t-1} - r_t^{Equity}.(B_{t-1} - NI_{t-1} + D_{t-1})) \tag{3.20}$$

$$= NI_t - r_t^{Equity}.B_{t-1} - NI_{t-1} + r_t^{Equity}.B_{t-1} - r_t^{Equity}.NI_{t-1} + r_t^{Equity}.D_{t-1})$$

$$= NI_t + r_t^{Equity}.D_{t-1} - \left(1 + r_t^{Equity}\right).NI_{t-1}$$

Any firm that is a going concern must eventually reach a steady state, where upon it becomes unable earn additional abnormal earnings in the future. As Penman (2010, p.170) points out; 'If those investments fail to earn a return above the required return, they will grow earnings, but they will not grow value'. Otherwise, per definition, its intrinsic value would be infinite. On reaching this point in time, where $RI_{t+n} = 0$, book value may be written as follows:

$$B_{t-1} = \frac{NI_t}{r_t^{Equity}} \tag{3.21}$$

Thus, by combining the RIV formula in Eq. 3.17 (or Eq. 3.18), together with the identity in Eq. (3.11), Ohlson (2005) and Ohlson & Juettner-Nauroth (2005) were able to derive their AEG valuation model, which is mathematically equivalent to the RIV model. Formally:

$$P_t^{Equity} = \frac{E_t(NI_{t+n})}{r_t^{Equity}} + \frac{1}{r_t^{Equity}} \cdot \left[\sum_{n=2}^{\infty} \frac{E_t(AEG_{t+n})}{(1+r^{Equity})^n}\right] \tag{3.22}$$

where P_t^{Equity} is the share price (intrinsic value of common equity) at time t, $E_t(NI_{t+n})$ is the expected net income in time period $t+n$, r_t^{Equity} is the risk-adjusted discount rate (cost of equity capital) applicable to the equity earnings (or cash flows) at date t and indicated as a constant, $\sum$ is the summation operator, $E_t[.]$ is the expectation operator where the expectation is based on information available at time t, $E_t(AE\ _{t+n})$ is the expected growth in abnormal earnings in time period $t+n$, both conditional on information available at date t.

In theory, the AEG model and the RIV model are equivalent in their respective assumptions and outcomes. However, the AEG model arguably has two distinct advantages over the generic RIV model: Firstly, financial analysts should find it easier to use the AEG model because investment practice traditionally relies more on analysts' earnings and growth forecasts for equity decision-making purposes than it does on book values. Secondly, the balance sheet drops out, which substantially reduces the analyst's workload because financial analysts no longer have to forecast growth in the book values of equity. Growth in book value of equity, modelled under RIV, is simply net income minus dividends. Hence, by forecasting net income and dividends, that is, abnormal earnings growth, the change in book value is redundant. (Ohlson 2005, p.342).

As any fundamental equity valuation framework, the Ohlson (2005) and Ohlson & Juettner-Nauroth (2005) AEG model comes with some reservations. For instance, according to

Schreiner (2007, p.30) the anchor in the AEG model, $B_t = \frac{NI_{t+n}}{r_t^{Equity}}$ 'is not actually a number which can be found in the financial statements. It is a forecast, based on speculation. In contrast, RIV follows the fundamentalists' dictate to distinguish what is known (in the financial statements) from speculation, by anchoring on book value of equity and then adding speculation about future residual income. Besides that, no empirical evidence on the performance neither for the AEG model nor its simplification as proposed in Ohlson & Juettner-Nauroth (2005) exist so far.'

In conclusion, it has been observed in this section that each of the fundamental equity valuation models outlined herein [DDM, DCF, RIV, and AEG] have some specific practical limitations. That said, the standard advice for practitioners is that they should continue to use as many fundamental valuation models as they consider is practical given the real-world valuation context at hand (Palepu et al., 2004). This appears simple yet sensible advice for financial analysts when you consider that many commentators are of the opinion that 'that valuation is the most critical element of successful investment.' (Stowe et al., 2007, p.xi). Therefore, the universal take away from this review of the related accounting valuation theory has to be that - even though the empirical evidence confirms that financial analysts dislike using DDM based techniques, see for example Arnold & Moizer (1984) and Demirakos et al. (2004) for the U.K.; Pike et al. (1993) for Germany and the U.K.; Block (1999) for the U.S.; and Fouche and van Ren burg (1999) for South Africa - theoretical understanding of valuation should be the essential component of any working financial analysts training and on-going practice. Otherwise his/her skill in financial analysis and equity decision-making may be open to question.

The next section reviews the related literature on valuation multiples, intrinsic multiples and market-based multiples, which are the approaches that are apparently most liked by practicing financial analysts, see for example Arnold & Moizer (1984) and Demirakos et al. (2004) for the U.K.; Pike et al. (1993) for Germany and the U.K.; Block (1999) for the U.S.; and Fouche and van Ren burg (1999) for South Africa.

A3.2 Relative (Multiples) Accounting Valuation Theories

3.2.1 Introduction

In general, the valuation literature discusses two broad approaches to estimating the value of firms. The first is fundamental equity valuation, in which the value of a firm is estimated directly from its expected future payoffs without appeal to the current market value of other firms. Fundamental equity valuation models are based on dividends, (free) cash flows, or (abnormal) earnings, and involve the computation of the present value of expected future payoffs – explained before for the DDM, DCF, RIV, and AEG method. The second is market-based valuation, in which value estimates are obtained by examining market values of comparable firms. The approach involves applying a synthetic market multiple (e.g., the P/E multiple) from the comparable firms to the corresponding value driver (e.g., earnings) of the firm being valued to secure a value estimate (Bhojraj & Lee 2002, p.413-414). This loose definition of a firm's multiple as the ratio of a market price variable to a particular value driver implies both; on one hand ample scope, but on the other hand a high degree of uncertainty. Uncertainty, because the definition does not tell a user which market price variable or which value driver one has to use in specific contexts. In fact, one can choose between two market price variables – i.e., stock price or market capitalization (P_t^{Equity}) and enterprise value (P_t^{Entity}) – and, basically, any value driver, typically from the financial statements.[20]

3.2.2 Intrinsic Multiples derived from Fundamental Valuation Models

In market-based valuation, sometimes also referred to as relative valuation, a target's firm value equals the product of a synthetic peer group multiple and the target firm's corresponding value driver. In doing so, the value driver in question is treated as a summary statistic for the value of the firm. Assuming the target firm in its current state "deserves" the same market multiple as the "typical" firm of the peer group, this procedure allows to estimate what the market would pay for the target firm (Bhojraj et al., 2003, p.12). But which are the firms that deserve the same multiple as the target firm? Fundamental analysis helps to resolve this question. In fact, explicit expressions for most of the commonly used multiples can be derived using either the DDM, DCF, or RIV methods or a few additional assumptions. These expressions also make it easier to interpret observed patterns in multiples, such as why growth firms and industries have higher earnings multiples than stable firms and industries. In the following, I present such explicit expressions of the P/E, the EV/EBIT, and the P/B multiple. Because these multiples are derivations of fundamental equity valuation models, which aim at estimating the intrinsic value of a firm, they are called "intrinsic" multiples.

[20] The market capitalization of a firm equals the market value of common equity. The enterprise value of a firm equals the sum of the market value of common equity and the market value of net debt ($P_t^{Net\ debt}$) (Penman, 2007).

3.2.3 Intrinsic P/E multiple - derived from the DDM

The GGM (1962) is used to relate the P/E multiple to fundamental analysis. The GGM equates a constantly growing infinite stream of dividends $D_t\,(1+g)^n$ to firm value P_t^{Equity}, as follows:

$$P_t^{Equity} = \frac{D_t\,(1+g)^n}{r_t^{Equity} - g} \tag{3.23}$$

Where r_t^{Equity} is the expected risk-adjusted discount rate (cost of equity capital) applicable to the equity earnings and dividends (or cash flows) at time t, and g is the expected constant annual growth rate in dividends (Beaver & Morse, 1978).

By also assuming a constant pay-out ratio (PR), dividends at time t are a fixed proportion of net income at time t, as follows:

$$D_t = PR.\,NI_t \tag{3.24}$$

Substituting equation (3.24) into the GGM formula (Eq. 3.23 or Eq. 3.5) yields:

$$P_t^{Equity} = \frac{PR.NI_t.(1+g)^n}{r_t^{Equity} - g} \tag{3.25}$$

Dividing both sides of equation (3.24) by net income provides the intrinsic P/E multiple at time t, as follows:

$$\frac{P_t^{Equity}}{NI_t} = \frac{PR.(1+g)^n}{r_t^{Equity} - g} \tag{3.26}$$

This formula serves to highlight the fundamental determinants of P/E multiples. It can be seen that (theoretically) the P/E multiple appears to be positively related to future (earnings) growth and dividend pay-out ratios, and inversely (negatively) related to risk as measured by the cost of equity capital (Fairfield, 1994 and Beaver & Morse, 1978). Additionally, even though reported earnings volatility (risk) does not appear in the relation derived for forward P/E ratio, Thomas & Zhang (2006) find that firms with lower earnings volatility (risk), due to lower cash flow volatility and greater earnings smoothing due to accruals, are associated with higher growth prospects and lower risk. Also, they advise caution when inferring linkages between price-earnings (P/E) ratios, growth, interest rates and risk; asserting that empirical results may vary in response to the proxies used in research, e.g. P/E ratios (trailing vs. forward ratios), growth (observed vs. forecast growth) and risk (standard deviation as a measure of volatility vs. betas). Furthermore, they assert that prior empirical efforts to explain variation in P/E ratios (Beaver and Morse, 1978 and Penman, 1996) have uncovered only weak relations between P/E ratios and risk/growth, especially at the firm level. However, they also point to recent research work on estimating the cost of equity capital (Easton, 2004) that suggests that P/E ratios are related to growth, and the implied cost of equity based on those P/E ratios and growth forecasts is related to risk.

In conclusion, growth and risk explain the market value of equity when the ratio of intrinsic value (present value) of future payoffs to market value is equal to one. Furthermore, all other things equal, firms with higher growth rates and lower risk should trade at higher P/E ratios than firms lower values of these characteristics.

3.2.4 Intrinsic P/B multiple - derived from the RIV model

In general, we know from recent empirical evidence [Arnold & Moizer (1984) and Demirakos et al. (2004) for the U.K.; Pike et al. (1993) for Germany and the U.K.; Block (1999) for the U.S.; and Fouche and van Ren burg (1999) for South Africa.] that the P/B multiple is a popular metric amongst financial analysts in practice whenever they are valuing firms. It is also widely used for the purposes of forming and analysing investment portfolios across many industries (Fama and French, 1992 and Penman, 2011).

While the RIV model (Eq. 3.16 or Eq. 3.19) presents the intrinsic or present value of equity as the book value plus a premium for the present value of expected RI in the future, Bernard (1994) shows that it can also easily be rewritten in terms of price-to-book ratios and rates of return on equity (ROE), as follows:

$$\frac{P_t^{Equity}}{B_t} = 1 + \sum_{n=1}^{\infty} \frac{E_t[(ROE_{t+n} - r^{Equity}) . \frac{B_{t+n-1}}{B_t}]}{(1+r^{Equity})^n} \tag{3.27}$$

where $\frac{P_t^{Equity}}{B_t}$ is the price-book ratio at time t, P_t^{Equity} is the share price at time t, $\sum$ is the summation operator, $E_t[.]$ is the expectation operator where the expectation is based on information available at time t, $E_t(ROE_{t+n})$ is the market's (i.e. financial analysts') expectation of return on equity (ROE_t)in period $t + n$, $\frac{B_{t+n-1}}{B_t}$ is the price-book ratio that reflects the analysts' forecasted expectation of future book values, $ROE_t = \frac{NI_t}{B_{t-1}}$, r_t^{Equity} is the risk-adjusted discount rate (cost of equity capital) applicable to the equity earnings (or cash flows) at date t, NI_t is the net income for the period ending at time t, B_t is the expected book value at date t and B_{t-1} is the book value of common equity at time $t - 1$.

Bernard (1994) observes that to generate an estimate of firm value, equation (Eq. 3.27) indicates that the financial analyst must forecast future ROEs and the related growth in future book values. Firms that are expected to generate ROEs in excess of the required return r_t^{Equity} will trade at prices above book value, and vice versa. The impact of abnormally high or low future ROEs is compounded by the preceding growth in book value, captured by $\frac{B_{t+n-1}}{B_t}$. Since the growth in book value is a function of dividend policy, equation (Eq.

3.27) may present the appearance that dividend policy is relevant to valuation, but that is not the case; equation (Eq. 3.27) permits, but does not require, Miller-Modigliani (1961) dividend irrelevancy.

There are several contrasting derivations of the intrinsic P/B multiple that are available in the literature, see for example Fairfield (1994) and Penman (1996). However, all interpretations usually conclude with identical results. Schreiner (2007) illustrates Penman's (1996) alternative derivation, which begins with the assumption that residual income grows at a constant rate g^{RI} each year. This assumption also implies constant growth in dividends and book value of equity $g^{RI} = g^{D} = g^{BT}$. Formally, he presents the following model of the intrinsic P/B multiple at time t:

$$\frac{V_t^{Equity}}{B_t} = 1 + \frac{(ROCE_{t+1} - r^{Equity})}{(r^{Equity} - g^{B}).\ (1 + r^{Equity})} \tag{3.28}$$

Where V_t^{Equity} which is the equivalent to P_t^{Equity} in Eq. (3.23) above, g^B is defined as the constant growth rate in the book value of equity and ROCE[21] is defined as the return on common equity at time t.

Equation (3.28) shows that a firm's P/B multiple is a function of its expected profitability, measured by ROCE; its risk, measured by the cost of equity, and; its growth expressed as the growth rate in the book value of equity.

For the reasons noted in the footnote below, and as was the case in Eq. (3.19) above, if a firm is expected to earn zero residual income in the future (i.e. $ROE_{t+1} - r^{Equity} = 0$), it's intrinsic P/B multiple is one (i.e. $\frac{V_t^{Equity}}{B_t} = 1$) and thus the firm is worth exactly its current

[21] Schreiner's (2007) use of ROCE in this formula appears out of place; because this researcher would normally have associated ROCE with the weighted average cost of capital (WACC) and ROE with the equity component of capital employed. Likewise, an increase in the 'entity value' is created whenever the return on capital employed exceeds WACC, not only the equity value as suggested in Schreiner's (2007) version of this formula.

book value of equity. Therefore, any premium in the market price over and above the book value of equity is attributable to expected non-zero residual income and growth in book value. Thus, the P/B multiple enables the financial analyst to form a quick opinion as to what the market thinks about the key performance drivers underpinning a firm's equity value: growth, profitability, and risk (Schreiner, 2007).

A3.3 Market Multiples

3.3.1 Introduction

Recent research (Lee and Myers, 1997) shows that abnormal earnings estimates of value outperform traditional multiples, such as price-earnings ratios, price-to-book ratios, and dividend yields, for predicting future stock movements. That is, firms with high abnormal earnings model estimates of value relative to current price show positive abnormal future stock returns, whereas firms with low estimated value-to-price ratios have negative abnormal stock returns (Palepu et al., 2004).

3.3.2 Definition of Market Multiples

The previous section helped to shed light on the fundamental drivers under-pinning P/E multiples and P/B multiples, two of the most widely used intrinsic multiples in practice today. This was also is an area of valuation theory where cognition amongst financial analysts is said to be poor. However, when people talk about multiples, they usually do not think of intrinsic multiples; rather, what they tend to have in mind are market multiples, i.e. the market price, not the intrinsic value, of the under-lying value driver. Thus in practice, the academic distinction between the market price and the intrinsic value tends to be over-looked. Consequently, Penman (2004) simply defines the size of a (market) multiple as 'the ratio of a market price variable to a particular value driver of a firm.'

3.3.3 Valuation using Price Multiples

Valuation based on price multiples is widely used by financial analysts in practice, see for example Arnold & Moizer (1984) and Demirakos et al. (2004) for the U.K.; Pike et al. (1993) for Germany and the U.K.; Block (1999) for the U.S.; and Fouche and van Ren burg (1999) for South Africa.

The primary reason for their popularity is there simplicity (Bradshaw, 2004). Unlike the discounted abnormal earnings, discounted dividends, and discounted cash flow methods, they do not require detailed multi-year forecasts about a variety of parameters, including growth, profitability and cost of capital, see for example Fernandez (2015), Damodaran (2012), Penman (2010), Pinto et al. (2010), Stowe et al. (2007), Schreiner (2007), Palepu et al. (2004) and Bradshaw (2004).

Palepu et al. (2004) provides a useful synopsis of the steps involved in using multiples to derive firm values, as follows:

Step 1: Select a measure of performance or value (e.g. earnings, sales, cash flows, book equity, and book assets) as the basis for multiple calculations.

Step 2: Estimate price multiples for comparable firms using the measure of performance or value.

Step 3: Apply the comparable firm multiple to the performance or value measure of the firm being analysed.

Using this approach, the financial analyst relies on the market forces of supply and demand to inform the values of comparable firms, which in turn signals their underlying prospects for short-and long-term growth and profitability. Then the analyst assumes that the pricing of those other firms is applicable to the firm at hand (Fernandez, 2015; Damodaran, 2012; Penman, 2010; Pinto et al., 2010; Stowe et al., 2007; Schreiner, 2007; Palepu et al., 2004; and Bradshaw, 2004).

On the surface, using multiples seems straight-forward. However, in practice this is not always the case. Identification of 'comparable' firms can be difficult and explaining why another firms multiple is applicable to the one at hand requires a sound understanding of the fundamental determinants of each multiple; and as noted earlier, cognition in this area is often lacking amongst financial analysts.

In summary, multiples are summary measures that inform financial analysts about what the market thinks a firm is worth compared to its competitors.

3.3.4 Categorization of Market Multiples

In view of the loosely defined nature of market multiples described above, it is conceivable that financial analysts can calculate a huge number of multiples for any given comparable firm of interest to them. For pragmatic reasons, practitioners tend to be selective about the multiples they use. Schreiner (2007) provides a useful overview of the multiples valuation framework that conveniently categorises multiples based on either the market price variable or the type of value driver used to construct them, see Figure 3-1 below.

	Accrual Flow Multiples	Book Value Multiples	Cash Flow Multiples	Alternative Multiples	Forward-Looking Multiples
Equity Value Multiples	P/SA	P/TA	P/OCF	P / (EBIT+R&D)	P / SA 1
	P / GI	P / IC	P / D	P / (EBIT+AIA)	P / SA 2
	P / EBITDA	P / B		P / (EBIT+KC)	P / EBITDA 1
	P / EBIT			P / (E+R&D)	P / EBITDA 2
	P / EBT			P / (E+AIA)	P / EBIT 1
	P / E			P / (E+KC)	P / EBIT 2
				PEG	P / EBT 1
					P / EBT 2
					P / E 1
					P / E 2
Entity Value Multiples	EV / SA	EV / TA	E / OCF	EV / (EBIT+R&D)	EV / SA 1
	EV / GI	EV / IC		EV / (EBIT+AIA)	EV / SA 2
	EV / EBITDA			EV / (EBIT+KC)	EV / EBITDA 1
	EV / EBIT				EV / EBITDA 2
					EV / EBIT 1
					EV / EBIT 2

Figure 3.1: Categorisation of Multiples Source: Schreiner (2007, p.39)

The table differentiates between equity value and entity value multiples; the equity value multiples are based on the stock price or the market capitalization of a firm, whereas the entity value multiples are based on the enterprise value of a firm, defined as market value of equity + market value of net debt. Schreiner (2007, pp.38-39) also observes that ‘the market value in the numerator distinguishes multiples from “financial ratios”, which provide information on a firm’s financial and operating performance (e.g., growth, profitability, leverage, or liquidity).

In conclusion, the P/E and P/B ratios are the most widely used multiples in practice. However, as with the multiples listed in Figure 3-1, they each have their merits as well as their drawbacks. A detailed discussion of the pros and cons of each of these multiples is beyond the scope of this chapter. For more information, the interested reader may wish to consult Fernandez (2015), Damodaran (2012), Penman (2010), Pinto et al. (2010), Stowe et al. (2007), Schreiner (2007), Palepu et al. (2004) and Lundholm & Sloan (2004).

Appendix to Chapter 4

Random Walk Model (RWH) and Beliefs in Stock Market Efficiency

List of Contents

A4.1 Present Values, Payoffs, Prices, Returns and the Stochastic Discount Factor

Finance theory posits that the study of risk and return patterns within assets classes can explain changes in equity prices and returns over time and across assets. On the other hand, accounting valuation theory emphasises the potential of the periodic financial statements to explain changes in equity prices and returns over time and across assets. For example, Penman (2013) demonstrates how combinations of P/E and P/B ratios can be used to provide an accounting-based explanation of the *value premium*, first highlighted in Fama and French (1993). This contrasts with Fama and French's (1998) explanation of the *value premium*, which uses an economic argument that is based on the concept of financial distress. Notably however, both so-called explanations rely on the underlying explanatory powers of P/E and P/B ratios.

Buraschi and Carnelli (2014) and Cochrane (2005) use the multi-period present value representation of the $P = E(MX)$ valuation formula to show how equity prices and equity returns are related to each other, as follows:

$$P_t = E_t \sum_{j=1}^{\infty} M_{t,t+j} \, . X_{t+j}$$

The single period present value representation of $P = E(MX)$ is derived by taking the *first difference* of the multi-period present value relationship. Thus, by grouping all the $t + 1$ terms (equivalent to taking the first difference of the time series), today's price can be more simply expressed as the expected value of tomorrow´s price and tomorrows dividend, as follows:

$$P_t = E_t[M_{t+1}(P_{t+1} + D_{t+1})]$$

As a corollary, if tomorrow's price and tomorrow's dividend divided by today's price is the rate of return, it therefore follows that the price of a *'+1 security'* may be written as:

$$1 = E_t[M_{t+1}(\frac{(P_{t+1}+D_{t+1})}{P_t})] \quad \text{-or-} \quad 1 = E_t[M_{t+1}.R_{t+1})]$$

By re-arranging this formula it can be shown that tomorrow's return may be defined as one over the expected value of tomorrow's stochastic discount factor, as follows:

$$R_{t+1} = \frac{1}{E_t(M_{t+1})}$$

Notably, in the context of the CAPM, the stochastic discount factor "*is the reciprocal of the return on the market portfolio*" (Sentana, 1993, p.441).

The $P = E(MX)$ valuation formula can also be used to express the price of a *'risk free security'*, as follows:

$$1 = E(MR^f)$$

Since a risk-free rate is risk free, it can come out of expectations and be written as one over the expected discount factor, as follows:

$$R^f = \frac{1}{E(M)}$$

This formula reveals that it is the expected value of the discount factor that codes the information in an asset pricing model about the level of the risk-free rate. However, this formula also posits an interesting question; is it the level of consumption in an economy which determines interest rates, or vice versa?

Finally, an excess return (R^e) is the return on any security (R_i) minus the risk-free rate (R^f), i.e. ($R_i - R^f$), or the difference of any two returns ($R_i - R_j$). In a situation where there are two price-one securities, the excess return has a price of zero. And, if price equals zero, the basic pricing equation for a zero-cost security may be written as follows:

$$P = 0 = E(MR^e)$$

Examples of situations where you are not putting any money down today include placing a bet; leverage (borrowing money to invest today); a long–short position (short-sell one stock and invest in another stock with no money changing hands today). When you're not putting any money down today (i.e. when P = 0), *excess returns* focus on the *risk* component of the investment.

In conclusion, the universal asset pricing model (Buraschi and Carnelli, 2014; Cochrane, 2005; Tapiero, 2004; and Sentana, 1993) demonstrates that it takes only a few simple steps to move between present values, payoffs, prices, returns and the stochastic discount factor. Arguably therefore, the schism separating accounting valuation theory and finance theory may not be as pronounced as Hopwood (2009)[22] suggests.

A4.2 A Basic Random Walk Model

Cochrane (2013) uses the simple and intuitive $P = E(MX)$ equation to invoke a parable about beliefs in stock market efficiency and the processes of competition to explain how the traditional time-varying model for equity prices behaves.

He begins by assuming that the behaviour of equity prices, *over-time*, is completely random and unpredictable. Theoretical support for this assertion can be found in the random walk theory, first formulated by Bachelier (1900), later developed into the theory of rational

[22] Hopwood (2009) discusses the lacuna separating accounting and finance theory from investment practice. This is a topic which is examined further in Chapter 4.

expectations by Muth (1961) and subsequently popularised as the efficient markets hypothesis (EMH) by Fama (1970).

Next, he assumes that, *in equilibrium*, competition will drive today's price (P_t) to the expected value of tomorrow's price, such that:

$$P_t = E_t(P_{t+1})$$

Turning that around, tomorrow's price (P_{t+1}) should be equal to today's price plus some *un-forecastable shock*, as follows:

$$P_{t+1} = P_t + \mathcal{E}_{t+1}$$

where, $\mathcal{E}_t$ is independently and identically distributed, with mean zero and variance (σ^2), i.e. $\mathcal{E}_t \sim IID\ (0, \sigma^2)$. This model implies that price changes are a white noise process $(\mathcal{E}_t)$, i.e. simply the accumulation of random and uncorrelated shocks over time, i.e.

$$P_T - P_t = \sum_{t=1}^{T} \mathcal{E}_t$$

The crucial *prediction* of this model [and the random walk process it represents] is that nothing but the *current price* (P_t) should be helpful for *forecasting future prices* (P_{t+1}); which in turn implies that all available information up to time t is fully reflected in the current equity price (P_t). In other words, past equity prices have no role in predicting future prices.

Cochrane (2005) warns that this description of random walk price behaviour *over-time* is not exactly theoretically correct. A more theoretically precise account of the RWH would imply that the price today should equal the expected discounted payoff tomorrow, as follows:

$$P_t = E_t[M_{t+1}(P_{t+1} + D_{t+1})]$$

where, M_{t+1} represents the consumption based stochastic discount factor and D_{t+1} refers to the future dividend stream.

Turning that around, the discounted price, including dividends, should equal today's price plus some random shock, such that:

$$M_{t+1}(P_{t+1} + D_{t+1}) = P_t + \mathcal{E}_{t+1}$$

And finally, Cochrane (2005) uses the consumption-based discount factor to provide the theoretically more explicit version of the RWH model, as follows:

$$\beta \left(\frac{C_{t+1}}{C_t}\right)^{-\lambda} (P_{t+1} + D_{t+1}) = P_t + \mathcal{E}_{t+1}$$

where, $\beta \left(\frac{C_{t+1}}{C_t}\right)^{-\lambda}$ is referred to as the inter-temporal marginal rate of consumption growth, i.e. the stochastic risk parameter. However, Cochrane (2005) notes that the addition of the inter-temporal marginal rate of substitution, when looking at high frequency data (days, weeks and sometimes months), has no real impact on the model. This is because the exogenous shocks $\mathcal{E}_{t+1}$ tend to be so big compared to the random discount factor [$M_{t+1} = \beta \left(\frac{C_{t+1}}{C_t}\right)^{-\lambda}$], that the process remains very close in appearance to the random walk in any case.

Thus, the most parsimonious version of the model simply assumes that the price tomorrow is *approximately* equal to today's price plus some random shock, such that:

$$P_{t+1} \approx P_t + \mathcal{E}_{t+1}$$

In conclusion, this is the traditional concept of market efficiency. It describes the belief that was common throughout all of asset pricing; that the price today reveals *all* the information that there is about the expected value of the asset tomorrow, properly discounted over longer horizons. However, shortly after Fama (1965) had succeeded in popularising the model's global asset pricing appeal, it began to show signs of problems. Numerous recent empirical tests now confirm the model is defective. For example, Lo and Mackinlay (1988 and 1987) strongly rejected the random walk model after testing it on a variety of aggregate return indices and size-sorted portfolios that spanned a period from 1962 to 1985 [see also Section A4.4 below]. On the other hand, the model manages to retain greater acceptability when approximating high frequency data (Cochrane, 2011). Finally, it is probably unfair to expect the RWH to behave like a one size fits all model. For example, Oprean (2012) suggests that factors such as the level of development of the capital market being tested, as well as the institutional features of the market (thin trading, non-linearity of asset prices, financial liberation, liquidity, end-of-the-month and end-of-the-year-effects, etc.,), should also be considered when evaluating the effectiveness of the model. Furthermore, empirical tests should consider whether the economy is emerging or advanced.

A4.3 The Mistaken Belief that Expected Excess Returns are *Constant*

Historically, realised equity risk premiums (R^e) have appeared unpredictable. Unsurprisingly, expected excess returns [$E_t(R^e)$] have likewise been viewed as unpredictable and un-forecastable. Ibbotson (2003) estimates the expected long-term equity risk premium (relative to the long-term government bond yield) to be about 6 percentage points arithmetically and 4 percentage points geometrically. This forecast of the equity risk premium is only slightly lower than their pure historical return estimate from 1926 to 2011. Similarly, Cochrane (2013) estimates the historical equity risk premium from 1926 to 2011 to be circa 7% per year.

Standard normal distribution models have frequently appeared in the extant finance and accounting valuation literature to describe time varying return estimates of this type, as follows:

$$E(R_{i,t+1}) = E\left(\frac{P_{i,t+1} - P_{i,t}}{P_{i,t}}\right) = \mu_i + \sigma_i ø$$

where, μ_i is the expected return or drift; σ_i is the standard deviation of returns, and; ø is a standardized normal variable.

The model asserts that expected returns are constant over time. Furthermore, Cochrane, (2011) shows how regression models of the following form, which ran returns on lagged returns, only served to reinforce this mistaken belief that expected returns were constant over time:

$$R_{t+1} = \alpha + \beta R_t + \varepsilon_{t+1}$$

Traditionally, models of this type produced slope coefficients that were often close to zero ($\beta = 0$), with insignificant *t* statistics. Thus, if $\beta = 0$, realised stock returns must be constant over time, as follows:

$$R_t = \alpha + \varepsilon_t$$

Additionally, by re-arranging the regression formula, this result also implies that today's expectation of next year's stock return must also be constant over time, as follows:

$$E_t(R_{t+1}) = \alpha = constant$$

Finally, from a *forecasting* perspective, the random walk hypothesis (RWH) implies that it is pointless to include additional forecasting variables when running a regression of price tomorrow on price today. That is, the other forecasting variable(s), say X_t in the following regression model, should be insignificant:

$$P_{t+1} = \alpha + P_t + \beta X_t + \mathcal{E}_{t+1}$$

The regressor, βX_t is irrelevant within the random walk process [i.e. βX_t will equal zero] because all available information is already priced into today's price.

In conclusion, the theoretical implications of the RWH model posit that notions of a '*bounce-back'* in prices in the future after a wave of selling or expectations of momentum and reversal effects and/or that long run investors should wait-out short-term price fluctuations, have no validity under the RWH. The RWH reflects the view that once the price went down, it remains down until another shock brings it up (or down again). Thus, popular investment practices, such as technical trading (Chartism) are by implication a waste of time.

A4.4 Empirical Facts regarding the RWH

Fama (1965; 1970) popularised the view that share prices and returns are unpredictable and un-forecastable over time. Nevertheless, most of the empirical evidence now available confirms that the RWH does not hold, or at least that its theoretical implications may be difficult to validate. It is true that in the short-term, when the behaviour of the data being examined is fractal and high in frequency [daily, weekly, maybe monthly], or when volatility (consumption) has not been smoothed over, the RWH tends to hold. However, ample empirical evidence now exists to confirm that there are variables that can forecast equity prices and stock returns over time. For example, slow moving dividend yields in regression models of the following form were shown in Cochrane (2005) to empirically forecast returns and equity prices over longer horizons:

$$R^e_{t+1} = \alpha + \beta(D_t/P_t) + \varepsilon_t$$

This evidence indicates that when dividend yields are high, expected returns are high and prices are low. When dividend yields are low, expected returns are low and prices are high.

Furthermore, multi-factor regression models were used in Fama (1993) to confirm that expected excess returns $[E_t(R^e_{t+1})]$ vary over time and that *value effects* represent opportunities to earn predictable risk premiums over long horizons.

The acknowledgment that realised returns are forecastable over time is the same as saying that expected returns and risk premia - vary over time; and are predictable. Furthermore, time varying expected returns and time varying risk premia often track visible changes in the economy such as business cycles.

If expected excess returns $[E_t(R^e_{t+1})]$ are known to vary over time, then this further implies that, in theory, the covariance of returns with the discount factor $[Cov_t(\mathrm{M_{t+1}}, R^e_{t+1})]$[23] will also vary over time. This in turn implies the existence of time varying correlations (ρ_t), time varying riskiness (denoted in Cochrane, 2005 as $\Delta \mathrm{C_{t+1}}$ or the change in consumption growth) and time varying risk aversion (denoted in Cochrane, 2005 as gamma (λ_t) or the power utility factor in the consumption based version $[\beta \left(\frac{C_{t+1}}{C_t}\right)^{-\lambda}]$ of the stochastic discount factor, M_{t+1}. As mentioned above, this time varying riskiness is more pronounced in times of recessions and financial crises, when expected returns are affected by the higher or lower macro-economic risks.

In conclusion, the erroneous belief that expected stock returns should follow a random walk, and are therefore unpredictable and constant over time, no longer prevails. The prevailing wisdom, supported by empirical evidence, confirms the view that there are numerous variables and risk factors that can forecast expected stock returns. For example, Hansson and Frennberg (2011) find that Swedish stock prices have not followed a random walk in the past 72 years. For short investment horizons, one to twelve months, they find strong evidence

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[23] This assertion relies on the definition of covariance, where: $Cov_t(\mathrm{M_{t+1}}, R^e_{t+1}) = E_t(\beta \frac{U'(C_{t+1})}{U'(C_t)}. R^e_{t+1})$

of positively autocorrelated returns. For longer horizons, two years or more, they find indications of negative autocorrelation (mean reversion). Likewise, Lo and MacKinlay (1988) find significant positive serial correlation for weekly and monthly returns, while Poterba and Summers (1987) also find consistent evidence that stock returns are positively serially correlated over short horizons, and negatively auto correlated over long horizons. These results are in-line with recent research on the U.S. stock market. For example, predictability regressions run by Buraschi and Carnelli (2014) found that short-term risk premia captured different information from long-run risk premia. Fama and French (1988) show that 25 to 40 percent of the variation of longer-horizon returns is predictable from past returns. Additionally, Keim and Stamgaugh (1986) find statistically significant predictability in stock prices by using forecasts based on certain predetermined variables. However, as Leroy (1973) points out, there is ample empirical evidence available to demonstrate that rates of return will follow a martingale distribution as a fair approximation, even in the presence of risk-aversion. Likewise, Lucas (1978) argues that the RWH is not entirely wrong or that markets are not completely inefficient. As Lo and MacKinlay (1988, p.42) state, *"few studies have been able to reject the random walk model statistically"*.

Finally, the above findings serve as an advertisement for caution when interpreting the theory, to ensure that it has not drifted too far from empirical reality.

A4.5 Additional Anomalous Patterns in the Cross Section of Stock Returns

4.5.1 Anomalous Evidence to Theoretically Challenge the Weak Form EMH

The Weak Form EMH asserts that existing information is of no use to investors who are engaged in the activity of trying to identify patterns to consistently outperform the market.

4.5.1.1 Seasonal Anomalies

Seasonal regularities contradict the weak form EMH, the RWH and the concept of equilibrium asset pricing models. The most important seasonal anomalies identified over the last thirty years or so have included: the *Size Effect* (Banz, 1981; Reinganum, 1981; and Roll, 1983), the *January Effect/Turn-of-the Year Effect* (Rozeff and Kinney, 1976), the *Turn-of-the Month Effect* (Ariel (1987; Lakonishok and Smidt, 1988; and Ogden, 1990), the *Intraday Effect* (Wood et al., 1985; Jain and Joh, 1988; McInish and Wood, 1990a; and Brooks and Chiou, 1995), the *Holiday Effect* (Merrill, 1965; Fosback, 1976; and Ariel, 1990), the *Index Effect* (Shleifer, 1986; Harris and Gurel, 1986; and Wurgler and Zhuravskaya, 2002) and the *Weekend-Effect* (Cross, 1973; French, 1980; Gibbons and Hess, 1981; Lakonishok and Levi, 1982; Miller, 1988; Lakonishok and Maberly, 1990; and Brockman and Michayluk, 1998) which occurs when share prices appear to follow a consistent pattern of peaking on Fridays and then falling on Mondays.

In conclusion, these anomalous patterns reflect inefficient prices and returns that are inconsistent with the CAPM, the traditional equilibrium model. Investors' exploiting these anomalies achieve superior (abnormal) returns, i.e. returns in excess of those predicted by the CAPM.

4.5.1.2 Momentum Patterns

Momentum Effects describe stock returns that tend to be positively serially correlated over short-term time horizons of (say) three to six months. Thus, investors can earn above average profits from trading observed patterns that tend to continue in the same direction (Carhart, 1997; Jegadeesh and Titman, 1993; Chan, et al., 1996; and Liu, et al., 1999).

4.5.1.3 Reversal Patterns

Reversal Effects describe stock returns that tend to be negatively auto-correlated over short-term, medium and/or long-term horizons. In effect, Winners become Losers, and vice versa.

Thus, investors can earn superior (abnormal) returns from trading observed patterns that tend to reverse direction after a certain period of time. Contrarian investment strategies that have exploited long-term trends of circa three to five years have been identified by Fama and French (1988), Poterba and Summers (1989), Cutler et al. (1990) and De Bondt and Thaler (1985). Alternatively, contrarian investment strategies that have exploited security returns that were negatively serially correlated over very short-term periods of circa one to two months were identified by Carhart (1997), Jegadeesh (1990) and Lehmann (1990).

4.5.1.4 Shiller's Excess Volatility

In the stock market, the term volatility refers to the variability in terms of standard deviation of security prices and returns over time. While in an efficient market one would expect a degree of volatility in a security over time, Shiller (1981) argues that share price movements are actually excessively volatile. He argues that events in the Stock markets, such as the October crash of 1987, indicate that investors are not fully rational; "*it appears that what happened on that day is old fashioned speculative panic. People began to fear that because of the fears of other investors, stock prices would crash and in effect they created the crash to get out of the market´´* (cited in Nichols (1993, p.5). Clearly if Shiller (1981) is right, then the weak form EMH does not hold, as patterns will exist in share prices.

4.5.2 Anomalous Evidence to Theoretically Challenge the Semi-Strong Form EMH

The Semi-Strong Form EMH asserts that publicly available information is of no use to investors who are engaged in the activity of trying to identify patterns to consistently outperform the market.

4.5.2.1 Value Patterns

As identified in section 2.7.2, the *Value Effect* exploits accounting indicators such as book equity to market equity (BE/ME), earnings to price (E/P), dividend yield (DY) and cash flow to price (CF/P). Investors use these ratios in order to develop contrarian investment strategies that distinguish between stocks that are likely to out-perform from stocks that are likely to under-perform. Methodologically, securities are formed into value and growth portfolios using some of these ratios. The value securities are those appearing under-priced in relation to their fundamentals; they have high DY, high E/P ratio, high CF/P and high BE/ME ratio. On the other hand, growth stocks are identified as those stocks showing high market value in relation to any one of the underlying fundamental indicators used in the ratio. Most studies undertaken in circa the last 30 years tend to evidence the out-performance of *value stocks over growth stocks* (Harris and Michou, 2001; Davies, Fama and French, 2000; Fama and French, 1993, 1996, 1997 and 1998; Richards, 1997; Dechow and Sloan, 1997; Strong and Xu, 1997; and Lakonishok, et al., 1994).

4.5.2.2 Briloff Phenomena

The evidence and arguments of Briloff are discussed in Foster's (1979) paper '*Briloff and the Capital Markets*'. Briloff was a noted critic of contemporary creative accounting in the US. On a number of occasions he published articles in the Wall Street Journal pointing out the presence of creative accounting in the annual reports of prominent companies. Although he was using only publicly available information which was available for some time, his articles had on several occasions caused rapid and significant falls in the share prices of the companies which he wrote about. In an efficient capital market this reaction shouldn't occur as the information which the companies in question tried to legally "hide" should have been immediately reflected in their share prices when the financial statements were first published. No lag or failure to interpret the data should have occurred.

4.5.2.3 Post-Earnings Announcement Drift

This effect has been the subject of significant research in the US and elsewhere and is a well-documented anomaly. The evidence shows that investors take a significant period, sometimes as much as 3 months, to fully impound the impact of publicly available EPS figures in share prices. Apparently even professional analysts sometimes fail to fully impound the implications of current EPS when making forecasts of future EPS.

4.5.2.4 Value Line Phenomena

Value-Line is a firm in the US which has developed a model which uses publicly available information to predict future share price movements. The enormous success of the "share tips" remains a mystery to financial researchers.

4.5.2.5 Excess Volatility

Cutler et al., (1989) found that many of the largest one-day stock movements in the US occurred without any major news announcement. This evidence contradicts the semi-strong form of the EMH because the expectation is that excess volatility in the market should be the outcome of unpredicted news announcements, or that prices should not move in the absence of information. Similarly, Mitchell and Mulherin (1994) reported that publicly available information accounts for only a small fraction of observed volatility in the stock markets

4.5.3 Implications of the EMH

The theory asserts that using the past to predict the future is pointless; one implication being that technical analysis will not be profitable. It also means that fundamental analysis, while valuable in terms of evaluating future cash flows, assessing risk, and assisting in the proper selection of investments for a portfolio, will not produce abnormal returns – it simply will produce returns commensurate with the risk assumed.

However, the EMH can only be tested by showing what prices should be after all available information has been fully incorporated into share prices. Any evidence of persistent mispricing is generally assumed by investors to be representative evidence of limited arbitrage. The *belief* is that if arbitrage were not limited the mispricing would quickly disappear. *'The problem is that while many pricing phenomena can be interpreted as deviations from fundamental value, it is only in a few cases that the presence of a mispricing can be established beyond any reasonable doubt. The reason for this is what Fama (1970) called the 'joint hypothesis problem'. In order to claim that the price of a security differs from its properly discounted future cash flows, one needs a model of 'proper' discounting. Any test of mispricing is therefore inevitably a joint test of mispricing and of a model of discount rates, making it difficult to provide definitive evidence of inefficiency'* (Barberis & Thaler, 2003, p.1059).

Appendix 6

FUND MANAGERS INTERVIEW RESULTS

A.6.1 **Introduction**

This appendix follows the same chronological order as the thesis chapter to which it relates.

A6.2.4 **Research Questions and Selected Evidence**

Nvivo 11 Pro was utilised to match the qualitative empirical interview evidence to the primary research objectives and questions outlined in Chapter 1. Specifically, selected pieces of evidence from the interviews were gathered into 'nodes' (themes) in order to later answer some ancillary research questions that under-pinned the study's overarching research objectives and questions.

To re-cap, the study's three primary research questions are:

Research Question 1[24] *– What personal attributes tend to exert the greatest influence on the decision-making behaviour, attitudes and beliefs of European fund managers and financial analysts in practice? For example, to what extent does gender, age, education, nationality, choice of employer, work experience, job title, CFA qualification, university degree, field of study, preferred industries, investment management genre, and investment management style affect their decision-making behaviour?*

[24] **Question One:** In line with Arnold and Moizer (1984), the underlying theme of this question permeates most of the research questions, methodologies and procedures adopted in the study.

Research Question 2 – What accounting valuation and finance factors tend to exert the greatest influence on the investment management decision-making behaviour of European fund managers and financial analysts in practice?

Research Question 3 – How useful is sell-side equity research?

Just Some of the ancillary research questions addressed during the interviews to shed-light on the primary research aims and questions included:

Secondary Research Question 1 – What, according to fund managers in Europe, are the most important criteria for the selection of value relevant measures when conducting fundamental equity analysis?

Secondary Research Question 2 – Why, given their theoretical decision-making superiority over market based 'multiples' valuation techniques, are DCF based valuation techniques, notably RIV models, not used more frequently within the investment management industry in Europe? [The rationale for this question specifically relates to the ready availability of information on book values and earnings as inputs in a residual income valuation framework. Furthermore, residual income valuation models are a logical response to calls for more scientific approaches to equity research in times of financial crises, which are the times when heuristics in equity valuation tend to be mistrusted the most (Loh and Stulz, 2013).]

Secondary Research Question 3 – Do, European fund managers believe that market-based multiples (relative valuation models) measure the value of equity reasonably well, and if so/not, how well does the valuation accuracy of market-based multiples compare to more complex DCF-based intrinsic accounting valuation methods?

Secondary Research Question 4 – What, importance do European fund managers attach market-based modern finance risk-adjusted return measurement techniques [single and multi-factor beta models]?

Research Question 5 – Which, value relevant risk and performance measures do European fund managers prefer?

Secondary Question 6 – What, channels do European fund managers mostly use to derive company and industry-specific information (specialist industry knowledge) relevant to their equity investment decision-making, and how does this relate to the kind of information usually available to them from sell-side analysts?

A6.3 **Fund Managers' Characteristics and Backgrounds**

A6.3.3 **Closer Examination of Interviewee Profiles**

The bio-data for each fund manager who participated in the interview segment is summarised in Appendix 6, Section A6.3. Hence, the 'believability' of the findings can be independently assessed in concordance with the 'quality' of each participants 'profile' information. According to the literature, for example Creswell & Creswell (2018), Bryman & Bell (2015) and Lincoln and Guba (1985), the credibility, transferability, dependability and confirmability of the findings arising from the interviews depend much on the 'profiles' of the individuals who participated in the study. Notably, circa one-third of all fund managers who participated in the interview segment of this study are featured in 'The Great Minds of Investing' (Leber, 2015). But in the interests of protecting their anonymity, the identities of who is covered in the 'Great Minds' is not disclosed. Likewise, any bio-data that might otherwise reveal knowledge of their identities is withheld.

Participant 'A1' is the founder and managing director of an independent and customer-oriented fund management firm based in Sweden, focusing on active fund management within fund categories where the company possesses unique competence. He is one of Sweden's most famous and experienced fund managers, known colloquially as "XXX". In

17 years he has grown the business to become one of Sweden's largest fund companies. His fund managers are regarded as the absolute top in their categories and every one of them has worked more than 7 years in the financial sector. As a major shareholder in a large number of companies his firm has the opportunity and immense responsibility to influence the companies and regularly meet with top management in the companies where they invest. Each year they participate in approximately 30 board nomination processes for the companies where they are invested. His firm is also a signatory to the UN directives for the Principles for Responsible Investments (PRI).

Participant 'A2' is the founder and managing director of a prestigious investment management firm in Switzerland. His firm are value investors who believe undervalued shares are the best strategy to achieve above-average performance over the long term. Their investment management style is rooted in thorough fundamental analysis, whereby they determine the inner, fair values of potential investments using their own in-house bespoke decision-making models.

Participant 'A3' is the founder and managing director of an investment management firm based in Germany, with funds registered for distribution in the following countries: Germany, Austria, Switzerland, France, Luxembourg, Netherlands, Spain, Liechtenstein and Hungary. He has a PhD and is a university professor with an international reputation for investment management excellence. The company's declared role models are Benjamin Graham who in 1934 laid the foundation for financial analysis and value investing in his book "Security Analysis", and Warren Buffett who is probably the most successful investor ever. Not surprisingly, the firm's investment style is rooted in the philosophy "Price is what you pay, value is what you get". This scientific research study further demonstrates that this investment management style still functions extremely well today. Participant A3's knowledge of the value investing style and his expertise in the practical operation of this philosophy was demonstrated in an extraordinarily open and friendly manner during an interview that lasted in excess of one hour. During that time the interviewee demonstrated how the firm takes a long-term approach in their models for valuing companies, looking back 10 years and forward 10 years. On this basis they invest if they identify a substantial undervaluation versus the past 10-year average. However they are cautious with their model assumptions, their goal being to generate long-term rates of return of more than 10% per year. Their deep learning models are based on fundamental data such as sales revenues, EBIT, profit and much more. The fundamental data is derived from an extensive company database that has been developed and steadily expanded for 15 years. Their data goes back as far as 1986 and their models are based on millions of observations. One particularly interesting element of the conversation with this participant involved the topic of artificial intelligence (AI). There is a growing number of fund managers who believe that, like self-driving cars, self-managing funds are coming. Of that this renowned CEO was sure. And for that reason alone his firm now offers the first mutual fund that is entirely controlled by artificial intelligence (AI). Stock selection, weighting and reorganisation activities are based on the Deep Learning models. The fund manager no longer intervenes in the portfolio decision-making process. The self-learning model progressively adjusts to the market environment as it pursues its long-term investment strategy.

Participant ‘A4’ is a Portfolio Manager and leads the capital markets research section at an international asset management firm based in Germany. The firm mostly rely on their own in-house capital markets research teams to actively manage assets totalling in excess of EUR 2 billion. His immediate staff have extensive and long-standing stock market experience spanning areas that include; global market and sector valuation, asset allocation, value investing, contrarian investing and last but by no means least; quantitative finance. As indicated later in the sections covering the analysis of the interview transcripts, his most notably ‘successful’ funds use a quantitative value-momentum based investment management style [arguably an insight into profitable equity investing in the future!]. Interestingly, he began his career with the study of ‘business informatics’, and after graduation he went to work for the quantitative research division of a large investment bank. His reputation for providing complete asset management services for his customers based on mutual funds is outstanding, so much so that he currently enjoys the personal confidence and highest regard of some of the world’s most well-known and highly successful global investors. However, he remains a modest individual who has now become a personal friend of the researcher. Overall, the depth of knowledge, general wisdom and guidance received from this investor/researcher was invaluable as far as this research project is concerned.

Participant ‘A5’ is the Chief Investment officer (CIO) at an international asset management firm based in Denmark. He currently manages a €2bn fund that invests in European Small Cap equities. His areas of expertise include: the fundamental analysis of companies with a focus on value drivers and risk factors; portfolio construction based on qualitative and quantitative criteria; developing quantitative screening processes to identify ‘quality’ stocks; meeting management in selected companies in Europe based on in-house quantitative stock screening and desk research; meeting multiple companies (preferably on site) on a yearly basis with no bias to specific sectors, where the main focus is usually on the business model, risk factors, strategy and quality of management; developing in-house valuation models as a sanity check for investment decisions. In keeping with the rest of the interview cohort the data collected from this participant was both rich and insightful.

Participant ‘A6’ is the Chief Executive Officer (CEO) and Chief Investment officer (CIO) of a large international asset management firm based in Portugal. Educated in Portugal he obtained an Economics Degree there before travelling to the UK to complete a Masters in Finance (MiF) Degree at the London Business School, a global top 10 educational business institution. Afterwards he returned to Portugal to begin a long and successful career (spanning +20 years) in investment management with the same firm he currently heads. AS CEO and CIO he manages an €11bn long-short hedge fund that is focused on Iberian (Portuguese and Spanish) equities. He likes to build tax-efficient portfolios based on undervalued and lower beta investments that tend to be well-diversified. Thus, his funds generally appeal to a conservative class of investors who like stability, certainty of income and minimal risk. His actively managed investment funds consistently generate above-average risk-adjusted returns over the longer-term, the success for which he attributes to his deep-seated belief in the power of fundamental analysis. For now, he distrusts macro-funds, but maintains an open mind as he waits to see what new technology brings.

Participant 'A7' is the founder and managing director of an independent and customer-oriented fund management firm based in Spain. He began his career as an equity analyst, rising to CIO and laterally investment director of a large international investment firm, before he established his own firm in 2005. His first fund focused on Iberian (Spain and Portugal) long-short equity portfolios. Subsequently, in search of new markets and new investors, he expanded his investment offerings to include 'UCITS' (which are mutual funds based in the European Union that allow European investors to have easy access to them) as well as more globally diversified portfolios domiciled in Luxembourg (allowing international investors to have easy access them). A notable addition included his 'socially responsible' European Equity fund, which is domiciled in Spain with the stated purpose of investing in the "main structural tendencies of the economy". All told he has more than 30 years' experience within the asset management industry in Europe. He espouses an active, value- driven investment management style based on fundamental analysis, and likes defensive, growth, and momentum stocks.

Participant 'A8' is Director and Chief Investment officer (CIO) of a large international asset management firm based in Greece that has more than €400 million AUM. Heading an investment department of 40+ people he has successfully steered his firm to the top of the Independent Asset Managers' rankings in Greece. The breadth of his experience was huge and encompasses Greek, European and US markets across various asset classes. His specialties include: asset allocation, portfolio optimization, sector rotation, asset/risk management, equities, commodities, fixed income, derivatives and hedge funds. Lasting more than 1 hour, the interviewee imparted a wealth of information on the practical application of quantitative investment techniques within his firm.

Participant 'A9' is CEO of a well-known investment bank based in Bulgaria, a position he has held for +12 years. His specialities include: Asset management, valuations, investment banking, ALM, hedging, M&A, and private banking. Aside from his investment banking activities he holds a university lecturing position, and for more than 10 years has taught asset management, international finance, banking and economics related subjects to business students. He has a PhD (economics and business) and is a board member of the Bulgarian Association of Asset Management Companies (BAMA). After obtaining a bachelor's degree in international business relations from the 'University of National and World Economy' in Sofia, Bulgaria in 2002 he moved to Germany and embarked on what was to become a long-standing and highly successful career in investment banking. Interestingly, his job in Frankfurt was as a Financial Analyst. Since then he has obtained diverse skills and experience in: Portfolio Management, Economics, Financial Markets, Asset Management, Financial Modelling, Capital Markets, Mergers & Acquisitions, Financial Analysis, Banking, Trading, Fixed Income, Risk Management, Corporate Finance, Equities, Emerging Markets, Financial Structuring, Hedging, Private Equity, Mutual Funds, Equity Research, Venture Capital, Alternative Investments, Investment Strategies, Investment Advisory, Financial Services and Quantitative Finance.

Participants 'A10' (two of them) are jointly the President/CEO and CIO of one of the largest fund and asset management companies in Croatia. The firm offers fund management of UCITS and AIFs, portfolio management and investment advisory services to clients under MiFID, and currently has 700m EUR in assets under management. The CEO has worked for the investment company for 7 years. The CIO has worked for the same firm for +12 years, and prior to his present position worked as a portfolio manager for a large asset management firm. As an active portfolio manager his strategies encompass conservative, balanced and aggressive models that vary both geographically and in terms of currency exposure. The principal interviewee (the President of the company) holds a Master's degree in mathematics from the University of Zagreb.

A6.4.1 **Utility of Accounting Theory**

This section begins by presenting fund managers' views on the meaning and usefulness of 'fundamental analysis' when applied to equity decision-making.

A6.4.1.1 **Utility of Fundamental Analysis when used for Valuation and Equity Decision-making Purposes**

Table A6.1: Fund Managers Views on the Usefulness of Fundamental Analysis

Theme	Selected Evidence
Fundamental Analysis	*Many **alternative ways of conducting fundamental analysis** are documented in the accounting and finance literature. How useful is Fundamental analysis in equity decision-making?*
	Yeah, when doing **stock picking**, actually I run a long short fund on Iberian Stocks, so it's a very focused and niche market, so it's a **very in-depth research… on each company** in Portugal and Spain. So, when we do that and when I manage with my team that fund, we follow a fully **fundamental analysis**, so we analyse the **balance sheets,** the **cash flows**, we like to **speak with the management of the companies** since our target universe of companies is just some 50…60 companies, so since it's a very **focused fund**, we take the time to analyse each one in

	depth. That's the **only way I think we can add value**, **is by knowing really well the companies**, **meeting the management of the companies** is something very important. Getting a feeling of what the **management strategy** is, and of course, keeping track of the numbers. Of course, to keep track of the numbers you cannot go through just the **P&L**, you have to go a bit more in detail. The balance sheet analogy is very very important. **Cash flow** is very important, most of the times, more even than the **P&L**, so of course **'multiples' comparisons** is something you do, **not as the way of deciding on any investment**, as more in a way of **comparing with other companies**. Mostly if you're doing some **relative analysis** to other companies of the **same Sector**, but then I think the **most important tool** would be more on the **cash flow**, the **DCF**, and the **balance sheet analysis**. During these times of these **highly leveraged countries and companies**, you really **need to take a good look at the balance sheet** and **understand what is registered in the balance sheet** and **outside the balance sheet**, so all those **debts** that are **off-balance sheet** must be taken into consideration and to do that, then, you need to focus… ***<u>you cannot do a 'Quantitative Analysis' of companies</u>***, you have to go really in-depth to them. You have really to **read all those 200 pages of the Annual Reports** and in order to do that, then you have to **reduce the scope of your universe of companies that you want to analyse**. This Fund I manage… we are a **team of 5** people and we analyse 60… 70 companies, that's our universe. And **only because the universe is small, is relative small, we are able to go so much in depth.** But, that's where I think **we can add value to investors**… It's almost **impossible**… **to analyse 600 companies** when you're benchmarking a fund… with the EUROSTOXX 600. So to do that people usually go to more **Quantitative tools**, but I have some problem if that **creates value** compared to a **passive investment**... I'm not sure of that. What **my experience** shows me is that **if you're focused**… If you are **concentrated** in a… a **small number of companies**, if you are **local on those markets** is also important, **<u>then you can create value</u>**. You are not smarter than anybody else, but if you are focused, you can **react** and you can **know a little bit better the companies** and you will be able to **react first** to changes in the context… in the **economic context**, in the **context of the company**… So, that's the way I see **Investing**, that's the way I see the **Stock Picking**… we are two fund managers… and then we have 3 analysts that help us out crashing the numbers. (06)
	I would say that probably in **any given year** we will not be looking… probably **not over 60** or something like that… typically looking at a quite **narrow bunch of companies** at any one point in time… every fortnightly deriving a shorter list which… you could call it our **model portfolio**. OK, so that will be **narrowing quite a lot the companies**… requiring from ourselves a really tight proximity to what they're doing in their **news flow**… and the changing that the **news flow** might imply into our **models** and our **fundamental analysis**... so that makes us be more **proactive in asking for inputs**, or really a more **in-depth analysis** and **follow-up from the 3rd party analysts**. Of course, **internally** we **tend to do it ourselves**… in most cases. If it's an **important piece of news** … **calling the company**… **meeting them**. But the way we like to **manage**, being quite nimble and quite **proactive in managing each position** doesn't allow us to… call them up… then we will be **meeting them**… So by acting that way… quite often really we do **one with each one of those 50 companies or 60 companies in one given year**. (07)
	… **fund managers**… will have their own opinion about numbers going forward… **their own opinion about what valuation methods to use**. That's up to the individual fund managers… **we believe in fundamental analysis**, we believe in… **long term investing based on fundamental analysis**, but then **how they do it is a little different between the individuals**. (01)
	To be honest Kevin, it was when I started the financial management that I focused on **fundamental analysis**, which I now **don't believe anymore**. Not now, for many years now, I personally focus on, eh, **statistics and econometrics**, which I believe, eh, more… We are performing **'sector analyses**, '**style analysis'** and **'factor' analysis'** as well… And except from that, we are going **deep in the research** to find whether they are misleading or not. (08)

	As a tradition, when we **sell a stock**… it's a reflection of the **valuation** and the **Investment Case**, but predominantly we sell it because the ***'Investment Case' has been played out***. (05)
'Accounting is not everything'	*When conducting fundamental analysis, what are the most useful **accounting analysis procedures**?*
	Accounting is not everything... but **it's the basics**. You have to start somewhere... So first of all you have to… **believe that the accounting numbers are the correct ones** and for that you can double check if… when you go more **in depth with other companies of the sector**, to see if the **trends** of these companies… make sense in the **environments** they are being in, in the **country** or the **sector**… but **in terms of accounting**, **it's the most important tool**, but you have to **cross-check it through different perspectives**, so you cannot just stay analysing the **P&L**, you have to **cross it with** the **balance sheet**, you have to… **double check it with** the **cash flow statement**. And then **everything has to make sense** when you **go to the field** and when you **talk to other companies** that are **upstream** or **downstream** that company, **and all these have to make sense for you to believe that the numbers are correct**. Remember a long time ago when these renewables thing started, there was this company in Spain that had totally **different numbers from the other one that looked much brighter**. Then you go more in-depth, then you start thinking that something is probably not right and you go and you **talk with competitors**, you **talk with companies** that are upstream or downstream their supply chain. And then, OK, suddenly you start thinking that "OK it's not a **fraud** in the legal term, but they are very **creative in terms of accounting**, and so eventually that company is broken. (06)
	*Do you tend to focus on the **Profit and Loss Account** or the **Balance Sheet Statement** when conducting Fundamental Analysis?*
	I think the **Balance sheet**… it's a stronger, more robust, and **less prone to creativity** instrument than the **Income Statement** where the **price to earnings** comes from. So, of course, I have to look at the Price-Earnings. Of course I **compare P/E's**, but… when you're talking about **highly leveraged companies**... OK, when you're talking about **financial companies**, the **Price to Book**… you're looking at the **Balance Sheet**, is the most **robust** place that you can look at. (06)
The Fundamental Analysis of Value, Momentum and Growth Companies	*How do you define "value"?*
	I **define value** in a more academic sense. **Value** is… are **'cheap' companies**. Cheap companies measured by traditional indicators like **Price-Earnings**, **Price to Book** and so on… It's very important for us to look at **Price/Book** values, **Enterprise Value/EBITDA**, **Price/Dividend**, **Dividend yield**, **Price/Cash flow**, and **Price/Free cash flow**. We also look at **price/book adjusted for intangible assets**... **That's the 'Value' perspective**. (04)
	There is **no one only definition for value**. Ehm. I think, if you have a **Growth Investor**, which is investing in **biotechnology** and something like this, he will also say that he invests in companies which are **under-valued**. He will never think that he invests in **expensive companies** which are **over-priced**, that wouldn't make sense. He says "No, if I am needing the **growth potential**, this company is **undervalued"**. "So If you look at it this way on this topic, **nearly every investor is a value investor"** you could say. (04)
	*Classifications based on value, growth and/or momentum appear frequently in the literature. How useful are these **investment style classifications** in practice?*
	So if you want me to give you a straight answer to your question, I mean, obviously each of those **company profiles**, let's call it that way rather than **style**, have their own **timing** during the **cycle on the economy and the markets**, right. So of course, I will tend to **adapt**, eh, to companies that will **work well into our portfolios** accordingly. So of course, on a more **bullish momentum** market we'll be… looking to earn more whichever displays more **growth stocks**. Of course, the other way around, whenever the market is looking like this, we'll probably of course be looking at more **stable names**, which might be, or not, represented by **lower P/E**, **therefore called value.** So I'm not sure if that is applicable to your Question, but I definitely don't see myself as being able to label the style we have as one or the other. Definitely not.

Value stocks are "Cheap" Companies ***Growth stocks are "Expensive" Companies***	We'll be, eh, you know, **shifting between one and the other according to the time of the markets** we're in. (07)
	What is the usefulness of the "value" perspective in accounting and finance and what factors tend to capture it?
	Look, we are **'Behavioural Finance Investors'**; we are looking for **factors** to **'measure investor sentiment'**. And '**value indicators'** are one way to measure the **sentiment**. And we try to find a lot of companies with a very negative sentiment. We try to **diversify** a lot of **small positions** and not just bet on [invest in] companies we like. And that's our view on **'Why Value Works'** and that's our **Value Definition**. (04)
	What distinguishes "value" and "growth" factors?
	I think... in most of **research papers**, and also, we say okay, when we make **empirical studies,** we have **value** and **growth** portfolios. **Growth** is perhaps not the best word. The **'value'** portfolio is the '**cheap'** portfolio of course. And '**growth'** portfolio is I would say the '**expensive'** [portfolio], the expensive stocks, not growth. Because if you have a company with **high price to book**, it doesn't mean that the company must have a **high growth rate,** it's just an **expensive company**. (04)
	What is the usefulness of the "growth" perspective in accounting finance and what factors tend to capture it?
	I think **"value-growth"** because **valuation indicators** like **price-book** are proxies for Ehm… what the word… **investor interest**. We know that **companies which are in the news**, which are well known, which have a **high growth rate** within the last year shown, have **very high expectations.** So if you have a company with **above average growth rate over the last 5 years**, **investors will expect that this company will grow in the future in the same or better amount**. But we have the situation when a **company** or **sector** has **above average growth rate,** we have other companies who will **enter into this market** and **growth rates and margins will come down**. And if this happens two results are; the first is you get a negative reaction on the declining rate; **negative reaction after the negative news are viewed**. And the second is the **fair valuation** has also to come down, **to decline**, and **that's why growth stocks lose**. And the opposite is in the **value segment**; if you have a company with very poor results over the last years, no investor or nearly no investor is interested in the company, then you need a little **positive surprise**, you know. The price will increase, that a higher valuation level makes sense, and so **Value Strategies profit**. (04)
	What distinguishes the accounting and finance approaches to capturing "value" and "growth"?
Momentum stocks	… the advantage of the **Quantitative Investor** is that you have a lot of time for **research** because you do not have to look every day on companies and to try to think of the future of the company So we try to focus my team on the research. I think the **most important point** or thing is the **research on which the strategy is based**. And ... we try to improve our strategies with the research (04)
	What is the usefulness of the "momentum" perspective in accounting and finance and what factors tend to capture it?
	… **We do not use trends in analysis**. We try to use the **'momentum effect',** so we know that companies which had an **above average performance over the last 6 to 12 months**, **tend to outperform their benchmarks over the next year… 6 to 12 months**. So, we try to find companies with a **strong momentum**, and when we **measure momentum**, we can use performance that I think are widest accepted way of the momentum criteria… we use… **relative strength** … That means **actual price divided by an average price of the last 6 months or 12 months**, something like this, and so we get stocks which **outperform**… We look at the lately [recent] **relative strength**… We try to find stocks with an **outperformance** over the last 6 to 12 months, and **underperformance** over the last 5 to 3 years. The **stocks with long-term**

	decline in the price, but with a **positive momentum in the short term** and an **undervaluation.** With this kind of stocks… we like. (04)
Company Policy versus Individual Choice over Fundamental Analysis Technique	*Does **Company Policy** tend to exert a controlling influence over the Fund Manager's choice of equity evaluation technique when he/she is performing fundamental analysis?*
	It's up to the individual fund manager, and if he loves **enterprise value to EBITDA** or if he likes to do some **discounted cash flow model**, that's up to him. But you'll probably find most of them, if you went to their excel spreadsheets, and we went around everybody, and was going to list what kind of valuation methods are in there, you'll find most of them there, I think. Yeah, and they're very different… so one of my colleagues that founded the company, he has now since a number of years, he is not managing money actively, but he's probably the best...He is one of the best investors I have ever worked with and he is the one who if we were sit down with him and discuss, you know, theories and things like that, he's School of Economics, so he's gone to school, so there's no problem there, but he… you know, he basically does a back of the envelope calculation. You know, **very simple**. And his performance over his whole career is... if he lived in the US, he would've been a billionaire, famous person, that's how good he's been. (01)
Intrinsic and Relative Accounting Models	*In terms of the split between **intrinsic valuation models (NPV, dividend discount model, discounted cash flow, and Residual income Model) vs. multiples models (price-earnings, price-book, EV-EBITDA, earnings-sales, and price-sales)**. What valuation approaches do you prefer?*
	You know, I wouldn't say that there's one better than the other… **It's definitely one better than the other for one specific company, sector**, **company maturity**. So, it depends on the stage that they're in, in terms of their own life… how you could value it. (07)
	… [fund managers and analysts] will have those models, they will have their **P/E's** and all that, and they will have some **net present value models**, **discounted cash flow models**. They all have them. You know… they will not… have enough to make decisions, they will have to check, you know, check where they are, you know, it's a reality check, or whatever. (01)
	… the way you analyse some companies… you **adapt it to the conditions of the markets.** Nowadays, when you look at **banks**, it's more or less… what is most important, is to look at the **capital base**, if the capital is enough, because it's not a **pure discount**, it's not a **pure cash flow thing**, there is some **regulatory concerns** that affect the **Value** of the company. So, I **don't do a DCF for a bank…** I would do more for an **industrial company**, for a **retail company** … if it's more… **more stable the company**, and the more **predictable its cash flows** the better of course… coming to your question on the **oil company** … mainly for you to have a **good feeling** of the **sensitivity of the stock to oil price**, which is the major input [**FACTOR**] that you obviously cannot **control**, so I'm not a **commodity investor**, I'm… what I do is **I invest in companies**… so I have to take as good the price that market gives me as an input; for instance, for commodities. … do some **simulations** and see what happens to the **value of the company** if you change that parameter. For instance, **for banking you don't do a DCF. You could do DDM, dividend discount model**, which is a little bit similar (06)
Sources of Industry Knowledge: **Company Management** **&**	*What are your main **sources of industry knowledge** when conducting Fundamental Analysis?*
	It's **mostly from the sell side analysts**, it comes mostly from the sell side analysts… and from the **companies themselves**, so **meeting the companies**… the **top management** of the companies, most of the focus will be on knowing the **drivers of the industry than actually the figures**. OK, when you want to know the figures, the income statement, the balance sheet of the company, you don't talk with the **CEO of the company**, you talk with the **accounting manager**, with the **CFO**. And so when you talk with the… **the top management, eh, mostly the decision makers,** you are able to have a view of the **sector** and see what the **levers** [the DRIVERS] are, what are the tendencies, what are the **trends**... And doing that, **together with**... **the sell-side** that does a little bit the same… you are able to have a better **view of your industry**. Of course I would love to be able to read all the **publications** from the **specialist**

Sell side Analyst Reports	**publications** for each **sector**, but I don't have **time** for that. I cannot read the 'Metals Bulletin' every week. Now, that's impossible, impossible… it's really... try to **get as much information and try to make sensible decisions**. (06)
	I focus on the **fundamentals of the company** and the **risks**: whether it is going to lose its **market share**, face new **competition,** whether it is too dependent on **price of the commodities**… something like that.... **the business**. (09)
	*Do you equate the term **Industry Knowledge** with **Fundamental Analysis** of a company, its industry and everything in the marketplace?*
	No, you don't need that. No. I mean… Sometimes in order **to take right decisions** you don't need all the details, in my opinion... [Easy to get swamped by information]… Yeah it is. Exactly. That's **one of the very big risks**. (05)
The Sell-side & Industry Knowledge	*How specifically does the **sell-side** add to your knowledge of an industry?*
	… the **sell side**… the good thing that many of these guys have is that they do have **specialized analysts** into some **specific sectors**. And because of that, they can really become quite **knowledgeable about each industry**, and they typically **subscribe to the specialty magazines and publications from the sector**, which tend to be quite extensive, by the way. And, so **that's where we extract most of the pure sectorial data** and any information, because, you know, we are still **relatively small**, so to have that sort of **extensive specific resources** is something which, right now, we wouldn't consider. (07)
	… it's really the fact that each one of them is **specializing to one industry**, or not. So the fact that I'm looking at, say, as we said before, probably in any given year, looking at **60 companies**, which are quite broad in the industries that they're from, that they're in. I mean, **I can't be an expert in all of those sectors**, obviously. And that's why it's **so important that I can gain access to these guys**, which only look at, say… probably in the range of **5 to 15 companies within the same sector**. And so that allows them to be **on top of every piece of news, every rumour, every little bit of information that's out there for that sector, or each company within it.** And can really plug into his numbers and make a quick comment upon the changes that are implied, **and that's relevant**. (07)
	I pay attention to [**Analysts' Reports**] because... if I don't know the specific sector I'm looking in I like to know what the risks are there. So sometimes I read the [Analyst] reports just to get a **better idea of the sectors**. So **I'm not reading specific reports to invest in specific company**, but just to get a **better idea of the sector**. And I read reports of several companies within the same sector. (09)
The Herd	*Do you ever try to get ahead of the 'herd' or the analysts?*
	No, no way. Definitely not faster… eh, maybe we have a more profound view, ehm, but it's one thing to watch something and think it's a good company, but another thing to see the crowd moving around. We try not to out-guess the crowd. (03)
Annual Reports, Management Meetings and Analyst Reports	*If you were to compare the three, which do you prefer: **Annual Reports, Management Meetings** or **Sell-side Analyst Reports?***
	Ehm. Neither, I would read the **Annual Report**… that's my **primary source**. Second is not **'meeting' management**, but '<u>**watching' management**</u>! I like to go to **conferences** and see them talk… and **compare different companies**. But you know, meeting people, eh first-hand, frequently does not help; it manipulates you into either you believe you understand something that you don't understand, or they charm you… **I don't trust them, I don't trust one-on-one meetings**… But the colleagues like the one-on-one discussions with management. (03)
	*Does '**fundamental information**' tend to flow firstly from the **sell-side** to the company's **buy-side analysts** for processing [analysis] before secondly being passed-on to the **fund manager** for investment decision-making purposes?*

Flow of Fundamental Information	It all depends on the **size of the firm**, it all depends on if you're talking about the **big capital groups**, **Fidelities** or whatever. I think that process you describe is the one, so, **sell-side** talk to **buy side** and then **buy side** does the work and presents it to **PM**, which only talks probably to the **management**. So this circuit is probably like that, maybe in a **big firm** and when you're taking about **big diversified funds**, the ones that **I don't think create value**. Because… if my universe was 600 or 1,000 stocks, of course I would have to have all these **filters**. But if you're talking more as a **niche player**, **boutique player**, **smaller scale player** that is focused on some specific value-added products, I think everything is **more flexible**. I talk to sell-side analysts, my analysts talk to sell-side analysts, so **there is no rule** to be honest with you. That is only possible if you **analyse 60 or 100 companies**. It's **not possible** if you **analyse a 1000**. So, **it all depends on your focus**, but then to be honest with you… I… believe that... you **cannot create value with analysing some 1000 companies**, **it's not humanly possible**. (06)
Investment Style Identification	*How do you articulate your particular **investment management style**?*
	Kevin, if you now look at the recently established funds, contrary to what used to take place, say like in the 90s, you no longer have many funds calling themselves as **value**, whatever, or **growth**, whatever. They tend to have less obvious names, leading to some sort of **'style identification'**, you know. We describe ourselves as **fundamentally driven stock pickers** with a **momentum** approach. (07)
Fundamental Active/Passive Debate	*Do you believe actively managed stocks tend to outperform passive stocks?*
	OK, so we of course believe in **active management**, since we are one, and we think we can **outperform**, but **we don't think everybody can outperform**… Just because theoretically we can't. But we're **true believers in active management** and we have now 15 years of track record to show that, and I love that debate… You know… our small cap fund, the fund I've listed… the outperformance in that over the 15-year period is a bit over 300% points after fees, total. (01)
Fundamental Analysis of Investment Risk	*So your funds are more risky than the benchmark index, hence your higher returns?*
	*OK, so, if you know that's possible, then we take in **higher risk**, right? That's what the guys say. We have lower **standard deviation** in the fund than any of our competitors. We have **lower standard deviation in the fund than the index**. So that doesn't work, right? **You can't have higher return and lower risk?** But, we can. So, then it's... then we talk to some of the **academics**, then they say "Well, there's always one lucky one". And then I normally say "in that case, it's better investing with the lucky one than the unlucky one, right?!" (01)*

Source: (The fieldwork)

A6.4.1.2 **Utility of Intrinsic Accounting Methods of Analysis and Valuation in Equity Decision-making**

This section presents a selection of the European fund managers' views on the usefulness of intrinsic accounting methods of investment appraisal (absolute models) when used as part of a scheme of fundamental analysis, 'fair' valuation and equity decision-making.

Table A6.2: Fund Managers Views on the Usefulness of Intrinsic Accounting Methods

Theme	Selected Evidence
DCF / NPV / DDM	*How useful are **DCF** based accounting analysis techniques for conducting Fundamental Analysis?*
	… **the assumptions** you put **on the DCF**, you have a view of the potential of the stock, you have a view of the **fair value** that the stock should be trading at, and then you **make a decision if the up side is worth the risk**… the risk of that stock, and you **invest long or short**. In my case I can do both ways, so the **DCF is a good tool to have**… to have a number… to have an **absolute number**, not a **relative one**, and… with two or three different levers you can **calibrate**, and you can **simulate**, and have **different scenarios**. So, if you calibrate for **growth**, if you calibrate the **margin,** if you calibrate the **interest rates**. So, these 3 levers [**FACTORS**] I would say are the **main levers**. Then you can not only **assess if the current price is a fair price to buy or to sell**. So, if it is a good opportunity to **buy** or to **sell**. And also, it's a good way of doing a little bit of a **scenario analysis**, by OK… let's say, that they can **improve margin**, **what's the impact**… and it's a **very straight forward method** and a very clean, clear method, of having a number and **understanding why the numbers match**. (06)
	*Are **DCF** methods **more useful in certain industries** than others, for example oil companies versus retail companies?*
	Yeah, at least you are able to… input the **oil price**… **to predict the market price**, and then… do some **simulations**, and see what happens to the **value of the company** if you **change that parameter**. For instance, **for banking you don't do a DCF, you could do DDM**, dividend discount model, which is a little bit similar… the way you analyse some companies… **you adapt it to the conditions of the markets**. Nowadays when you look at **banks**, it's more… important… to look at the **capital base**, if the capital is enough. Because it's not a **pure discount**, it's not a **pure cash flow thing**, there is some **regulatory concerns** that affect the **value** of the company. So, I **don't do a DCF for a bank**, I would do more for an **industrial company**, for a **retail company**… the **more stable the company** is and the more **predictable its cash flows** the better of course. But that's a general statement… but… coming to your question on the **oil company**; of course, it's important… for you to have a good feeling of the **sensitivity** of the stock to oil price, which is the major input [**FACTOR**] that you obviously cannot **control**. So, I'm not a commodity investor, I'm… what I do is I invest in companies, so I have to **take as good the price that market gives me as an input**, for instance for **commodities**. (06)
	*Do you use the **Dividend Discount Model** to calculate **'fair values'**?*
	Never. (05)
Residual Income Model (RIV / EVA)	*Do you use the **Residual Income Valuation Model** to evaluate equities? Residual Income Valuation and Economic Value-Added models use figures that are **readily available** in the **Annual Report** (i.e. **P&L, Balance Sheet**). They can be used to calculate a **rate of return, excess cost of capital or opportunity cost of capital** measure of an asset or company. Alternatively,*

	*'Value Investors' can use them to obtain a convenient discounted c/f number such as the **'fair value' of a share**.*
	No, no. To be honest with you, no. I use the… **Economic Value Added** sometimes, not often... [I use] more of a straightforward **DCF** approach, so no. (04)
	… EVA... [Economic Value added]… oh, that´s where you add back the goodwill, amortisation and then you figure out what the return on assets is … Yeah, we do that. (02)
	No. (05)
	Pretty much, yeah, yeah. Yeah, we use one specific model. It's called, it's by **Professor Stephen Penman of Columbia**. And, it is just so logical. Ehm. That's why we're using it. I don't… **First of all, I don't trust simple metrics too much. I mean they're nice, but we're talking about the use of capital,** and, **to get the use of capital right, I have to measure incremental returns from incremental capital, and the residual income model does that.** We are deploying capital, and the company does it on our behalf, so I want to see how they utilize the capital, in terms of operating cash flow, operating capital and fixed investments, and see what the returns from that are. **So,** this is basically **my role in the economy.** Ehm, I don't trust…Ehm, the **dividend discount model, I mean, it's useless.** Look at Berkshire Hathaway. I mean, ha, ha. Berkshire Hathaway would have a value of zero. **NPV**… Ehm… In the end they're all the same if you do the right calculations, but **NPV doesn't really calculate the real investment of capital.** Ehm. **Discounted Cash Flow**, same problem. Ehm. And the simple **P/E's** and, yeah... I mean that's the reason. And, **Capital Asset Pricing Model**… I used to do that, some 25 years ago, **until I realized, that it doesn't make sense**. (03)
Fair Values	*Do you routinely use **'fair value'** techniques [NPV, DCF, RIV, and DDM] when conducting fundamental analysis?*
	No, no, no. Only occasionally
	Sometimes, sometimes. (05)

Source: (The fieldwork)

A6.4.1.3 **Utility of Relative Accounting Methods of Analysis and Valuation in Equity Decision-making**

This section provides a selection of the European fund managers' views on the usefulness of relative accounting methods of analysis (multiples models) when used for the purposes of fundamental analysis, equity valuation or investment decision-making.

Table A6.3: Fund Managers Views on the Usefulness of Relative Accounting Models

Theme	Selected Evidence
	*How useful are **'Accounting multiples'** when conducting Fundamental Analysis on a company, industry or sector?*
Accounting Multiples' Models	Yeah, again, I can show you a screenshot if you'd like. Let me see... OK, can you see the red bars? Basically, it says **"how are different valuation models working at the moment".** So, **price to book**, book to equity, to market equity, has a negative performance, negative out-performance. **Operating cash flow yield** has negative performance. **Enterprise value to EBIT** is positive at the moment, **earnings to price** is negative, **pay-out yield** is negative, and **dividend yield** is negative… So, elm, but the other **sectors** that are doing well, for example: **Profitability** X3 comes from the xx model, **EBIT to total assets** is a very positive indicator. So, what we do is, **we pick those factors that work at the current**… at this current moment. And, if they work right now, we use a **higher weighting**. So, it goes into our… into our **'weighting decision'**. But we measure it. So right here we can see which of our companies in our portfolios fall into this category…. We have… Mitsubishi Corporation, Trinity industries… which belong into this category. So right now, we should have a lower weighting on these stocks. *[And how many stocks have you in a portfolio?]* … 36 (03)
	*How useful are **P/E and P/B models** when conducting Fundamental Analysis?*
	Both of them … for different **sectors**, yes. So yeah, I mean, obviously, **book** is something quite important for **financials** for instance. **P/E** … and the **profile of the P/E**… is **definitely relevant** for… **growth stories** and not to get caught into a **value trap** or something like that. So, you have to… get quite into **where earnings are derived from** and really **see the growth** in it, and have a dynamic model, you know? (07)
P/E and P/B Models	… we're coming out of … an equity market that in the mid-80s or late 80s was where the **valuation methods** were still pretty rough, you know, **multiples**, **historic**… the theoretical framework around them has improved over the years… But we still go back to the **P/E ratio** and things like that. (01)
	*Do **high P/E stocks** growth (expensive) stocks tend to outperform the market?*
	Ah, we don't like these kinds of generalizations. (01)
	No… there's **high P/E stocks** that we think are the most **dangerou**s thing you can own on earth because you can lose a lot of money. There are some where we're so convinced of the **business model** and the **future growth prospects**, so will we **buy at multiples that we normally wouldn't**, but it in this case we will make an **exception**. (01)
	One has to accept that that it is probably the most divisive valuation method in the markets. Therefore, you can't just reject it, even though… one has the opinion … it's have a lot of... you say…. **weakness**…. Yes, I mean **you shouldn't rely on one**, that's my point. You should try to **COMBINE them** and take best out of everything, and that's how I view it… **and if you can**

	tick the box in more than one then you might have a pretty good case **[Investment Case]**. (05)
	*Do **low P/B stocks** value (cheap) stocks tend to outperform the market?*
	No. (05)
Enterprise Value Models **(EV/EBITDA) (EV/Sales)**	*Do you use the **EV-EBITDA** multiple? [EV measures market capitalization as equity plus debt minus cash]*
	Yes, very often. (07)
	*Do you use the **EV-Sales** multiple?*
	Yeah, you want EV: Sales too, because Price: Sales isn't really relevant. That doesn't make any sense, but EV to Sales does. (02)
	*How useful is **EV compared to equity market capitalization (Price)** when calculating a firm's value or when generally conducting Fundamental Analysis?*
	For the same reason that EV to EBITDA makes sense, Price to EBITDA doesn't. (02)
Favourite Multiple	What is your favourite accounting multiple for finding 'Value'?
	Enterprise Value: EBIT. (05) Price: Book (03)

Source: (The fieldwork)

A6.4.2 **Utility of Modern Finance Theory**

A6.4.2.1 **Assumptions Underpinning Modern Finance Theory**

The single and multi-factor asset pricing models that collectively comprise modern finance theory were built on a number of key theoretical assumptions. Whether asset managers find these assumptions believable or not will in turn influence their feelings regarding the usefulness of capital markets theory in equity decision making. Table A6.4 presents a selection of the fund managers' views on the usefulness of some of the more ubiquitous theoretical assumptions implicit in the finance models that have emerged over the last 70 years.

Table A6.4: Assumptions Underpinning Modern Finance Theory

Theme	Selected Evidence
Rational Economic Man **(Mill, 1836)** **(Markowitz, 1952)**	*Do you agree with **capital market theory's** assertion that all Investors are **'rational'**? This implies for example that they will always choose to invest in portfolios situated along Markowitz's 'efficient frontier', i.e. those with minimum risk for a specific return or maximum return for a given risk.*
	"… rational economic man, that we always take rational-economic decisions…I mean, I've been around when we've all been ******** our pants because we think the world's going under, and we don't dare to invest when we should, and I'm sure we've been greedy, so just there that goes away" (01)
	When we look at some big case in history we had a lot of **fund managers** who invested based on their own **expectations** about **markets** or **sectors** or **companies**, and we know when we look at **forecast errors** and the success of these strategies, that it is **nearly impossible** to identify **the right markets** or **right companies** and I think a lot of investors realized this! (04)
EMH **(Fama, 1970)**	*Do you agree with **capital market theory's** assertion that **current asset prices fully reflect all available information**, which in turn implies it is **impossible to "beat the market" consistently** on a risk-adjusted basis?*
	I do believe in a **weak form of the efficient markets hypothesis**, otherwise **value investing** wouldn't work (02)
	"No, no, no… I can tell you why, you know, and I like this **active/passive debate**… a lot of articles… if I remember correctly… talk about **information efficiency**. **That doesn't exist**. And… you just have to watch the market… I mean this can't be **perfectly efficient**, there's no way" (01)
	I'm not really sure… Perhaps the market will become a little bit more professional, a little bit **more efficient** because a lot of strategies in the last years were **story-driven** or **theme-driven**. And I think a lot of **new quantitative approaches** will lead to **smaller inefficiencies**. (04)

	… talk to some of the academics… they say "Well, there's always one lucky one". And then I normally say, "in that case it's better investing with the lucky one than the unlucky one, right?" (01)
	… well I think it will get more difficult for all investors to make an **alpha** on the markets, because more and more **capital is allocated** in a more… in a **better way like in the past** and this is also relevant for private investors. Though if a private investor is just looking on **headlines**, I know some of them are doing so, and try to get companies based on **news flows,** or something like this. I think this will get more difficult to get an **alpha**, but it was also difficult in the past to get an alpha on such a strategy. I think **only a few strategies** are, on the **long term,** able to generate **real alpha returns**, and some of these concepts are **value strategies**, some others are **momentum strategies**. I think these two areas are very interesting, although in the future... If private investors have the possibility to get the right data to **find undervalued stocks,** I think they **will also be able to generate alpha in the future**. But how many private investors are able to get on Bloomberg or Bourse data? (04)
	We have some **broker, researchers** which are focused more on **relationships**. Take **JP Morgan** for example: they have a very good **fundamental research**, they publish a lot of research about **relationships** between **value** and **momentum** and **stock returns**, and this is **useful** for us, and I like reading this, and discussing this research, but … there are two sides of the coins. Of course I like it. The other side is that if a lot of people, eh, are doing research in this area, the **inefficiencies will get smaller**. (04)
Modern Portfolio Theory **Portfolio Optimisation & Diversification** **(Markowitz, 1952)**	*Do you agree with **modern portfolio theory's** assertion that **diversification** tends to improve portfolio performance vis return/risk outcomes?*
	… when I make the **diversification,** I'm **not looking for the highest possible return**. I look for the **reduction of the risk**, **improvement of the liquidity of the portfolio** and catching some **other markets** that are going to **perform better** than my **domestic market**. From my specific experience I had many portfolios that where invested in a specific… you know, **specific sectors**, some **market**… in **specific countries** that did not do well in the years after the crisis, for the period 2010-2014. And other portfolios with **broad diversification** had **performed better**. And those who provided **better liquidity**, that's the **reason that I agree with this one**. This is from my own experience, **risks were reduced, yes**... **returns higher**. Of course, this is when you talk about the **risk and return ratio**. When you talk about **pure returns**, it's **not working**. (09)
Cost of Borrowing **(Sharpe, 1970)**	*Do you agree with **Markowitz**, and later **Sharpe**, that investors can **borrow/lend money at the risk-free rate of interest**?*
	"...it doesn't cost money to short stock? Well if you try to lend stock from a bank, it has **never been free** for us, and even the **underlying**, there's underlying things to the theory for it to work, as I remember it, but it's 30 years ago soon, that, not even that underlying things are working. **They're not true**!" (01)

Source: (The fieldwork)

A6.4.2.2 Utility of Single-factor Finance Models in Equity Decision-making

Table A6.5 presents a selection of the European fund managers' views on the usefulness of single-factor asset pricing models when used as part of a scheme of fundamental analysis, equity valuation and/or decision-making.

Table A6.5: Utility of Single-factor Finance Models in Equity Decision-making

Theme	Selected Evidence
Single-factor Finance Models: CAPM CCAPM **Cost of Equity, Equity Risk Premium, DCF Discount Factor, Return on Equity, WACC models Consumption models**	*How useful is the **CAPM** for fundamental valuation purposes or when calculating the expected risk or return on investments?*
	When we're doing the **NPV of a company**, we of course have to calculate the **Discount Factor**… the **Cost of Equity**, or the **WACC**. (05)
	We just use it as the cost of capital. For **cost of equity**. (10)
	Usually… in **DCF models**, that's when I'm using it. I know from my experience what the **price of equity** is. Sometimes I check it because I know others are also checking it. (09)
	No… I used to do that some 25 years ago until **I realized that it doesn't make sense**. *[So you just pick say 10% and go with that*?]… **Yeah, and 10% as a fixed rule**. I believe we need to come down because the markets are changing so much… I mean the interest rate has come down for so long, and so permanently, and the 10% comes from a different world… I don't want to move the yard sticks around that's why I keep them at 10%. *[It sets the benchmark quite high, and provides you with a great challenge?]*… **moves me into risk areas**… **it forces me to take unusual decisions**. (03)
	Well… of course we do. I mean, the **assessment of the cost of capital** and the **return in equity** that we're getting is of course something that you always to have in mind. And if we do believe the inputs that we plug into the model, giving us access to a **meaningful beta**, then you'll be quite relaxed about using the number, you know. So, what I'm mean is, for instance… we are very careful about **the length of the history** that you take **to derive the regression**, right. So, we do manage that quite actively in terms of, you're not using all the time, one year or three years or whatever as the theory says, **that it's meaningful**. We'll be using one which is… which **makes sense to the recent history of each company**. So, if the company has changed, say two years ago, in the business model/volume/performance that they have, so it makes no sense to use a history larger than that to **derive your betas**. (07)
	… to compute the **cost of equity**… to **discount** the **cash flows** usually you do it the easy way, which is via the **CAPM**, via the **beta**, the **market risk premium**. For the **stock picking** the **CAPM** is more for computing the **cost of equity** and putting it into your **DCF**. (06)
Portfolio Optimisation **and**	… moreover, in terms of CAPM, I think it's also **useful**… more on **asset allocation decisions** to take the **implied market risk premium**… that the **market is pricing** and, eh, make an assessment if that **market risk premium is fair or not fair** for any given circumstances. I think that's also a way for the **Damodaran analysis of extracting the market risk premium out of the price of the market**, which basically is **CAPM reversed** and worked around. I think it's also a very good tool for you to have, at least in a **time series**, being able t**o know if the market is over-pricing or under-pricing the risk premium**, and then take a view on the asset. But that is **more of an analysis of asset allocation** and not a **stock picking** kind of analysis. But then that is more of a **macro fund** because… if you do that you will be more for the macro fund… finding the idiosyncrasies of the companies… [in] a **quants model**… than on a **stock picking**… a **quants model** works… as a **macro way of investing**. Because when you say… **my model looks for low**

Asset Allocation Decisions	**price/book stocks that have a high dividend yield**, whatever. So, that's already a **macro view** that you have, you have the macro view that the stocks that will do better are the low price/books with the high dividend yield. You're not talking about this **company** that is going to **win this contract**, or that is in this **sector** that is **growing**, and **political** things are changing, and you have to be careful. **So, you're not talking about the idiosyncrasies of the company**, you're talking about **the macro**. OK, **I believe that it's good to buy low price/book stocks**. ***Boom*. *There it goes*.... *then the model just does it.*** (06)

Source: (The fieldwork)

A6.4.2.3 **Utility of Multi-factor Finance Models in Equity Decision-making**

Table A6.6 presents a selection of the European fund managers' views on the usefulness of multi-factor asset pricing models when used as part of a scheme of fundamental analysis, equity valuation and/or decision-making.

Table A6.6: Utility of Multi-factor Finance Models in Equity Decision-making

Theme	Selected Evidence
Overall Attitude to Theoretical Finance Models	*Do you use **theoretical finance models** for investment decision-making?*
	Oh, no. No, **they're all wrong**. So, we think… sometimes when we're a little bit rude, we say the **financial theory must be the worst theory ever made-up**, because **nothing is correct**. **We won't use them at all** … **fund management**, 28 years later… **it's an art**… what I've been doing for a lot of my career is managing fund managers… they create things ... So, hiring and firing fund managers. So, I'm very interested in the idea of what makes a good fund manager, and 28 years later I can't tell you! (01)
Multi-Factor (Beta) Finance Models **Factors / Weighting Decision / Asset Allocation**	***How useful are extensions of the CAPM** from a single factor beta model to a multi-factor-multi-beta model such as the **Fama-French 3-factor** model or the **Carhart 4-factor momentum** model or some alternative multi-factor derivation developed in-house? They are frequently discussed in the academic literature. **Do you use multi-factor finance models for investment decision-making purposes**?*
	Not yet… that's work in the pipe-line to do that. Not yet, no, no. (07)
	Yes… 'Random Forest', eh, boosted decision trees. And the academic behind it… is a guy called Breiman. B, R, E, I, M, A, N, a statistician from Berkley. They are now becoming quite common. We have used them for about 10 years now. It's… a "**Late-Leader tool**"... like **Regression**, only… more robust. (03)
	We do have a screening, not only based on you may say '**Operating Margin Stability'** and '**Return on Equity**' and '**Cash Flow'** but also based on '**Momentum**'. So we combine all of these 'factors' into one **Screening Model**, and that is you say our '**Idea Generator**' for going further into our best research. (05)
	… the advantage of the **Quantitative Investor** is that you have a lot of time for **research** because you do not have to look every day on companies and to try to think of the future of the company So, we try to **focus my team** on the **research**. I think the **most important point** or thing is the **research** on which the **strategy** is based. And ... we try to **improve our strategies** with the **research** (04)
	What factors do you include?
	Hundreds. We've tested about **1 million factors** and come up with about **80 that are useful**. There are unusual factors, for example the **stability of income changes over time** … we aren't academics, we simply look at them; do they work, or don't they work? We tested everything that we could get our hands on. (03)
	*What makes a **"useful"** factor* or a ***"critical" success factor**?*
	[Fund manager displays a screenshot to demonstrate how different valuation models were working] … let me just pull it up… only takes a second. Basically, it says "how are different valuation models working at the moment". So, **price to book**… has negative out-performance; **operating cash flow yield** has negative performance; **enterprise value to EBIT** is positive at the

	moment; **earnings to price** is negative; **pay-out yield** is negative, **dividend yield** is negative… But the other sectors that are doing well, for example: **profitability** for Q3; **EBIT to total assets** is a very positive indicator. So, what we do is **we pick those factors that work at the current moment**... And **if they work right now, we use a higher weighting**. So, it goes into our **'weighting decision'**. So right here we can see which of our companies in our portfolios fall into this category. For example, **price to book**… We have… K + S, Mitsubishi and Trinity industries which belong into this category, so, **right now** we should have a **lower weighting on these stocks**… (03)
	We know the most **important factor [critical success factor]** of the portfolio is **asset allocation**. That means, if I **invest in stocks,** or not, **or in cash**… so that's **the most important factor**, **research on asset allocation..**. or… **Sector** and **Country allocation**. So, I think the **most important research** we did are for example the studies on **CAPE ratio**, **Schiller-Cape**, and other **Fundamental indicators**. There is our focus. So, it's not so relevant if I invest in the German Bayer or in the German BASF. It's more important if I invest in **Germany** or in **Japan**, or in **Automobile** or in **Healthcare**, or in **Cash**. And so, I would say **Asset Allocation** is the **most important thing**. (04)
Fama–French Three-factor Model	*As a **'value investor'** do you agree with **Fama & French's** approach to **'value investing'**, specifically their identification of the **'Value Premium' [Value minus Growth stocks]** and the **'Size Effect' [Small Cap minus Large Cap stocks]**?*
	Kevin, if you now look at the recently established funds, contrary to what used to take place, say like in the 90s, you no longer have many funds calling themselves as **value** whatever, or **growth** whatever. They tend to have less obvious names leading to some sort of **'style identification'**, you know. (07)
	… if you look at the **value factor strategies** at the moment, a lot of **value factor strategies** invest in **large caps.** We know that in the **large cap** area there is nearly **no value premium** over the last 10-20 years. (04)
	So, I think an investor won't get any **value premium** in the **large caps** segment in a standard **market like the US.** So, investors who… try to **capture a value premium** I think won't get this. There are more reasons for this, for example a lot of **value strategies** and **back-tests** are **equal weighted**. A lot of **ETF's** are **market weighted**. **Value strategies** in **academic research** like **Fama & French** do not have **sector** or **country** restrictions. Most of the **ETF's** have, so there are a lot of **factors** which will reduce the **value premium**. Does it matter? I think these **ETF'**s perhaps won't be a real success, but I think when an investor tries to get the **market exposure** of a **country** or a **sector** there is **no better way than an ETF**. No fund manager will offer a more attractive… also when we look at **costs** to invest in markets… and there's also not a more **liquid** possibility … I can trade **ETF's** also in **China** and **Taiwan** in a very short time with high volume. That would not be possible with stocks. **I think this advantage is the key of the success of the ETF strategy**. (04)
	And the small cap effect, I mean we do a lot of small caps. If you're really good and nimble, regardless, pretty much of industry, you can grow, you know, basically without the industry trends. I'll give you an example: we own a small XXX company that does... Now, that company… with good shareholders… acquired a part of another company that had the same turnover… so they doubled in size with one acquisition… The company they bought was not profitable. So, within 3 years they had taken the margins up to where they were themselves, right? Thanks to very strong shareholders, who, including us, said: if they need more equity, we'll give it to them, but you guys give them the loan… they can buy the company. They did get financing, and within 3 years they reached the target. So, they had taken the acquired business up to the same margin. That means for us, that's some 100% earnings per share growth… in 3 years. So, the same valuation we get 100% return, right? Now, doing that with a big company is extremely hard… if you're good, you're not a residual of the world economy, or whatever, or you can do this type of acquisition that grows the company… doubles the company in 3 years… can be done with the small caps… very hard to do with the large caps. (01)

Carhart four-factor 'Momentum' Model	*As a **'value investor'** do you agree with the **Carhart four-factor** approach to **'value investing'**, specifically their addition of the **'Momentum Factor'** in the Fama–French Three-factor Model?*
	Well, **we do not use trends in analysis**. We try to use the **'momentum effect',** so we know that companies which had an **above average performance over the last 6 to 12 months**, tend to **outperform** their benchmarks over the next year… 6 to 12 months. So, we try to find companies with a **strong momentum**, and when we **measure momentum**, we can use performance that I think are widest accepted way of the momentum criteria… we use… **relative strength** … That means actual price divided by an average price of the last 6 months or 12 months, something like this, and so we get stocks which **outperform**… We look at the lately [recent] **relative strength**… We try to find stocks with an **outperformance** over the last 6 to 12 months, and **underperformance** over the last 5 to 3 years. The stocks with long-term decline in the price, but with a **positive momentum** in the **short term** and an **undervaluation.** With this kind of stocks are… we like. (04)
	How do you use momentum models in your business?
	Yeah, it's as easy as 1, 2, and 3. **One** is of course **'Stock Price Movement'**. **Second** one is, I don't know if you call it **Momentum**, but it's... **'Volatility'**… "what **weighting decision**". **Third** one, which is very important, is **'Analysts' Revision Models'**. It's a model that **we buy**. If analysts move their revisions up… it's a pretty **good indicator**. So… you know, the stock is bottomed-out, it may take two years until the analysts re-evaluate that stock. But when they do, the stock usually moves. (03)
	Well, when I check the momentum model, I thought a bit just like using **momentum traits**… more like a technical analysis, sometimes. So, I see how much market is **overbought** or **oversold**. Some **technical indicators** are suggesting good breaking points, something like this encourages me to make… to use the momentum and make the trade. (09)
Relevance of the Value Premium **(Out-performance)**	*The accounting and finance literature frequently segment stocks according to **value** (e.g. Fama and French, 1992/3; Penman, 1992). Do out-performance investment strategies that try to capture the **value premium** continue to make sense given today's competitive markets?*
	There are +1,000 investment funds in the German market, and worldwide a lot more, and I think the great majority of this products are **unnecessary** and **doesn't produce any value**. So it wouldn't make sense, from our view, to make a product without any **outperformance** possibilities. And we think that we have some **strategies** in our company who are able to generate **outperformance on the long term**… I think what we can, for example **on a stock level**, **we can realize the value premium** in a very good way. We do not have a **large cap** only universe, we use the **mid-caps** where the **inefficiencies** are higher at the moment. We **define Value** in a **quantitative** way, **very similar to the academic definition**, so we have a value strategy which has **proven outperformance over many, many years**. (04)
Relevance of Momentum Factor Strategies **(Out-performance)**	*The finance literature frequently segment stocks according to **value** and **momentum factors** (e.g. Carhart, 1997). Do factor models that combine **value + momentum stocks** achieve out-performance over the longer term given today's competitive markets?*
	We **combine value indicators with momentum indicators.** I think this is a very **innovative** way. A lot of investors, **value investors, only focus on value.** They say 'value' is all that counts, I do not look at 'momentum'. **Momentum investors** are the opposite and **usually do not focus on value criteria**. They say **all information is reflected in price movement so it's not necessary to look at valuation. As a consequence, a lot of value investors invest too early.** We … also in the last years [recent years]… realized it was a disadvantage. **They invest too early … and value stock can decline a very long time**. (04)
	What in your view is current status of research on multi-factor models that combine value + momentum?
	If you look at **value** alone, you get hundreds of **academic research**. **Momentum** alone, hundreds of academic research. If you look at the **combination of two effects,** you have about **5 studies!** (04)

Relevance of 3–way splits according to Value-Growth-Momentum Factors (Out-performance)	*As noted, the accounting and finance literature frequently segment stocks according to **value** and **growth** factors (e.g. Fama and French, 1998; Penman, 1992). And as also noted, the finance literature frequently separates stocks according to the criteria of **value** and **momentum** (e.g. Carhart, 1997). Therefore, does a 3-way split between value-growth-momentum make more sense than either of the two-way splits mentioned? [As an aside, it was noted in the literature review chapters that the two eminent academics in question did not agree on the meaning of the terms **value** and **growth**!].*
	Value and Momentum factors are **negatively correlated.** That means, if you have a **value portfolio**, normally these stocks have a **low momentum**. If you have a **momentum** portfolio, 'normally' you have **growth** stocks or **expensive** stocks **over-weighted**. So this is a **negative correlation**… and this has some **important implications** for our future, because if you are a **Value Investor**, and you invest only according to **value indicators**, you have a portfolio with low momentum stocks. We know low momentum stocks has a high possibility of an under-valuation and high volatility. So, if he invests only in companies, **in undervalued companies with a higher or above average momentum,** perhaps **we can exclude some** pitfalls, some **negative signals**. That's **one important idea behind the combination of value and momentum**. (04)
	And also, when you come from a **momentum perspective** it's the same way. If you have a **momentum portfolio** you have the majority in **growth stocks**… or **expensive** stocks. **Expensive** stocks lead to **under-performance** and **high volatility**. If a **Momentum Investor** would exclude in our momentum portfolio, **over-valued company**, then perhaps I **can exclude some poor signals**.... **So it works from both perspectives.** (04)
ETF Market -versus- Value premium	*How does your experience of the **value premium** fit with the recent upsurge in **ETF** investment activity? That is, **why are ETF based investment strategies so apparently successful?** (04)*
	I think an investor won't get any **value premium** in the **large caps** segment in a standard **market like the US.** So, investors who are investing in these **ETF's** and try to **capture a value premium,** I think won't get this. There are more reasons for this, for example, a lot of **value strategies** and **back-tests** are **equal weighted**. A lot of **ETF's** are **market weighted**. **Value strategies** in **academic research** like **Fama & French** do not have **sector** or **country** restrictions. Most of the ETF's have, so there are **a lot of factors which will reduce the value premium**. Does it matter, **I think these ETF's are perhaps won't be a real success**, but I think when an investor tries to get the **market exposure of a country** or a **sector**, and there is **no better way than an ETF**. No fund manager will have more attractive… Or also, when we look at **costs** way to invest in markets and there's also **not a more liquid possibility,** I can trade our portfolios. **ETF's** also in **China** and **Taiwan**. In a very short time, with high volume, that would not be possible with stocks. **I think this advantage is the key of the success of the ETF strategy**. (04)
ETF Market -versus- Value + Momentum Factor Models	*How does your experience of the **momentum factor models** fit with the recent upsurge in **ETF investment** activity?*
	I think the **ETF** market will increase but we have not any more the situation that we have **ETF** just to **replicate some indices**. It would be more and more… **factor strategies -** for example **value** and **momentum**… and a lot of investors invest in these strategies at the moment. **I think a lot of these strategies won't be able to satisfy the investors.** I think there are sometimes **wrong expectations**. For example, if you look at the **value factor strategies** at the moment, a lot of **value factor strategies** invest in **large caps.** We know that, in the **large cap** area, there is nearly no **value premium** over the last 10-20 years. (04)
	*And do you think that investment strategies that combine **value** and **momentum factors** can outperform an **ETF** based strategy?*
	Yes, I think so. If not, we wouldn't do this. (04)

Source: (The fieldwork)

A6.4.3 **Utility of Accounting and Finance Theory for Managing Investment Risk**

Table A6.7 provides a selection of the European fund managers' views on the usefulness of accounting and finance theory for managing the investment risk inherent in all equity decision making. Immediately following the presentation of the evidence in Table A6.7, there is a discussion on the findings.

Table A6.7: Fund Managers Views on Risk Management in Equity Decision-making

Theme	Selected Evidence
Systemic Investment Risks	*What is **Systemic Investment Risk** and how do you manage it?*
	… **the risk is the system itself.** I think that the system doesn't work well. So **the openness of the market** and the freedom of the market **hasn't worked well in the past**. The leveraging that derivatives offer has not been at good hands, and the governments have done nothing all these years after 2008 to control it, and the **leverage has gone up instead of going down**. And I think that the risk is the system itself. **I don't feel risk from my investments as such, because I truly diversify**, **mathematically diversify**. I follow strict conditions in order to apply an **asset allocation**. And, eh, so, I don't feel something that makes me… let's say, stressful. I don't have something stressful… I really sleep. (08)
Structural Investment Risks	*What is **Structural Investment Risk** and how do you manage it?*
	China is living a structural change that I don't think investors understand... simple investors. There is a huge change that takes place in China, and it's not only now, its 5, 6 years now... But in the previous years they had this **public spending**… but now we have a little bit… **slump**. This is, eh, the one side of the coin. Because Kevin, the structure, **the real structural change**… what China is doing… macro environment. China was focused on public spending all the years before. Now, everything we see happening on the commodity markets, and the **commodity countries**, is because **China has structurally changed its views on how they want the economy to work**. They **want to produce consumption for their own good**, for their own sake, and **not produce things for the West**… for the other world. **This is the huge structural change**…(08)
	*How do you **measure it**?*
	But you can see it from the numbers, yes you can see from the numbers. Because **China** is going down because **consumption** cannot sustain the **business mode**l like **public spending** was in the past. I mean, **public spending was a huge** and **consumption is not that much**, in order to do everything for the **economy**, I mean. So, what you really see is that trade has gone down… You see the **'Baltic Dry Index'** being at 300, falling from 1200 a year ago. So, you think that, you see that the **shipping industry** is going down, you see that they're forced to sell their ships, you see that the **scrap is increasing** like… You know it's... 2015 was the second highest scrap period in the history, after 2011 to 12… Last year there was 30 million tons of scrap outside of, you know, the shipping industry. So, this is not something that has happened by chance. It's because, Ehm… China, **China was buying**, Ehm, 3… I think 3 million tons of steel from **Brazil** a year. It buys nothing. **Brazil has gone down**… Companies have gone down. **Telecom industry** has gone down…. They have created ghost cities in **China**… they have done everything! Already the construction with the infrastructure is there. But the

	people are not ready to live in there, because if you go from a wreck to a yacht, you will make the yacht a wreck, if you are not prepared to be living in a yacht… (08)
	*How do you **manage it**?*
	Really, **I'm staying a little bit away from everything** at the moment. **Risks have elevated** during the last years… couple of months, so I prefer **getting into the game and getting out when I find that prices are good enough**. I think that **Asia has some good levels at the moment**, but what happens is that **when things are bad** you don't see 'the couple', **you don't see markets performing good and markets performing bad, you see the whole markets**… all markets are moving together. So because I think that markets are currently in a difficult path, I want things to peter out a bit, and then of course there are very nice valuations at the moment in Asia and someone should look at them. **But I prefer… the world to clear… up a little bit.** (08)
	What might be the implications for Europe, America, and the West?
	A Very difficult question for someone to answer. For **America**, for U.S, it's simpler… because U.S. is controlling, let's say, most parts of the world chess. So… it can easily turn it to whatever they have imagine… **U.S**. is programming, it's **forecasting**… it's **simulating things for years to come**... and **Europe is doing nothing** like that, **because Europe is not working as one**. U.S. is, eh, for 260 years now as one. So they… all different members are working as one. **Russia**… a little bit, not in every state, you have different relation in every state, **but they decide as one** part. **Europe**, it's not there. So, Europe will have to pass through waves. I think that finally it's going to stay unite, but instead of having worse civil wars like US has in the past in order to be one, Europe will have **economic wars**, that will finally lead to the unification. That's what I believe. You will not have any blood like U.S. had, but you will have economic blood. (08)
Short-term Risks **Volatility/ Standard deviation/ beta/ R-squared/ Sharpe ratio**	*Do **short-term falls in equity values (volatility)** concern you and how do you manage it?*
	A short-term fall in value would be just **volatility**... and **you'll always have that**. And then **volatility**, is anyone good at **predicting volatility ex ante?** I don't know. It doesn't seem like it. It doesn't seem that consistent. (02)
	No, not at all. Like **financial**, like **leverage** is a relevant risk, or maybe even **liquidity** in the company is a relevant risk because that can make you go bankrupt. **Share volatility**… there's no company that's gone bankrupt because they had a volatile share… **It's not relevant**, and still we have to produce so, for **regulatory** reasons, we do have to produce reports to them with often **variance-based risk measures**. But that's for them, we don't use them... No, they're **[risk models for measuring volatility] are all wrong**. (01)
	[Volatility] **I don't care about it. I don't care about it at all.** We use it in our, eh, **portfolio optimization**. To get the right portfolio, but… ehm, I'm holding a speech this afternoon. **It's an opportunity, not a risk**. (03)
	Yes, we do, actually, we do very frequently. Mostly because, as I told you, the **intrinsic volatility** that we derive from our own **portfolio** to check how we look in terms of **risk**, is a lot of it, based on the **betas** of each stock, so… Yeah. (07)
	… **we don't measure volatility**. We don't it, **we don't find that a risk measure that's of any use to us**… anyway the computer measures the volatility fine, it's not like the risk manager manages the volatility, we don't have any limits on that or anything like that... We don't measure correlations or RR's or all that stuff. (02)
	I mean, **it's important**, because it gives you a lot of...you can say ... **windows of Opportunities** when you have the **volatility**. I mean, for example, share prices are down by 20% for no reason. It gives you a lot of **opportunities to**, you can say, **add to your position**. So, that's how we look at it... So, we, **in the long run**, **we love volatility** because that **creates opportunities**. (05)
	No… The numbers are done as far as 3 years down, but currently because of the **momentum** in the markets and the **volatilities**, we are not looking much **more than one, two years**, tops. (07)

Risk Management Techniques: **Sell side Analyst Reports / Margin of Safety Rules /** **Monitoring Balance Sheet risks, e.g. Liquidity** **Monitoring Accounting Multiples** **Monitoring Political risks** **Monitoring Macro-Economic Environment** **Monitoring Currency risks** **Monitoring Commodity Price Trends** **Monitoring Emerging Market Trends** **Monitoring GDP Growth Rates** **Monitoring Sector Risks** **Monitoring Bankruptcy or Default risks**	*What sort of risks are you looking to manage in a portfolio?*
	… a few years back… we got a big… **audit from the regulator**, and they were talking about our **risk management process** and I said: **"Well, you know... our best risk management tool is really knowing the companies and understanding what risks we take."** … Now that's not relevant if I remember the textbook, because those we **diversify away in theory**. **So specific risk** is **taken away and systematic is left**…. **but that doesn't work**. So, we have bad years and we get hit, and we can backtrack that to those **specific risks in that company** that we have not understood. (01)
	*How useful are **Sell side Analyst Reports** for managing investment risk?*
	I think **analyst's time horizon** tends not to be long enough. **Sell side time horizons** are not long enough to really worry about that question because **they normally are sticking with the next 12 months**. And they can be quite good, I mean they'll point out, you know, **what factors are weighing down the stock** or **helping**… there's nothing wrong with that... the **operational side**, they tend to have a good handle on it. (02)
	*Do you use '**Margins of Safety**' rules to manage investment risks?*
	No, we do have **'Stop Losses'** on our "***Shorts"***. And we do have a ***measure*** which we derive... **every week**, which is the **'Implied Volatility'** *within* the **portfolio**. And… from doing this for some time, **from experience**, we know that our **management of the portfolio** typically leads us to get that **implied volatility** by something like 2-3% points. So, we know the cushion that management gives us from the current numbers… in terms of volatility… the **intrinsic volatility** that we derive from **our own portfolio** to check how we look in terms of **risk**… based on the **betas** of each stock… (07)
	Yes. Yes… That's quite **important**... I mean, we, eh, look at the ***likelihood*** *of the company achieving the **estimates** we have*. (05)
	Yes. Eh, I can show you if you just want to take a look. OK. OK, ehm, for example, you see my, eh, baskets to the left… little blue lines… And, for example my **'international stock fund'**, is the third from the bottom, AAGF. And I go right over here, **fair value**. And, I get this **'EXIT sheet'**, which says: what is the **margin of safety on each of the stocks** at this moment. So, for example I did a re-valuation of "PostNL", the Dutch ... Mail company, and it's now **over-valued by 80%** and so later today we'll probably discuss **selling it off**… say we use a **discount rate of 10%**. We want to have a **margin of safety of 20%**, and as soon as the stock gets beyond **0% margin of safety**, we… have to **sell it off**. And we have it for, we have it for all our portfolios… Just to impress you a little bit… Let me just take any stocks out of my portfolio, here, like Apple at the top. And I get my valuation up in seconds. So, this is… my past 10 years and the next 10 years of Apple Corporation. And down here I have my **'Margin of Safety'** and the **valuation**. It comes from a database, and it fills these X cells once per month, so we can do 20,000 of these X cells each month… and it takes about 5 days until they're re-done each month. (03)
	Do you use accounting multiples, such as the price-earnings or price-book ratios, to measure the risk on equities?
	Yeah… I mean... obviously, **you are implicitly taking risk into account when you're looking at a company**. For example, … P/E multiples... saying that … you don't want to pay too high, eh, multiple... because it's too risky a company. Then you, **indirectly apply risk in your evaluation**. (05)
	*Do you monitor the **'balance sheet'** to manage investment risks?*
	That is something we pay much more attention to. (05)
	Yeah... We're pretty much school-booked because… up here we have a lot of, you know, **engineering** and stuff like that, and also some **natural resources**. And so... if the **operational risk** is high, then we don't like **financial risk**, you know, but we do believe in **optimal balance sheets** but… **if there is a lot of operational... very cyclical company** or whatever, we don't like to see a lot of financial risk, or… a lot of **cyclicality**… an example… coming out of Lehman at the end of 08, there's a mining company here called _XXX_. And there's copper, zinc and

	dollar, and that's basically what… what decides how much money they're going to make. And at that time, it's a high **operational risk**. At that time the company was sitting with **9 billion net debt and the credit market was closed**, the banks were pretty much closed. And we saw **re-financing risk** going forward, and that's enough for us to step away. And the reason I'm telling it is because after in 2009 when the market came back that was the single best stock in the market, but we're happy not owning the single best stock in the market, **because at the beginning of the year the risks were way too high for us**. (01)
	…there's one that's, eh, it's a **market element**, more than an **external factor**, which is the **liquidity**, so that's the one thing that is easiest to **measure,** and which we do manage most **actively**, probably. (07)
	Then, more **strategically**, what we look to **manage**, of course, is, well, right now it's a pretty obvious point in Spain, which is a **political** thing. (07)
	… the **commodity trends** in the market has been something quite important for us over the recent past. The **trends in emerging markets**, **GDP growth** deriving precisely from the commodity play... it's something which, because of the connections that most of these companies have, and because of the macro-economic environment, of course, is something which we pay a lot of attention. (07)
	… **market-related risks**… being quite **difficult to predict…** something which we are paying a lot of attention to is **currency risk**. (07)
In-house Risk Specialist	*Do you employ a **Risk Specialist** in the organization? What kind of risks is he managing?*
	Well… he's managing the risks that… we violate… our elm, **investment restrictions** essentially. (02)
	… What the manager has to do is… **understand the risks in the company is taking**… he has to look at… **sector risk**… you know… gaming before… they've been lovely… the gaming stocks. But we cannot sit with a portfolio with 30% gaming stocks. That risk becomes too high. That **sector risk** becomes too high… N**o [finance] models**, they do that by looking at how they compose the portfolio. (01)
	Yeah, we have… we tend to be quite extensive in trying to assess every sort of risk because… one of our **Funds** aims at having a volatility below 8%. So **we have to be very wary about every source of risk**. And the **Global Macro Fund**… being able to play many of those **actively**, also aims at having a low volatility. So that's the **reason** why we really tend to have quite broad reach in what we look at in terms of **risk sources**". (07)
	*Does the **Risk Manager** have some sort of checklist to help him manage every known risk facing the company?*
	No, eh. Typically, what we do is that within the **investment committees**, we identify those **sources of risk**, we discuss them, and what we do from time to time, ask from this guy, is that he **models** some sort of, how do you call it… **stress test** a situation, upon looking at an **historical period** when that particular **source of risk** was in place [play]. So, you know, trying to check whether this... were the situation to deteriorate, and enter into one of those stress periods, for that same particular same reason, how the markets fared and how would we fare against that. (07)
	*Does the **Risk Manager** manage the risks on equities?*
	Well, that's part of the analysis. **There's this whole notion that somehow returns and risk are separated**. You need one guy to make the returns and one guy to manage the risk. **It's one of the complete and utter idiocies of modern regulation**. It's so incredibly stupid that I just can't figure out how anyone could get to this point. But **you can't split the two**. How can you split the two? Unless you get a bunch of traders where they have an **incentive to bet the company** because that **makes their bonuses**, **there no downside**, OK, sure, you need a **risk manager** to keep them in check, but we have our own business here you know. **All of our money is in the fund** so when we think about the **potential of return of the company, we also have to think about the potential risk**, otherwise we're not doing our jobs.

	But the question is **what risks are people talking about?** I mean… there's no way you can get a risk manager to manage the risk of **medium-term loss on a stock**…. he does not manage **volatility** because we don't measure volatility. **We don't find that's a risk measure that's of any use to us…** anyway **the computer** measures the volatility fine. It's not like **the risk manager** manages the volatility, we don't have any limits on that or anything like that... (02)
Forecasts: **Longer term (Structural)** **Medium term (Tactical)** **Short term (Operational)**	*What **investment time-horizons** do you normally operate within when **forecasting (managing) expected investment risks and returns**?*
	Well, we typically try to make it for 3. But actually, on the **decision-making**… we've been looking less than that, we would be looking at 1 to 2 years. But the **estimates** are 3 years down the road. (07)
	It's a two-way approach, one is, you saw those spreadsheets earlier that I showed you. It has a **10-year prediction out**. So, we look at the economics of a company ten years out. Yeah, and then we see **what the current valuation is**. And, OK, **Step one**: is it cheap at the moment? **Second point**, in terms of short-term, what is the right time to buy company? We clearly look at **momentum data**… **So, if the analyst's opinion moves up**, we say it is the right valuation and the right time to buy it. So, I say we in stock picking, we are, I don't know, **fundamentalists.** In terms of **investing and waiting**; **we are opportunistic**. (03)
	Because the question cannot give the whole picture, I'll give you… I'll give you the picture in order to understand. What we are doing here is the following: First of all, you have the **long-term trends**. So, it's not only that we use three years, or four years, or even one month or 3 months' time and stuff like that. **It depends on what we're looking for**. Now, to give you the whole picture, I'll tell you this. **In order to watch and guard the long term**, the **structural strengths** on the different assets, we're going back to situations when we can see even **15 years or 20 years of track record**. So, in order to see the **structural changes**, because I don't believe in 30 years or 50 years, **we only go back to 10 or 15 years at max**… for example, think of Euro, Euribor. The structural change was when from 1 went 1 to 1.5. And then there was another structural change from 1.5 to 1. I mean, the **long-term trends**. Which is not, which is not something **tactical**, it's going to remain for a long period of time. OK. **The other thing is that, because I believe that the world is moving according to the latest developments, we have to look at data for the more near term, term-ish way, let's say**. So… let's say… when we were back in 2009, after finishing the Global Crisis of 2008 and starting really big things to change in 2009. March and mid-2009, we were… more sure that now we are in a pace of **expansion in valuations**… then **we start looking at the more**, let's say… near-ish, eh, **momentum data**... That was only a few months we were looking at. But after moving to 2012 we started increasing the time period, and when a specific event comes… let's say… **volatility**. As you said it depends **where you see the volatility specifically**. Do you see the volatility **in the whole market?** Do you see the volatility **in specific parts of the market**? Or **specific sectors**? … **Can you gather the alpha from the sectors that represent the volatility**? So, it's not something that we use… **It depends** of the **state of the economy** and the **state** of… the **sectors...** and of the **different instruments we use**. But because I want to give you an answer… I wanted to show that I do not rely on data 30 years ago… and I don't rely only on data that's two months or 3 months... which is so **short term-ish**… the picture I wanted to give you, is mid-term and the longer than mid-term time series data, but **it depends** always... (08)

Source: (The fieldwork)

Fund management firms have multi-variate legal and fiduciary obligations to fulfil in society. Many of these relate to their management of the risks associated with their equity investment decision-making practices. Consequently, firms frequently employ dedicated ‘risk specialists’ or whole risk management departments, depending on the size of the organisation. In this regard, individual fund managers are frequently tasked with important governance responsibilities also. Alongside the requisite training and expertise, fund managers are expected to demonstrate a good knowledge of the accounting and financial methods related to this function. As a corollary, Table A6.7 gives some examples of the interviewee responses to the question on the usefulness of accounting and financial methods of analysis and valuation when used to manage the risks associated with equity decision-making. We discuss five broad thematic classifications of risk and note that overall, risk management is a pervasive function within the investment management industry. However, the interviews also reveal that fund managers did not always agree on which accounting or finance method was most useful for managing risk. Nonetheless, in keeping with the previous section the interviewees demonstrated that effective risk management went hand-in-hand with their effective management of the accounting and finance fundamentals of the investment, see Penman (2011). Thus, it is impossible to completely compartmentalise the frequently over-lapping fiduciary responsibilities involved.

Systemic Investment Risk is the first theme listed in Table A6.7. It represents the risk of collapse of an entire financial system or entire market, as opposed to the risk associated with any one individual entity, group or component of a system that can be contained therein without harming the entire system (Wikipedia, 2018). For example, interviewee #08 presents the following interesting observation to help distinguish between systemic risk and other types of investment risk; “what happens is that when things are bad you don’t see 'the couple', you don’t see markets performing good and markets performing bad, you see the whole markets… all markets are moving together”. The seminal 2008 collapse of Lehman Brothers ushered in the most recent example of a systemic crisis to affect global stock markets. It is an historical fact that many individuals lost a lot of money as a result. But the question remains; could many of these losses have been avoided through better asset risk management? Some of the interviewees would appear to think so. For example, interviewee # 08 states; "... And I think that the risk is the system itself. I don't feel risk from my investments as such, because I truly diversify, mathematically diversify. I follow strict conditions in order to apply an asset allocation. And, eh, so, I don't feel something that makes me… let's say, stressful. I don't have something stressful… I really sleep". Evidently knowledge of Markowitz's (1952) portfolio selection theory is useful here.

Structural Investment Risk is the second theme listed in Table A6.7. It refers to the design of financial systems that make them vulnerable to 'shocks'. As defined by the U.S. Department of the Treasury; "Structural risks could include excessive leverage or liquidity, crowded trades, large credit concentrations, poor governance, overreliance on one or a small number of essential service providers, or data and analytical gaps" (Office of Financial Research Glossary, 2012, p.137). Interviewee #08 presented an interesting example of structural risks that relate currently to China. Within it he refers to the evident gap that separates simple investors from experienced investors. He notes that "China was focused on public spending all the years before. Now, everything we see happening on the commodity markets, and the commodity countries, is because China has structurally changed its views on how they want the economy to work. They want to produce consumption for their own good, for their own sake, and not produce things for the West… for the other world. This is the huge structural change". Interviewee #08 suggests fund managers can mitigate the effects of structural risks by switching in and out of markets when the signals indicate this is advisable. For example, he states "… I'm staying a little bit away from everything at the moment. Risks have elevated during the last… couple of months, so I prefer getting into the game and getting out when I find that prices are good [or, bad] enough". In the meantime, he advises investors to maintain a watchful eye on valuations and step back into the 'game' [markets] when valuations appear attractive and risks have normalised again. Staying with the Chinese example, interviewee #08 suggests investors can monitor the structural stability of markets like China via the following indicators: 'Baltic Dry Index', consumption and public spending levels, shipping industry activity, ship sales and scrap levels, **c**ommodity import/export volumes and prices, and infrastructure and construction industry activity. Modern finance theory can potentially play a role here also. Markowitz's (1952) portfolio selection theory is a relatively obvious example of where knowledge of finance theory can help an investor to diversify his/her unique risk exposures sensibly. Moreover, Breedon's (1979) consumption capital asset pricing model (CCAPM) is an arguably less obvious example from finance theory that can help investors to monitor a range of macro-economic activities within a country, market or sector.

Turning next to the ubiquitous theme of short-term volatility in asset prices. Table A6.7 reveals that except for one participant the majority of fund managers did not feel short-term movements in stock market prices were any cause for concern. For example, as interviewee #02 stated; "A short term fall in value would be just volatility... and you'll always have that". Likewise, interviewee #01 commented; "Share volatility… there's no company that's gone bankrupt because they had a volatile share… It's not relevant". Similarly interviewee #03 remarked; [Volatility] "I don't care about it. I don't care about it at all. We use it in our, eh, portfolio optimization. To get the right portfolio, but… ehm, I'm holding a speech this afternoon. It's an opportunity, not a risk". Contrary to the majority of participants, interviewee #07 felt that volatility was a potential cause for concern because it could adversely impact the historical beta values he regularly derived from customised time-series share price data. Specifically, he responded as follows when asked whether short-term falls in equity values (volatility) concerned him; "Yes… frequently. Mostly because, as I told you, the intrinsic volatility that we derive from our own portfolio to check how we look in terms of risk, is a lot of it, based on the betas of each stock, so… yeah". Finally, interviewee #05 commented that rather than fear volatility he welcomed it because it frequently provided good buying opportunities. He stated; "I mean, it's important, because it gives you a lot of… windows of opportunities when you have the volatility. I mean, for example, share prices are down by 20% for no reason. It gives you a lot of opportunities to, you can say, add to your position. So, that's how we look at it... So we, in the long run, we love volatility because that creates opportunities". Nonetheless, it was notable that the 'Regulator' appeared to view volatility 'risk' differently to the cohort of interview participants. As interviewee #01 stated; "and still… for regulatory reasons, we do have to produce reports to them with often variance-based risk measures. But that's for them, we don't use them... No, they're [risk models for measuring volatility] are all wrong". The above statement seems to point to reasons why 'regulators' have so often and so spectacularly missed some huge frauds, for example Enron!

Risk Management Techniques were the next theme considered in Table A6.7. Overall it was clear that for the majority of the interview participants, the risk management process is anchored in fundamental accounting analysis. As interviewee #01 stated; "… a few years back… we got a big… audit from the regulator, and they were talking about our risk management process and I said: "Well, you know... our best risk management tool is really knowing the companies and understanding what risks we take." This sentiment was echoed by the rest of the participant cohort. Some of the specific fundamental risk management techniques used by the interviewees are listed in Table A6.7. These included: 'stop losses' on long or short positions; 'margin of safety' limits and 'exit' rules re: market values compared to asset 'fair values' and their associated 'discount rates'; reading analysts' reports; utilising 'accounting multiples' (e.g. P/E or P/B ratio) to monitor asset valuations or cross-check specific items on or off the P&L or balance sheet (financial risk, liquidity risk, re-financing risk, operational risk, and default risk; monitoring general macro-economic indicators such as interest rates, employment, GDP, and consumption; monitoring commodity prices and keeping a watchful eye on economic indicators that are of specific interest or concern to the investor, e.g. the ‘Baltic Dry index’; monitoring exchange rate movements; paying attention to the general economic, political and environmental climate affecting investments; administering and managing a range of legal, regulatory and corporate governance regulations affecting investments; routinely comparing valuations across a range of benchmarks of specific interest or concern to the portfolio manager, such as: intrinsic values, market values, competitor valuations, liquidity risks, buy-side forecast estimates, sell-side forecast estimates, Annual reports, Chairman’s statement, and Director’s statements. In short, how an investor sets a specific ‘margin of safety’ threshold or whether he utilises ‘stop losses’ to mitigate investment risk will depend on his personal preferences and experience coupled with the rules of the firm. Nevertheless, aside from questions concerning choices about individual risk management techniques, the interview evidence overwhelmingly indicates that effective risk management is on the one hand inextricably linked to the performance of detailed fundamental accounting analysis, while on the other hand it is linked to modern finance theory through the judicious application of quantitative financial and statistical analysis techniques. In addition, effective risk management depends on the experience and good judgement of the investor(s) and analyst(s) whose job(s) it is to collectively manage the investment funds. To illustrate, it was noted above that interviewee #01 asserted “... our best risk management tool is really knowing the companies and understanding what risks we take." Nevertheless, the same interviewee then goes on to say “… Now that's not relevant, if I remember the textbook, because those we diversify away in theory. So specific risk is taken away and systematic is left…. but that doesn't work. So we have bad years and we get hit, and we can backtrack that to those specific risks in that company that we have not understood”. While not disagreeing (on the face of it) with this statement, there is nonetheless ample evidence in this thesis to show that diversification does work, not in all cases, but it does work. Perhaps the truth lies somewhere in the middle of these two assertions. The key (solution) will undoubtedly come down to the specific circumstances, experience and judgement of the investment manager. Another notable risk management theme related to the utility of the sell-side, i.e. the length of sell-side time horizons. Interviewee #02 asserted that analyst reports tended to be overly short-term in their focus, and consequently were not that useful for buy-side decision-making purposes. Specifically, he stated; "I think analyst's time horizon tends not to be long enough. Sell side time horizons are not long enough to really worry about that question [risk management] because they normally are sticking with the next 12 months. And they can be quite good, I mean they'll point out, you know, what factors are weighing down the stock or helping… there's nothing wrong with that... the operational side, they tend to have a good handle on it". Furthermore, the earlier interview evidence indicated that portfolio managers were indifferent to share volatility, which by definition is a short-term phenomenon of 12 months duration or less. Therefore, the short-term nature of sell-side analyst reports holds little risk management value for the buy-side. However, the flip side of this argument relates to the potential risk management appeal that longer-term sell side horizons might offer buy-side managers.

The next risk management theme listed in Table A6.7 is closely related to the preceding discussion and relates to whether the employment of a 'Risk Specialist' is likely to be useful beyond its often-obligatory regulatory function. Overall the interview evidence indicated that 'risk managers' play an important auxiliary fiduciary management role. As interviewee #02 commented; "Well… he's managing the risks that… we violate… our investment restrictions essentially". Similarly, interviewee #01 stated "… what the manager has to do is… understand the risks in the company is taking…" In the same vein interviewee #07 commented; “… we tend to be quite extensive in trying to assess every sort of risk because…” Next, in response to the question of whether a Risk Manager might be inclined to use some sort of ‘risk checklist’ to help him manage every known risk facing the company, the interview evidence indicated it was more likely that the risk specialist will routinely attend in-house ‘investment committee’ meetings in order to discuss, identify and evaluate potential risk sources facing the firm. For example, as interviewee #07 commented; “Typically, what we do is that within the investment committees, we identify those sources of risk, we discuss them, and what we do from time to time, ask from this guy, is that he models some sort of, how do you call it… stress test a situation, upon looking at an historical period when that particular source of risk was in place [play]”. Finally, interviewee #02 commented that even when a risk specialist is employed in an organisation it is nevertheless impossible to separate investment returns from investment risk for the purposes of risk management, because the two factors go hand-in-hand. Instead the interview evidence makes it apparent that the investment committee meetings are the essential platform whereby all parties to the return-risk debate can come together to examine all potential sources of risk facing the firm. In other words, ‘risk management’ is just part of fundamental analysis. For example, as interviewee #02 asserted; “There’s this whole notion that somehow returns and risk are separated. You need one guy to make the returns and one guy to manage the risk. It's one of the complete and utter idiocies of modern regulation. It's so incredibly stupid that I just can't figure out how anyone could get to this point… you can't split the two. How can you split the two?” Aside from the importance afforded to investment committee meetings as a means to mitigating levels of risk within the overall investment management space, there is another risk management mechanism that arguably transcends either the investment committee meetings or the hiring of a risk management specialist. It relates to the potential for company-wide performance-related incentive schemes to engender ‘goal congruence’ amongst investment managers and the clients they represent such that the risks borne by the investment fund are simultaneously borne by investment managers personally, albeit not necessarily in the same proportions. As interviewee #02 explains; "… we have our own business here you know. All of our money is in the fund so when we think about the potential of return of the company, we also have to think about the potential risk, otherwise we're not doing our jobs".

The next risk management theme listed in Table A6.7 relates to the length of the investment time-horizons used to forecast (manage) expected investment risks and returns. We discuss three separate cycle-lengths [long-term (structural), medium-term (tactical) and short-term (operational)] and note that overall, the length of a specific forecast horizon will always depend on the specific concerns of the individual investment manager at the time of forecasting. In short, the length of the forecasting horizon is mainly a matter of personal choice that will depend on what the individual fund manager is trying to find out. Breadth of investment knowledge and experience are important factors in these decisions. However, while individual fund managers did not always agree on specific cycle lengths, there was a general consensus amongst the interview participants that effective forecasting will usually span the operational, tactical and strategic risk exposures facing the company, industry or sector to which the fund relates. For example, interviewee #08 explained the forecasting decision-making cycle is the following way; "Because the question [*What investment time-horizons do you normally operate within when forecasting (managing) expected investment risks and returns?*] cannot give the whole picture, I'll give you… I'll give you the picture in order to understand. What we are doing here is the following: First of all, you have the long-term trends… In order to watch and guard the long term, the structural strengths on the different assets, we're going back to situations when we can see even 15 years or 20 years of track record… OK. The other thing is that, because I believe that the world is moving according to the latest developments, we have to look at data for the more near term, let's say… momentum data... only a few months… And when a specific event comes… let's say… volatility... it depends where you see the volatility specifically. Do you see the volatility in the whole market? Do you see the volatility in specific parts of the market? Or specific sectors? Can you gather the alpha from the sectors that represent the volatility? … It depends of the state of the economy and the state of… the sectors... and of the different instruments we use. But because I want to give you an answer… I wanted to show that I do not rely on data 30 years ago… and I don't rely only on data that's two months or 3 months... which is so short term-ish… the picture I wanted to give you, is mid-term and the longer term, than mid-term time series data, but it depends always..." Likewise it was notable that interviewee #07 also indicated that he followed this approach to forecasting. Specifically he stated; "Well, we typically try to make it for 3. But actually, on the decision-making… we've been looking less than that, we would be looking at 1 to 2 years. But the estimates are 3 years down the road". Finally, it was notable that interviewee #03 indicated that he also tended to firstly look at the longer-term forecast results (say, 10 years out) before proceeding to examine the more immediate short-term data. Specifically, he explained his forecasting approach was as follows; "It's a two-way approach, one is… It has a 10-year prediction out. So, we look at the economics of a company ten years out. Yeah, and then we see what the current valuation is. And, OK, step one: is it cheap at the moment? Second point, in terms of short-term, what is the right time to buy company? We clearly look at momentum data… So, if the analyst's opinion moves up, we say it is the right valuation and the right time to buy it. So, I say we in stock picking, we are, I don't know, fundamentalists. In terms of investing and waiting; we are opportunistic".

In summary, the interview evidence presented here confirmed that risk management is an important activity within the investment management industry. In keeping with previous sections, the interview evidence clearly demonstrated that it represents a decision-making framework that is firmly anchored on a thorough analysis of the fundamentals of the company, sector or economy to which the fund is exposed.

A6.5 Utility of Sell-side Research in Equity Decision-making

Table A6.8 presents a selection of the European fund managers' views on the usefulness of sell-side equity research in buy-side equity decision-making. By design it addresses Thesis Research Objective #3.

Table A6.8: Utility of Sell-side Research in Equity Decision-making

Theme	Selected Evidence
Analysts' Reports	*How useful are **Analyst's Reports** in buy-side decision making?*
	[Not useful] … Because, I think, two reasons: One is **a lot of research is made by the broker industry and they want to sell their business,** and I think that's the one important reason. The other important reason is that a lot of people think that if they do **research** about **companies** or about **sectors** or **countries**, they are able to **predict the future** and that can help in the **investment decision**. And**, I think that's normally not true**. (04)
	[Sometimes useful] … Some of them if I find something interesting, **something that I didn't know**, and **this would be influential**. (09)
	[Quite useful] Yeah. **They're quite useful**, in, ehm, let me see... if some company details, which I, you know, for example, the **'Product Mix' of the company**, which I usually don't see anywhere else, and it comes out of Analyst Reports... **'Competitive situation'**; you know what is 'cooking', **'who's competing'**, ehm, so this is on the plus side. (03)
	*Why do many Fund Managers **'bin' Analysts Reports** as soon as they receive them?*
	[Not useful] … Yeah... We have that discussion with them all the time... a lot of them are very focused on, and also evaluated on, you know, how close they were to the quarterly EPS. **That's not very interesting**. (01)
	*What does the **sell-side analyst** do that the **buy-side analyst** doesn't? Is it simply just to help you crunch the numbers or does it go beyond that?*
	[We have]… one [buy-side analyst] in that micro-cap team and he's truly dedicated to finding... interesting alternatives within that sector… maybe you don't just do the **number-crunching** yourself… you have to sort-of work with... you do some numbers yourself but the basics you take from **sell-side**. (01)
	Ultimately, it's of course our decision, and **it's our own numbers that count**. Now we will be relying a lot on all those **external resources**, to eh, derive our **initial models.** So, we'll **not be doing historical models** and that sort of thing, so we'll just ask one of these guys, typically brokers, to **provide us with their own models**, upon which we will be **making our own changes and assumptions** and making them.... you know, how do you call it…eh... improving and **make them all according to the same standards**, you know what I mean… with the **same assumptions**, and so on. **Uniform in** a sense. (07)
	It goes beyond just crunching the numbers, it's… another **'head' thinking**, it's another **head challenging you**. So, we are this team of 5 people working on this **specific fund** for instance. We have a lot of support from the **sell side,** to get us the **information**. Basically, when you do **stock picking**, what you do is you **trade on information**. Your **raw material is information**. Is not only the information, and also the **perception** of **information that the rest of the market has**. So, it's a matter of **positioning**. So if everybody knows that results will be very good, if everybody is very happy with some results, you know that if they are just in line, it will be a deception, there is no **marginal bias**. It's important that information that comes from the outside sources… not only… **ring you some bells** sometimes, but for you to understand what the positioning of the

	market is, what the average **[head] is thinking about that company**, about that **earnings season**, about whatever. Then you have your **buy side analyst** that apprehend all that information and build their own evaluation of the companies. And we work very, very close, the five of us in this case… although the **decision making** is taken by myself and the other co-manager, but it's a very **collaborative process of analysing the companies**. Because of course in this you are never 100% right, as we mentioned in the beginning of our conversation. The **accounting** is the way to start, but we know there is a lot of **limitation in everything that is accounting**, the **creativity** or something like that… The **buy side analysts** are very important for you to have an **independent** and **aligned with your interests/opinions**, because sometimes the **sell side opinion** is not aligned with your opinion. (07)
	Well let me put it this way: Right now we have, well let's say that the all of us are 6 **making sort of portfolio management and research internally** here. But at the same time, we're gaining access to 7 research teams… which totals something like 50 analysts, alright? So, it's a little bit like asking: "**Would you rather have 7 utility analysts or just one**", you know what I mean. So of course, that in the end, because the ultimate decision of course is ours, the ultimate 'opinion' will be from each and every one of us, or if that was the case to our own internal utility analyst. I mean, **the input from all these guys is certainly going to help**… **And so that's a value which it's difficult to ascertain but definitely is there**, you know. So, I mean... it's difficult for me to say if that's for the better or for the worse as the **'Management Company'**. (06)
Analysts' Valuations	*How useful are the **valuations** in **sell-side Analyst Reports**?*
	They're poor at valuation… they will just typically… value the stocks sort of from where they are in the market today, you know? (01)
	I don't care about the valuation at all. Ehm. And when I see them, they usually want to sell something to me, so I can use the stuff, eh, but, ehm, but as an indicator of when to buy or when to sell, No. (03)
Analysts' Forecasts	*How useful are the **forecasts in sell-side Analyst Reports***?
	Well we use them to check… **as a reference point**, to see if maybe we've made a mistake… time series… **estimates of earnings and cash flows**. OK, so when we forecast sales and earnings, we'll check that against the **consensus**, or maybe there's an analyst report where we think it's interesting, and we'll see if there's **something we're missing**, is there a **factor we're missing**, and so it's just… it's a way for us to make sure that we're, elm, to test our own assumptions and thoughts. (02)
	And they can be quite good, I mean they'll point out, you know, **what factors are weighing down the stock** or helping… there's nothing wrong with that… you know, the **operational side: they tend to have a good handle on it**. (02)
	I usually make my own forecasts, but if I have some companies I'm not able to do it, for reasons such as **the sector of these companies are operating in** is not a **sector** I know very much, then I may use other forecasts, just **to check whether my way of thinking is right or not**, **but I don't rely on other forecasts.** Yes, just to get an idea whether I'm thinking something very differently, and that's how we do it. (09)
	*Are the **forecasts in sell-side Analyst Reports** usually **accurate and reliable**?*
	They do good models, but they don't **forecast** that good, they **typically follow what the company says**, and they don't really make much of a **judgment towards what the company says**, and that's my feeling. (07)
	If you look at **forecast errors**… I think it's a shocking result. If you calculate **fair values** or **discounted cash flow models** and you have a forecast error of perhaps 1 and 2% at the long-term earnings growth, you get a significant impact on the fair valuation level and we have **forecast errors** of about **30% for earnings in the next year**! If you use this error in discounted cash flow models, you can justify every price level for every stock. And we also looked at **stock market predictions**: **Very big forecast errors**. (04)
	*How useful are the **time horizons in Analysts' Forecasts**?*

	I think **analyst's time horizon tends not to be long enough**. Sell side time horizons are not long enough to really worry about that question because **they normally are sticking with the next 12 months**. (02)
	Does forecast **accuracy and reliability** *in Analysts' Forecasts* depend on **Age and Experience?**
	Yes (05)
Analysts' 'Buy' or 'Sell' Ratings	*How useful are **Analysts' Buy or Sell ratings** on a stock?*
	Yeah, yeah, **the stockbroker's recommendation**... those we totally disregard. **They are useless**. (01)
	Their specific ratings, **the ratings that they give to specific stock** are not influential. (09)
	If a company is **rated Buy or Sell**... I mean the fact that a certain **broker** which we really do like and which we value a lot, ehm, values the company or rates the company 'Buy' or 'Sell' is pretty much **meaningless** to us. Of course, I will be quite interested in knowing the **reason why they may change recommendations**. Of course, that's important. The **reason why** they did **change their recommendation.** But, apart from that on a day to day basis, **the fact that there are ten buys and one sell in one company means nothing to me**. So… what you need really to do is to **understand the numbers, talk to the guy and derive your own conclusion on what he says**, rather than the tag that he put on the survey or the research… Because they tend to be quite experienced, quite seasoned inclusively [specialised] in a lot of cases. (07)
	What… I want to receive from them, the **information**... **not their opinions**, I don't care if they say it's a **buy or sell** or if the **price target** is 10 or 5, what I want… **what I value in the brokers is the depth of their analysis**… is them calling me saying "OK, I've discovered that this retail company in Poland… that the retail sales are coming down and they're doing something different…" **I appreciate all the information that I can put on my DCF to have a better quality for my cash flows**. So **that's information**... **what I value most is** not the conclusion of their work, but **their input, their field work**… (06)
	[Not useful contd.,] … We looked at **buy and sell recommendations**, if they **out-or-under-perform**, and the results are really impressive. Yes, sell recommendations generate an underperformance over the next 12 months, but in the majority **before the sell recommendations is published**. So, some **insiders' trade** and the stock is declining. But **the majority of the readers of the research** won't be able to participate on this. And we also looked at **buy recommendations** and we found that the underperformance is bigger than the sell recommendations. So, it **makes no sense to read such research, especially sell side research**. (04)
Business Idea Generation	*How useful are Analysts' Reports for **generating investment ideas**?*
	[Not useful] … Yeah, so, what we do is we find the sell-side is constantly poor at a few things, and one where they're not very good is at **idea generation**, so we don't get much help from there. (01)
Conflicts of Interest	*Do Analysts' Reports lack **independence**? [… by implication do their **Valuations, Forecasts, 'Buy' or 'Sell' Ratings, Revision Outputs** and **Commentaries** lack **independence**?]*
	Of course, no. What I meant to say was that the fact that ***almost no broker is really independent in their ratings on companies,*** ehm, says a lot. **Analysts are quite good**, so, you know, it would be ridiculous to say that they don't bring in any real sort of value. You just have to play them the right way. It's not that you follow the top line, you just have to see, you know, the numbers. (07)
	You have in a broker company a lot of **interest conflict**. You have clients which **hold stocks** you cannot give sell recommendations, sometimes, in such cases. The next thing is, as a **broker research analyst**, you have to get in good contact to the company. You won't get any contact if you **publish** a __**sell recommendation** of the company. So, the **broker research analyst** that some days ago, it's very difficult if you cover some companies to make **bad reports**. And sometimes you have an in-**house view.** And some **US companies** have problems too, with **sell recommendations of US companies**. A lot of **political conflicts** and interests, **and that in**

	combination with the main difficulty to predict the future, makes this research in my view very senseless. (04)
Risk Analysis in Analysts' Reports	*How useful are Analysts' Reports for **managing investment risks**?*
	Well, they tend to… do a poor job on, but this isn't true for all of them, but sort of on the whole… they are not very good at modelling **balance sheet risks**. I mean credit analysts are good at this, but equity analysts aren't, because it's a different focus, but **they're not great at looking at whether or not something will go bust**, could go bust, or under what circumstances it might go bust. But of course, they do it, it's not that they don't pay attention… And **I just find the cash flow estimates can be somewhat superficial**... (02)
	.No, I don't care, no, no, no. '**Competitive Risk'** or **'Market Risk'** or maybe even **'Management Risk',** but, ehm, no. (03)
	*How useful are Analysts' Reports for **managing the risk of adverse movements in equity valuations**?*
	Well… do you mean on a... sort of on a **long-term fall in value or a medium-term fall in value**? A short-term fall in value would be just **volatility**... **and you'll always have that**. And then volatility, **is anyone good at predicting volatility ex ante?** I don't know. It doesn't seem like it. It doesn't seem that consistent. And then… **risk that the company stays down for a long time? And I think analyst's time horizon tends not to be long enough**. Sell-side time horizons are not long enough to really worry about that question because they normally are sticking with the next 12 months. And they can be quite good, I mean they'll point out, you know, what factors are weighing down the stock or helping… there's nothing wrong with that… you know, the **operational side**: they tend to have a good handle on it. (02)
	*How useful is the **scope of risk analysis** in Analysts' Reports?*
	[Risk analysis] **I think that they're pretty poor there too**. What we rely on with them is if we wanted to know how this engineering company is doing right now in China, or things like that. (01)
	I believe they have **good risk analysis** about the downsides and the potential losses, so I think those that I'm using **have some risk analysis**. I'm talking about the **Business Risk**. I'm interested in the business risk of the companies I'm researching. (09)
	[Risk analysis] … that's important to us because we believe… we can prove, that **we create the most excess returns in really bad markets**. And that I think is a consequence of… we normally say like this: you have to focus on… I believe **if this will happen with this company, happens… I think it will be… worth this much**. But **you also have to focus on**, well... **if this goes wrong** or this goes wrong, or this goes wrong with the company, **how much will I lose**? **And that's very different because, depending on what kind of risks we are talking about**, you know. Well the best example is, and we don't invest in them because of it, is if you take let's say an **early stage pharmaceutical company**, you know going through some **approval process** that is really… it's a yes or no… if it's a no we lose 80% or 90% overnight. That's too big of a risk for us to take, so we never invest in them. We have to have that sort of mind-set with us into every investment. (01)
	*Do **Analysts' Reports and Commentaries** lack adequate **risk analysis**, say re the markets, industries, and the companies they're reporting on?*
	Well that's, that's still pretty much true, although recently a lot of effort has been made into changing that I would say. People now are more…, probably because of… **IPO's**, where the **SEC's of the world** ask the companies to **put in every sort of risk there is**… So **more and more they're trying to bring in a measure to the risk that each company faces.** Yeah… I wouldn't say that there's one specific… I just like to see, to re-assess, **what the overall risks are** and **where they lie** mostly, if its **regulation**…whatever… that… might be an issue for each company. (07)
[Star Analysts]	*How useful are **Institutional Investor Rankings**? Do **higher ranked 'star' analysts** tend to outperform **lower ranked 'ordinary' analysts**, for example when **picking stocks**?*
	I'm not sure, I don't know. **I don't tend to really pay much attention on the seniority** of one versus the other._Eh… We deal with them quite frequently, so we can have our own feeling,

Institutional Investor Rankings (Europe, America)	views, about how much each one of them is really worth… so it doesn't make much difference. (07)
	StarMine are our **data source** and they have … an **'Expected Surprise Model'** based on **good analyst vs. bad analyst**, so… the good analyst has an opinion, then the bad analyst will follow after a while. (03)
	*In general, do you think **sell-side Analysts can out-perform the markets?***
	No… I don't necessarily disagree… they might outperform. The thing is that, I mean… they don't take into account a lot of other constraints that we do when planning a proper portfolio. But their portfolio doesn't really comply with the rules that we have to comply with, so it's not a fair comparison. But, eh… they might … outperform, but, eh, typically I would say that, eh, in a lot of, eh, trend changes in the market they will miss it 100% of the time. (07)
Industry Knowledge	*What is your **most important source Industry Knowledge**?*
	It's mostly from the sell side analysts, it comes mostly from the **sell side analysts**… and from the **companies themselves**, so **meeting the companies**… the **top management** of the companies, most of the focus will be on knowing the **drivers of the industry than actually the figures**. OK, **when you want to know the figures, the income statement, the balance sheet of the company, you don't talk with the CEO of the company, you talk with the accounting manager, with the CFO**. And so when you talk with the… the **top management**, eh, mostly the decision makers, you are able to have **a view of the sector** and see **what the levers [the DRIVERS**] are, what are the tendencies, what are the trends... **And doing that, together with the... the sell-side** that does a little bit the same… **you are able to have a better view of your industry**. Of course, I would love to be able to read all the **publications** from the **specialist publications** for each **sector**, but I don't have time for that. I cannot read the 'Metal's Bulletin' every week. Now, that's impossible, impossible… it's really hard work and being... and try to get as much information and try to **make sensible decisions**. (06)
	It's a combination [i.e. sell-side] of them all. It's a combination of all factors. (05)
	In-house view. (05)
	It's a personal preference. Let me see… I have one guy who loves media. I have one guy who does energy… materials… whatever. I forgot to tick biotechnology, I love biotechnology as well… So we have 4 guys analysing companies and each of us has a preference… some people have settled into certain industries… there's no real limit, but we are… **our quality in picking stocks in different industry by industry**. So, one guy is very good at picking good insurance companies, but average in terms of retail. Let me show you … This is basically **our distribution of 'picks' across industries**. So… within the industry; a very good 'pick', and then… these are very bad picks in the industry. So, I can see industry by industry [that] we are relatively good in this industry or relatively bad. So, this is **measured by performance relative to Industry**, **sub-sector** and **country**, and it's an average of all four. And I find it interesting. We have no middle ground; we, either have very good companies or very bad companies, so we have no average, it's funny. (03)
	*Do you **pay for sell side research** or is it coming to you **'free of charge'** or more usually via the **trading fees you pay on transactions**?*
	Purchase the information? **Oh. No**, no. I mean, we get it for **free**. (05)
	We haven't done that yet, no. We may, you know, ask one of our **favourite analysts** for one of the companies we are interested in at that point in time, **we may ask him could you just make sure to have an updated view on this company**, you might want to call these guys up and just **check the latest, whatever, news**, and give us the feedback, if we are not quiet enough to do it on our own, you know (07)
	[Free of Charge?] **No, it's not quite like this**, but **the fund pays for it through the commissions**… You'd just spend a lot more on commissions than we do to get that kind of service. **Sometimes we embarrass them with a question and then they feel obliged to go do some research and come back with an answer**. We do spend money on information. **Not necessarily from the sell side though**. We will **pay other consultants**... **expert networks** or

	industry consultants, like with **McKenzie on the Minerals. They sell published reports, we buy that**… (02)
	Well, no... We don't do... **Well, we can ask them**… "Can you look at this" but we don't do tons of, I guess, what you would say where we direct them on what research they should do…. We pay for it with… so we've gone to an **unbundled model**, where **we separate cost for research and cost for transaction**. So, when we pay… so, when we do a… what do you call it? Is there an English word for it? It's like a… So, when we buy a stock, we ask them to specify… **if we pay them 10 basis points**… **in the commission**, **they have pre-set what**… those **10: 4 is transactions**, **6 is paying for research**. We take those 6 from them, we put in a pot, that's distributed at the end of the quarter. So, they might not get their 6, we might give them to someone else, but **we're paying for research with commission**… **with the commissions that we generate over the quarter**… Then we evaluate how, so we say, **in a given year we will pay X pounds for research**. We have a **research budget**, and then we accumulate that over the year, actually quarterly, and then at the end of every quarter we do an evaluation on the **research received**. And **that's how we allocate the money**. So **they don't know how much we'll pay them in advance**. It's a… **if we perceive them having given us a good service**, **then they'll get paid more**…. We're more part of their general service. (01)
	Well, we need extra material, we buy lots of stuff, we buy **Compustat data**, we buy **StarMine** condensed, **Analyst's opinions**, we buy **footnoted research on balance sheets,** we buy, let me see… **AlphaSense**… sometimes use, rarely use, an **outside researcher to do some industry research**. So **these are the main sources**. The **brokerage stuff** we get for ***free***. There's lots of it, but **we buy lots of numerical data**. Let me show you on my screen, let me see… this is ***StarMine*** for example. Then I use ***footnoted.com*** to look if there is anything strange in the **Annual Reports**. I use ***AlphaSense*** to find stuff in the **written report**. I use our **own system** which gives me… I'll put it up... which is generated automatically from the data that we buy at ***Compustat*** and ***StarMine***. So these are some **standard tools** that I'm using. And they're very, very good to me. (03)
	Actually, it's probably something that we may change in the near future, eh, because of course also **the new regulation that is made to come into place** may make us change that. But **for the time being we've been quite relaxed about it** because we always thought that gaining access to those sorts of things is something that which we should really value, and on the top of that we actually pay the exact same fee to all of them. And then we see ourselves as quite good client, and we hope them to see us as a good client as well. ***So, we tend to pay, hopefully not overpay that much, but we pay what we think is right for the service that we get.*** Of course, if there ever comes to a point, we're we don't get the service, either because they've just became, you know, less professional about what they do, or people moved around, or whatever, we will be trading less with them. **We'll not lower fees, we will simply execute less.** So obviously paying less overall, which might take us to a point, which with our periodic revisions of the service we get, to potentially take them out of our...the list of the brokers we use. (07)
	The way we purchase **is not exactly as others are doing**… On the asset management side… we have, eh, cooperation with… custodial banks. So by paying them, by actually… **sending them clients, we kind of… paying what we receive**… we send them clients… and we kind of… get a lot of things out of them. I mean by sending them clients they give us access to their research. **If I wasn't sending them clients, I wouldn't get access to their research**. So, when I call them to make a cooperation, I tell them that **because I will bring you clients you will give us access to the research, through your web I can go and search whatever I want and stuff like that**. (08)
	Is global diversification another reason to purchase research?
	Yeah, I mean there's logic behind it. My opinion is that there's always something to be found on the globe, if you look at it in the right place, so, if I have a wide focus, I can find stuff. If my focus is too narrow, I won't find it, so… (03)

From 'Generalist' to 'Specialist' **Industry Knowledge**	*How useful are **'Specialist' Analysts**?*
	I want sell side analysts that are able to look beyond what actually the **'Investor Relations'** tells them. I want them to go much beyond that and I value that. So, **I value specialist sell side brokers**. I value specialist… (06)
	Well, the good thing with them, the good thing with some of them, not all, but some of them, are… they know a lot about the company. You know, **they have very detailed knowledge about the company they follow**. You know, and that's where we like to... you know, so, Ok, "so how are they doing in China?" "Oh, they have a really good manager, there. They're doing great, da-da, da-da..." But **when it comes to estimates**.... Well, I mean, we're more interested than **if we have a very different opinion**, you know. **Market has one opinion, we have a very different**... **That can be interesting!** That can be interesting… (01)
	… and the **sell side…** the **good thing** that many of these guys have is that they do have **specialized analysts** into some **specific sectors**. And, because of that they can really become quite **knowledgeable about each industry,** and they typically **subscribe to the specialty magazines and publications from the sector**, which **tend to be quite extensive** by the way. And, so **that's where we extract most of the pure sectorial data** and any information, because you know, we are still **relatively small**, so to have that sort of **extensive specific resources** is something which, right now, we wouldn't consider… it's, it's really **the fact that each one of them is specializing to one industry***,* or not. So the fact that I'm looking at, say, as we said before **probably in any given year looking at 60 companies**, which are quite broad in the industries that they're from, that they're in. I mean, **I can't be an expert in all of those sectors**, obviously. And that's why it's so **important** that I can **gain access to these guys**, which only look at say… **probably in the range of 5 to 15 companies within the same sector**. And so that allows them to be **on top of every piece of news, every rumour, every little bit of information that's out there for that sector or each company within it**. And can really plug into his numbers and make a quick comment upon the changes that are implied, and that's relevant. (07)
	*Do you buy **specialist research** because you are **diversified globally**, say to get a better handle on **foreign companies in foreign markets**?*
	Yeah, I mean there's logic behind it. My opinion is that there's always something to be found on the globe, if you look at it in the right place, so, if I have a wide focus, I can find stuff. If my focus is too narrow, I won't find it, so… (03)
	*How useful are **'Generalist' Analyst Reports**?*
	... I understand … that sometimes they are more **generalists** because if you're talking about, you know, if you're talking to a **generalist European portfolio manager**, **the level of detail he's looking for is different from a guy that just does Portugal and Spain.** So, they have to adjust, they are a commercial orientated business, so **they have to adjust to their clients**, but on my side, **what I value most is not the conclusion of their work**, but **their input**, their **field work**… their field work, which is the ones **I value most**. (06)
Newly Proposed European Regulations **[Separation of Trading Commissions from Research Costs]**	*The **European Union** has proposed that **buy-side organisation** may have to **disclose the cost of sell side research separately from trading commissions**, i.e. **fund managers may have to stop disclosing both costs as a single composite sell-side fee**. **Thus fund managers may find it more difficult to justify expenditure on sell-side research the future**. Thus do you agree that **sell-side research may become less relevant in the future?***
	Yes, it's a **real problem**. I've spoken to a broker some days ago, and he said the clients are **not willing to pay any fees for research**, and their **business model** is getting more and more difficult. And I think it's not the worst development, because… I think a lot of persons waste their time by trying to predict things you cannot predict. (04)
	*If proposed **European regulation changes** regarding **commissions and research costs** come into play, I.e. where there's a **separation between the research spend and the commissions**, what effect do you think that might have on the **sell side business model?***
	Well, let me put it this way: Right now, we have, well, let's say that the all of us are 6 **making sort of portfolio management and research internally** here. But at the same time, we're

	gaining access to 7 research teams… which totals something like 50 analysts, alright? So, it's a little bit like asking: **"Would you rather have 7 utility analysts or just one?"** You know what I mean? So of course, that in the end, because the ultimate decision of course is ours, the ultimate 'opinion' will be from each and every one of us, or if that was the case to our own internal utility analyst. I mean, **the input from all these guys is certainly going to help**… **And so that's a value which it's difficult to ascertain but definitely is there**, you know. So, I mean... it's difficult for me to say if that's for the better or for the worse as the **'Management Company'**. Of course, **for the brokers, typically it will be a challenge** because the same way I'm putting from my point of view that **I will have to decide whether I am going to pay out to external managers, or I mean 'Research Houses', or I'll do it internally. If everyone decides to do it internally then there will no longer be a place or a budget for the current full-service brokers to still exist because all of them will be 'executing brokers'**. (07)
	I mean, I think it's going to really **revolution everything**. Because, of course, if the **regulator** comes to me and says: "OK, from the say 15 basis points you pay these guys you must accept that part of that is due to the access to the research team, ok. So, let's split what's being paid because of the **research** from what's the market practice in terms of **discount brokers** to just **pure execution**, right. So, let's say that they came and say: "Okay, we don't accept over 5 basis points for execution". So, the **management of the company** has to pay for the 10 basis points which are currently paying through the executions still. **So right now, it's the clients in the end that are paying for your access to the research teams**. **So that no longer can be the case and so you will have to pay it yourselves**. So, it will be… it will reach a point where you'll be asking yourself: **"Do I rather increase the number of my analysts internal, internal analysts, and use that budget for that purpose or will I really be paying external research with that same amount?" And of course, it will change a lot of the old industry. And, I think that it will be a huge issue if that ever comes to be the way that I just mentioned**. (07)
Improving the Sell-side Business Research Model	Do you think sell-side analysts *should focus more on **relationships*** as a way of improving their business model, i.e. their perceived usefulness to *investors? For example, advising clients on the outperformance potential of value momentum strategies?*
	Yes, yes, yes. OK, I see. We have some **broker, researchers** which are focused more on **relationships**. Take **JP Morgan** for example, they have a very good **fundamental research**, they publish a lot of research about **relationships** between **value** and **momentum** and **stock returns**, and this is **useful** for us, and, I like reading this, and discussing this research, but t**here are two sides of the coins**. Of course, I like it. The other side is that if a lot of people, eh… ...are doing research in this area, the **inefficiencies** will get **smaller**. So there is no need, from my perspective, that many broker firms try to start research in this area! (04)

Source: (The fieldwork)

A6.6 **Utility of Technical Analysis within the Equity Investment Management Industry in Europe**

Table A6.9 presents a selection of the European fund managers' views on the usefulness of Technical Analysis in equity decision-making.

Table A6.9: Fund Managers Views on the Usefulness of Technical Analysis

Theme	Selected Evidence
Technical Analysis	*The performance of **Technical analysis** involves the use of **charts** to examine **resistance levels**. How useful is technical analysis in equity decision-making?*
	No. No, to be honest with you I have 4 Bloomberg screens in front of me; 3 of them are full of graphs, but I don't do technical analysis... to be honest with you, I believe more on the **fundamental analysis** than on **technical analysis**. But, of course… I follow the **price momentum**, the price action and a graph is the easiest way for you to absorb that momentum; other than having numbers rolling on your screen. So a **graph** is a good way of analysing the price, the **price movements** more than the **price patterns**. To be honest with you, I know that many people disagree with this, but I have some problems with **technical analysis**. I think it's a little bit of a self-fulfilling prophecy or something like that. So, to be honest with you, I have graphs, I like to see graphs to apprehend the price action, but I don't take **decisions** based on that. I might… the only way I might look a little bit more at graphs is a little bit more for the **timing of some decisions**. For that, OK, many people follow, and you get some notions of **resistance** and **supports**. Probably for **timing**… I might be **influenced** by that, but not for the **decision** to **buy or sell a company**. (06)
	… Sometimes. So, I see how much market is **overbought** or **oversold**. Some **technical indicators** are suggesting good **breaking points,** something like this encourages me to make… to use the momentum and make the trade. (09)
	I do not try to align trend lines or something like this. I'm not sure if it works. If you see in chart, you can of course draw trend lines but it's very difficult to think these lines before you know the development of the stock price. (04)

Source: (The fieldwork)

Technical Analysts attempt to exploit historical information from past price and volume data to produce indicators (i.e. formulae) that can be used to make predictions about future price movements. These indicators can be calculated intraday, daily, and over longer periods of time (Murphy, 1999). The majority of the interviewees agreed that Technical Analysis was not that useful for the purposes of equity decision-making, at least not in the 'fundamental' sense described in this chapter. For example, interviewee #06 stated "No. No, to be honest with you I have 4 Bloomberg screens in front of me; 3 of them are full of graphs, but I don't do technical analysis... to be honest with you, I believe more on the fundamental analysis than on technical analysis”. Likewise, many academics do not give technical analysis substantial support, see for example Mitra (2011), Menkhoff (2010), Zhu & Zhou (2009), Menkhoff & Taylor (2007) and Brock (1992). Nevertheless, the majority of the practitioners did agree that it was potentially useful for maintaining a watchful eye on the ‘price action’. For example, interview #06 stated: “But, of course… I follow the price momentum, the price action and a graph is the easiest way for you to absorb that momentum; other than having numbers rolling on your screen. So a graph is a good way of analysing the price, the price movements more than the price patterns”. This fact was notably highlighted in Schulmeister (2009). In a similar vein, interviewee #09 stated; “… Sometimes…. I see how much market is overbought or oversold. Some technical indicators are suggesting good breaking points, something like this encourages me to make… to use the momentum and make the trade”. This fact was notably highlighted in Pring (2015), who describes these overbought or oversold phonomena as ‘Flow-of-Funds indicators’. On balance, the interview evidence acnowledges that technical analysis, or "charting" as it is also called, has been a part of financial practice for many decades even though as a discipline it has not received the same level of academic scrutiny and acceptance as more traditional approaches such as fundamental analysis. In some circles it is even regarded as ‘voodoo finance’ (Lo et al., 2000). Nonetheless, technical analysts continue to look towards behavioural finance theory (BFT) in the hope of receiving more widely accepted theoretical ‘legitimacy’ for technical analysis (Kirkpatrick and Dahlquist, 2015; Papathanasiou et al., 2015; Vasiliou et al., 2008; Barberis and Thaler, 2003; and Tversky and Kahneman, 1974). In this regard there have been some recent successes documeneted in the literature to indicate that new technological advances, in particular new computer algorithms, could potentially prove insightful, say for identifying a trend reversal at a relatively early stage and then riding on that trend until the weight of the evidence shows or proves that the trend has reversed, see for example Nazárioa et al. (2017), Zakamulin et al. (2016), Silva et al. (2016) and Pring (2015). But in terms of more conclusive evidence, 'the jury is out'. In conclusion, this chapter has served to demonstrate that fundamental analysis was not only quick to be adopted by the scholars of accounting and modern quantitative finance theory, it remains strongly supported in practice. However, the interview evidence also indicates that technical analysis, while still considered something of an orphan within the realm of investment management practice (Lo et al., 2000), is also weakely supported albeit (for now) the current state of its usefulness remains questionable.

Appendix 7

DESCRIPTIVE ANALYSIS:

RESPONDENT CHARACTERISTICS

A.7.1 **Introduction**

This appendix follows the same chronological order as the thesis chapter to which it relates.

A.7.2 **Sample and Methods**

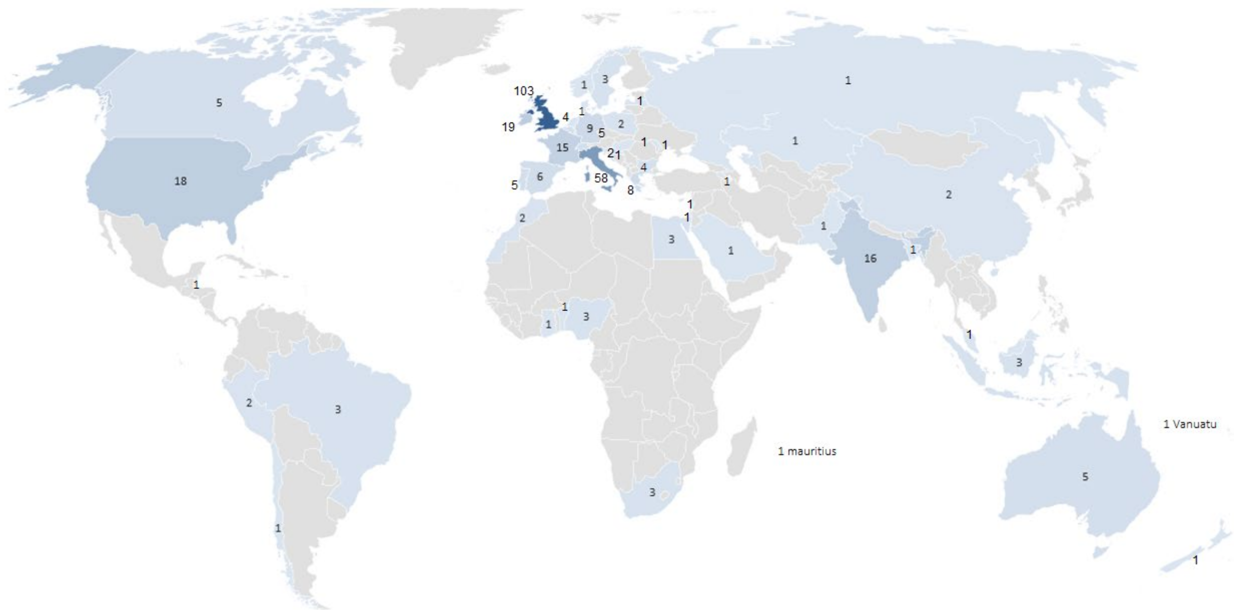

Figure A7.2: Dispersion of participant nationalities across the world map

Table A7.2: Frequency distribution showing global dispersion of respondent nationalities

h.Nationality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8 Armenia	1	.3	.3	.3
	9 Australia	5	1.5	1.5	1.8
	14 Bangladesh	1	.3	.3	2.1
	17 Belgium	4	1.2	1.2	3.3
	18 Belize	1	.3	.3	3.6
	19.Benin	1	.3	.3	3.9
	24 Brazil	3	.9	.9	4.8
	26 Bulgaria	4	1.2	1.2	6.0
	32 Canada	5	1.5	1.5	7.5
	35 Chile	1	.3	.3	7.8
	36 China	2	.6	.6	8.4
	42 Croatia	1	.3	.3	8.7
	48 Denmark	1	.3	.3	9.0
	53 Egypt	3	.9	.9	9.9
	61 France	15	4.4	4.5	14.3
	65 Germany	9	2.7	2.7	17.0
	66 Ghana	1	.3	.3	17.3
	67 Greece	8	2.4	2.4	19.7
	76 Hungary	1	.3	.3	20.0
	78 India	16	4.7	4.8	24.8
	79 Indonesia	3	.9	.9	25.7
	82 Ireland	19	5.6	5.7	31.3
	83 Israel	1	.3	.3	31.6
	84 Italy	59	17.4	17.6	49.3
	88.Kazakhstan	1	.3	.3	49.6
	94 Latvia	1	.3	.3	49.9
	95 Lebanon	1	.3	.3	50.1
	104 Malaysia	1	.3	.3	50.4
	110 Mauritius	1	.3	.3	50.7
	116 Morocco	2	.6	.6	51.3
	122 Netherlands	1	.3	.3	51.6
	123 New Zealand	1	.3	.3	51.9
	126 Nigeria	3	.9	.9	52.8
	127	1	.3	.3	53.1
	129 Pakistan	1	.3	.3	53.4
	134 Peru	2	.6	.6	54.0
	136 Poland	2	.6	.6	54.6
	137 Portugal	5	1.5	1.5	56.1
	140 Moldovia	1	.3	.3	56.4
	142 Russia	1	.3	.3	56.7
	150 Saudi Arabia	1	.3	.3	57.0
	157 Slovenia	2	.6	.6	57.6
	160 South Africa	3	.9	.9	58.5
	162 Spain	6	1.8	1.8	60.3
	168 Sweden	3	.9	.9	61.2
	169 Switzerland	6	1.8	1.8	63.0
	185 UK	105	31.0	31.3	94.3
	187 United States	18	5.3	5.4	99.7
	190 Vanuatu	1	.3	.3	100.0
	Total	335	98.8	100.0	
Missing	System	4	1.2		
Total		339	100.0		

Table A7.5.3: Crosstabulation: Education * Title

Degree Course		Portfolio manager	Buy-side analyst	Sell-side analyst	Other	Total
Other	Count	10	7	6	4	27
	% within b_Title	6.7%	7.0%	8.8%	19.0%	8.0%
Accountancy	Count	3	2	1	0	6
	% within b_Title	2.0%	2.0%	1.5%	0.0%	1.8%
Finance	Count	58	44	36	10	148
	% within b_Title	38.9%	44.0%	52.9%	47.6%	43.8%
Economics	Count	37	19	6	2	64
	% within b_Title	24.8%	19.0%	8.8%	9.5%	18.9%
Business	Count	18	12	10	4	44
	% within b_Title	12.1%	12.0%	14.7%	19.0%	13.0%
Science	Count	6	1	6	0	13
	% within b_Title	4.0%	1.0%	8.8%	0.0%	3.8%
Mathematics	Count	11	6	0	0	17
	% within b_Title	7.4%	6.0%	0.0%	0.0%	5.0%
Law	Count	0	3	0	0	3
	% within b_Title	0.0%	3.0%	0.0%	0.0%	0.9%
Healthcare	Count	0	1	0	0	1
	% within b_Title	0.0%	1.0%	0.0%	0.0%	0.3%
Computing	Count	1	0	0	0	1
	% within b_Title	0.7%	0.0%	0.0%	0.0%	0.3%
Engineering	Count	5	4	3	1	13
	% within b_Title	3.4%	4.0%	4.4%	4.8%	3.8%
Technology	Count	0	1	0	0	1
	% within b_Title	0.0%	1.0%	0.0%	0.0%	0.3%
Total	Count	149	100	68	21	338
	% within b_Title	100.0%	100.0%	100.0%	100.0%	100.0%

Table A7.6.1: Frequency Distribution Showing Investment Management Style of Respondents

		Portfolio manager	Buy-side analyst	Sell-side analyst	Other	Total
Active	Count	103	66	48	5	222
	% within b_Title	69.6%	67.3%	72.7%	26.3%	67.1%
Passive	Count	5	7	2	2	16
	% within b_Title	3.4%	7.1%	3.0%	10.5%	4.8%
Hybrid (both Passive and Active)	Count	40	25	16	12	93
	% within b_Title	27.0%	25.5%	24.2%	63.2%	28.1%
	Count	148	98	66	19	331
Total	% within b_Title	100.0%	100.0%	100.0%	100.0%	100.0%

Table A7.6.3: Frequency Distribution Showing Investment Management Genre of Respondents

		Portfolio manager	Buy-side analyst	Sell-side analyst	Other	Total
'Quant' (machine-driven)	Count	12	6	0	0	18
	% within b_Title	8.2%	6.1%	0.0%	0.0%	5.4%
'Qual' (human-driven)	Count	71	47	37	7	162
	% within b_Title	48.3%	48.0%	55.2%	36.8%	48.9%
Hybrid (both Quant & Qual)	Count	64	45	30	12	151
	% within b_Title	43.5%	45.9%	44.8%	63.2%	45.6%
	Count	147	98	67	19	331
% within b_Title	% within b_Title	100.0%	100.0%	100.0%	100.0%	100.0%

Table A7.6.4: Frequency Distribution Showing Major Motivational Influences on Investment Behaviour of Respondents

		Portfolio manager	Buy-side analyst	Sell-side analyst	Other	Total
Reflect accounting/finance methodologies learned while at university	Count	21	19	22	4	66
	% within b_Title	14.3%	19.2%	32.8%	21.1%	19.9%
Reflect the CFA program course of study	Count	16	20	11	5	52
	% within b_Title	10.9%	20.2%	16.4%	26.3%	15.7%
Reflect the investment management industry's latest innovations and alpha insights	Count	53	17	11	4	85
	% within b_Title	36.1%	17.2%	16.4%	21.1%	25.6%
Conform to your firm's prescribed "company policy" on valuation	Count	27	35	10	5	77
	% within b_Title	18.4%	35.4%	14.9%	26.3%	23.2%
Experience plus Academic Knowledge	Count	30	8	13	1	52
	% within b_Title	20.4%	8.1%	19.4%	5.3%	15.7%
Total	Count	147	99	67	19	332
	% within b_Title	100.0%	100.0%	100.0%	100.0%	100.0%

Appendix 9

STRUCTURAL EQUATION ANALYSIS

A9.1 Case and Variable Screening and Cleaning

A9.1.1 Introduction

Data ‘screening’ represents an essential first-step in all EFA, CFA and SEM designs. Without it, it is unlikely that any proposed CFA and SEM model will achieve identification and good model fit. Notably, researchers ought to expect some degree of ‘missingness’ in almost all primary survey data.

Data screening is the process of ensuring the data is ‘clean’ and ready for statistical analysis (Gaskin, 2016). As mentioned previously, it was not feasible for the author to simply impute or replace missing column variables to their mean or median values because the levels of missingness faced by the author where well beyond the acceptable thresholds outlined in the literature. In this section the author outlines how he further ‘cleaned’ the dataset in order to bring the level of missingness to within acceptable thresholds before imputing the remaining missing values and obtaining the fully completed dataset. In total 139 cases and zero variables were trimmed from the original dataset (n=339). Subsequently the author removed, but did not delete, 49 variables from the re-specified post-imputation SEM sample because the affected variables were mot needed to conduct the structural equation modelling (SEM) hypothesis testing procedures described earlier. The final SEM dataset continued 200 cases (rows) and 50 variables (columns).

A9.1.2 Case Screening – Missing Data in Rows, Unengaged Responses and Outliers

Cases refer to the rows in the data set. These were examined for missing data in the rows and unengaged responses. Missing values represent potential candidates for dismissal, i.e. removing the row from the data set. The rows were also examined for evidence of potential outliers, although outliers are more normally associated with continuous variables rather than the five-point Likert scale variables making-up almost all of the data in the sample.

A9.1.2.1 Missing Data in Rows

To identify cases and variables with missing data in rows the author used the 'Analyse – Descriptives – Frequencies' tab in IBM SPSS to create the Output File containing the frequency tables, summary statistics and histograms shown in this appendix. Summary statistical measures (min, max, percentiles, median, mode, kurtosis and skewness) were particularly useful for this purpose, also shown in this appendix. Preliminary examination of the original 339 rows (participants or cases) necessitated the removal of 80 rows from the sample, mainly because the variables associated with these cases had more than 20% of their values missing (Reifman, 2018; Gaskin, 2017; and Hair et al., 2014).

A9.1.2.2 Unengaged Responses in Rows

Unengaged responses occur when participants take the survey but aren't really paying attention to the individual questions being asked and either respond with exactly the same value for every single question or provide somewhat the same answers across all questions, for example respondents with a 3 or a 4 score on 5-point Likert scale questions. One way to detect potential unengaged responses is to embed 'attention traps' within the survey before it is sent to respondents for completion. Failing that a visual inspection of the sample data may suffice but this is usually cumbersome and time-consuming when there are as many respondents and variables to examine. Another useful way to detect potential unengaged respondents is to calculate the standard deviation of the row values of interest, whereby small to zero variances on a row indicate respondents answered either nearly the same or exactly the same value for every question in that row. In total, 23 participants demonstrated little purposeful ‘engagement’ with the survey and accordingly were removed from the sample.

A9.1.2.3 Outliers in Rows

Outliers are usually a phenomenon that occur only when the variables in a question are continuous. The Scatter/Dot plot function in SPSS Chart Builder is a useful way of detecting them. However as only ordinal or categorical nominal variables were used to administer the survey there were no continuous variables present in the sample. Nevertheless as an added step the author performed the frequently used Scatter/Dot plot procedure shown in Figure A9.1 below as a way to detect any individual question values that may have exceeded either their 5 or 7-point ordinal scale ranges. The min and max values of each variable were also examined in SPSS to further verify the absence of ordinal scale outliers in the dataset. If any outliers had been observed, they likely would have been due to data entry error(s). Additionally, the author inspected all categorical nominal variables in SPSS to affirm every variable adhered to its predetermined questionnaire code book measurement scale. No issues of concern were evident.

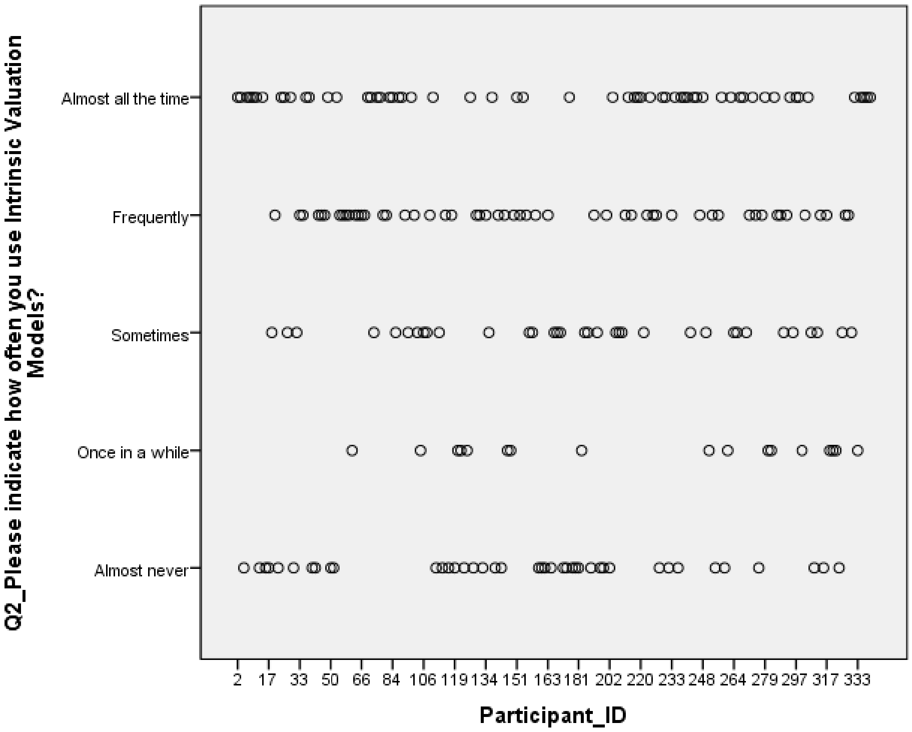

Figure A9.1: SPSS Chart Builder Scatter/Dot plot for Q2. Intrinsic Valuation Models

A9.1.3 Variable Screening - Missing Data in Columns, Skewness & Kurtosis

A9.1.3.1 Missing Data in Columns

The issue of missing data in columns has already been covered in the previous discussion on case rows.

A9.1.3.2 Skewness & Excess Kurtosis Values to determine Normality

Many statistical inference procedures require a distribution to be normal or nearly normal, otherwise the statistical test results may not make sense. This is no less true when the research plan calls for several EFA, CFA and SEM model building steps to be undertaken. Graphical methods for assessing normality include the histogram and the normality plot.

Alternatively, skewness and excess kurtosis are the two statistical measures of shape traditionally used by researchers to test for normality.

A9.1.3.3 Measures of Skewness & Excess Kurtosis to determine Normality

A normal distribution has skewness and excess kurtosis values of 0 (perfect symmetry). However for practical purposes the symmetry of any distribution is assumed to be normal so long as these values lie close to zero. But the question of what constitutes 'close' or an acceptable level of skewness and kurtosis has become something of an open issue in the literature. Bulmer (1979) for example recommends the following rules of thumb: If skewness is less than −1 or greater than +1, the distribution is highly skewed; if skewness is between −1 and −½ or between +½ and +1, the distribution is moderately skewed; if skewness is between −½ and +½, the distribution is approximately symmetric. However, there are several published thresholds that are somewhat more liberal than Bulmer's guidelines, which recommend up to +/-2.2, instead of +/-1. For example, Tabachnick & Fidell (2013) suggest that an acceptable range for skewness or kurtosis values is below +1.5 and above -1.5. George & Mallery (2010), Trochim & Donnelly (2006), Field (2009) and Gravetter and Wallnow (2012) assert that values between -2 and +2 can be considered acceptable in order to prove normal univariate distribution of a dataset. An alternative measure of symmetry suggests that the ratio of skewness and/or kurtosis to their standard error can be used as a test of normality, i.e. the test statistic measures how many standard errors separate the sample skewness or kurtosis values from zero. In such cases if the Z values lie between −2 and +2 the sample may be said to be symmetric. Otherwise, you reject normality if the ratio is less than -2 or greater than +2 (IBM Knowledge Center). An even more liberal upper threshold for normality is provided in Sposito et al. (1983), who assert that absolute values from -3 to +3 or less (rather than 1.00) should be fine for assessing normality, thus implying values over 3 are problematic. Hair et al. (2010) and Bryne (2010) argued that data should be considered normal if skewness is between -2 to +2 and Kurtosis is between -7 to +7. Finally, Yadav & Pathak (2016) cite Kline's (2011) assertion that normality using skewness and kurtosis values of 3 and 10 respectively may be viewed as acceptable, or at least that any deviation of the data from normality may not be too severe.

A9.1.3.4 Results of the Skewness & Excess Kurtosis Normality Tests of the Dataset

In order to test the normality of the distribution of the variables in the sample data collected in the online survey, as well as the constructs or factors they were purported to represent in the theoretical framework or model, the author adopted the more liberal stance suggested in Sposito et al. (1983), i.e. only skewness or kurtosis values greater than – 3 or + 3 should be considered indicative of either a negative (left) skew or a positive (right) skew in the data and therefore treated as potentially problematic. However, because most of the variables in the sample were based on Likert-type scales the author was less concerned about skewness (Gaskin, 2017). Thus the primary focus of his analysis was directed towards identifying kurtosis issues, with only cursory attention given to skewness values.

The SPSS Output File summarising the analysis demonstrated fairly 'normal' distributions were observed across most of the reflective latent factor indicators in the dataset, with only 4 variables showing signs of skewness and kurtosis issues. Additionally, there was no sign of skewness or kurtosis issues among the remaining non-latent variables (e.g., age, experience). Specifically, out of a total of 96 variables in the dataset only 4 variables appeared potentially problematic: Q.1 (e): study field; kurtosis=5.278; Q.1 (j): gender; kurtosis=8.115 and skewness=3.170; Q.3: ICAPM; kurtosis=3.779; Q14: firm specific risk factors; kurtosis =3.174. Since the two ordinal items (Q3 and Q14) were only marginally outside of the Sposito et al. (1983) recommended thresholds of -3 and +3, the author considered no further remedial action was necessary. Nevertheless, as an added precaution the author did make a note to maintain a watchful eye over these two variables during the exploratory and confirmatory factor analysis stages that followed later. In effect this meant that because both of these variables were single items belonging to a set of items that made up a reflective latent factor or construct, either one or both could always be dropped without any loss of statistical power if they became troublesome during the CFA or SEM stages.

While the evidence indicated gender was highly kurtotic (8.1159) and only marginally beyond the stated threshold for skewness (3.170), the result was nevertheless expected since the number of males (n=237) versus females (n=20) in the sample (n=257) was disproportionately high for males. For likewise reasons the 'study field' variable was also understandably highly kurtotic (n=5.278). Notably, it seemed that when deciding on a career choice the majority of the investment management respondents (n=259) favoured finance (46.3%; n=120) rather than any alternative field of academic study available to them.

In conclusion, this section on case and variable screening and cleaning has outlined how the SurveyMonkey data collected from the 339 investment management professionals who responded to the survey was 'cleaned' and subsequently how the inevitable 'missingness' that should be expected in almost all survey data was 'fixed'.

Moreover, the analysis emphasised that data must be complete, useable, reliable and valid for testing causal theory. Nonetheless, missing data is a common occurrence that can have a significant effect on the conclusions that can be drawn from the data (Hair et al., 2014). Frequently it occurs because of attrition and nonresponse, i.e. no information is provided for one or more items or for a whole construct or factor (Gaskin, 2017). Generally, missingness is classified as either: missing completely at random (MCAR), missing at random (MAR) or missing not at random (MNAR). Notably, the impact of missingness on the reliability and validity of research conclusions varies depending on which one of these classifications the researcher assumes (McKnight et al., 2007).

A9.2: Univariate Statistics – Mean, Standard Deviation and Missing Values

	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
Participant_ID	339	170.00	98.005	0	.0		
Q1_a_Institution	339	3.75	1.733	0	.0	63	76
b_Title	338	1.88	.938	1	.3		
c_Experience	338	1.67	.926	1	.3		18
d_CFA_level	104	2.94	1.189	235	69.3		
d_Degree_Type	206	1.85	.505	133	39.2	.	.
e_Education_2	338	3.05	2.245	1	.3		19
f_CFA_Years	99	2.02	.926	240	70.8		
g_Work_Country	337	142.66	54.565	2	.6		
h.Nationality	335	121.34	57.824	4	1.2		
i_Age	331	2.92	1.067	8	2.4		
j_Gender	334	1.10	.303	5	1.5	.	.
k_Genre	331	2.40	.592	8	2.4		
l_Style	331	1.61	.896	8	2.4		
m_Preferred_invsts	339	3.04	1.846	0	.0		
n_Val_Method	332	2.99	1.347	7	2.1		
Q2_Acc_Int_1	205	3.36	1.481	134	39.5		
Acc_Int_2	240	2.57	1.376	99	29.2		
Acc_Int_3	246	3.66	1.375	93	27.4		
Acc_Int_4	234	2.25	1.280	105	31.0		
Acc_Int_5	232	2.42	1.336	107	31.6		
Q2_Acc_Mtpl_1	163	3.74	1.260	176	51.9		
Acc_Mtpl_2	242	3.34	1.223	97	28.6	29	
Acc_Mtpl_3	247	3.90	1.126	92	27.1		
Acc_Mtpl_4	248	3.67	1.219	91	26.8		
Acc_Mtpl_5	238	2.76	1.359	101	29.8		
Acc_Mtpl_6	242	3.26	1.357	97	28.6		
Acc_Mtpl_7	234	3.05	1.443	105	31.0		
Acc_Mtpl_8	237	3.17	1.347	102	30.1		
Acc_Mtpl_9	212	2.69	1.436	127	37.5		
Q3_Fin_SFM_1	251	2.84	1.487	88	26.0		
Fin_SFM_2	241	1.67	1.067	98	28.9		23
Fin_SFM_3	244	2.39	1.403	95	28.0		
Fin_SFM_4	243	2.34	1.322	96	28.3		
Fin_SFM_5	239	2.01	1.237	100	29.5		
Q3_Fin_MFM_1	240	1.83	1.181	99	29.2		

Fin_MFM_2	238	1.63	1.067	101	29.8		21
Fin_MFM_3	240	1.98	1.215	99	29.2		
Fin_MFM_4	237	1.91	1.257	102	30.1		
Fin_MFM_5	238	1.45	.911	101	29.8	.	.
Fin_MFM_6	237	1.68	1.142	102	30.1		24
Q4_Freq_Anal_1	248	3.60	1.331	91	26.8		
Freq_Anal_2	249	3.54	1.263	90	26.5		
Freq_Anal_3	247	3.78	1.264	92	27.1		
Freq_Anal_4	240	2.40	1.210	99	29.2		
Freq_Anal_5	242	2.83	1.396	97	28.6		
Freq_Anal_6	239	2.27	1.179	100	29.5		
Freq_Anal_7	211	2.24	1.247	128	37.8		
Q5_PE	252	3.51	.980	87	25.7	7	
CAPE_A	238	3.11	.999	101	29.8	19	
PB_A	250	3.33	.930	89	26.3	9	
Q6_Val_Ind	249	2.03	.913	90	26.5		
Q7_Client_Reports	121	3.96	1.715	218	64.3		
Q8_QuantModels	223	3.81	1.332	116	34.2	16	24
Q9_Discussios	221	3.39	1.556	118	34.8		
Q10_Feedback	220	2.80	1.126	119	35.1		16
Q11_Trust_1	223	2.37	1.082	116	34.2		8
Trust_2	222	2.99	1.117	117	34.5		
Trust_3	221	3.20	1.167	118	34.8		
Transformed_Trust_4	223	2.56	1.160	116	34.2		16
Trust_5	221	2.92	1.237	118	34.8		
Transformed_Trust_6	220	2.45	.943	119	35.1		6
Trust_7	222	3.38	.966	117	34.5	8	
Transformed_Trust_8	220	2.54	1.022	119	35.1		1
Trust_9	223	3.63	1.009	116	34.2	8	
Q12_Anal_Freq	196	2.79	1.393	143	42.2		
Q13_Fcasts	202	3.07	1.281	137	40.4		
Q14_Risk_1	202	3.53	1.226	137	40.4	17	
Risk_2	202	3.64	1.112	137	40.4	12	
Risk_3	203	3.80	1.143	136	40.1		
Risk_4	204	4.08	1.075	135	39.8	18	
Risk_5	202	4.11	1.084	137	40.4	21	
Risk_6	202	4.40	.984	137	40.4	14	
Risk_7	203	3.17	1.340	136	40.1		
Risk_8	200	2.81	1.434	139	41.0		
Q15_FundAnal_1	202	3.89	.983	137	40.4	.	.
Transformed_FundAnal_2	204	2.89	1.144	135	39.8		
Trust_10	202	3.03	1.194	137	40.4		

DecQual_1	204	3.85	.894	135	39.8	.	.
Transformed_DecQual_2	200	2.98	1.188	139	41.0		
Trust_11	201	3.14	.872	138	40.7	8	
Trust_12	203	3.70	1.091	136	40.1	9	
Trust_13	201	2.47	1.183	138	40.7		
Timing_1	203	3.37	1.345	136	40.1		
Timing_2	203	3.40	1.069	136	40.1	11	
Transformed_FundAnal_3	202	3.12	1.236	137	40.4		
Transformed_FundAnal_4	203	3.11	1.174	136	40.1		
FundAnal_5	199	2.84	1.133	140	41.3		
Q16_Relevance_1	191	3.39	1.094	148	43.7	11	
Q17_Relevance_2	190	3.45	1.148	149	44.0	16	
Q18_Style_1	201	2.86	1.222	138	40.7		
Style_2	199	3.59	1.092	140	41.3	5	
Style_3	197	2.69	1.060	142	41.9		
Style_4	197	3.79	1.043	142	41.9	.	.
Style_5	202	2.07	1.193	137	40.4		39
Research_Costs_1	201	3.32	1.158	138	40.7		
Research_Costs_2	201	3.18	1.179	138	40.7		
Research_Costs_3	201	3.03	1.151	138	40.7		
Research_Costs_4	198	2.83	1.089	141	41.6		
Q19_Survey_Feedback	194	4.62	1.246	145	42.8	9	17
Q20_FollowUp_Survey	194	1.52	.501	145	42.8		

A9.3: Variable Summary - Level of Missingness per Question in Descending Order

Question	Missing		Valid N
	N	Percent	
Q1_(f)_If you are a CFA, how long are you fully qualified?	240	70.8%	99
Q1_(d)_What is the highest level of CFA education you have completed?	235	69.3%	104
Q7_How many clients regularly receive your Research Reports each year?	218	64.3%	121
Q2_Please indicate how often you use Accounting Valuation Multiples Models?	176	51.9%	163
Q17_How confident are you that your future research output will remain relevant to clients after Brexit?	149	44.0%	190
Q16_How confident are you that investment clients find your research output relevant?	148	43.7%	191
Q20: Would you like to participate in a follow-up Questionnaire?	145	42.8%	194
Q19: Did the questionnaire give too much detail, too little detail, or about the right amount of detail?	145	42.8%	194
Q12_How many companies do you regularly analyse each year?	143	42.2%	196
Q18_Global diversification mostly improves the return/risk/value/growth performance of investments	142	41.9%	197
Q18_High P/E (growth) stocks (e.g. SME companies) mostly outperform Low P/B (value) stocks	142	41.9%	197

Q18_EU calls for a single capital market Union (CMU) _TRANSFORMED_will likely INCREASE the competitiveness of UK analysts in Europe post-brexit?	141	41.6%	198
Q18_Small-cap stocks (small firms) mostly outperform Large-cap stocks (big firms)	140	41.3%	199
Q15_Financial Analysts' should focus on last published fundamental data?	140	41.3%	199
Q15_PE and PB_TRANSFORMED_are mostly useful for finding growth companies	139	41.0%	200
Q14_How likely are you to include 'Factor Relationship' factors in your forecasts?	139	41.0%	200
Q18_EU proposals that currently call for separately disclosure of research costs & trade commission costs will, if implemented, most likely enhance the competitive strength of EU investment firms -v- UK brokerage firms post-brexit	138	40.7%	201
Q18_ EU & US calls for enhanced 'fee transparency' are welcomed by UK Financial Analysts?	138	40.7%	201
Q18_Brokerage fees (research costs & trade commissions) _TRANSFORMED_mostly IMPROVES investors' ability to re-act to new market information?	138	40.7%	201
Q18_Actively Managed stocks mostly outperform Index Funds	138	40.7%	201
Q15_Financial Analysts' can predict future direction of stock market indices?	138	40.7%	201
Q15_Financial Analyst forecast ability improves when Shiller-CAPE is used in conjunction with traditional value indicators?	138	40.7%	201
Q18_Frequent stock trading mostly improves investment performance	137	40.4%	202
Q15_Forecasting earnings and stock returns_TRANSFORMED_is empirically POSSIBLE	137	40.4%	202
Q15_Financial Analysts' are able to make accurate predictions of future earnings & stock returns at the company level?	137	40.4%	202
Q15_Long-term earnings & equity return expectations CAN BE derived from fundamental valuation factors?	137	40.4%	202
Q14_How likely are you to include Firm-specific risk factors in your forecasts?	137	40.4%	202
Q14_How likely are you to include Industry risk factors in your forecasts?	137	40.4%	202
Q14_How likely are you to include Regional risk factors in your forecasts?	137	40.4%	202
Q14_How likely are you to include Global risk factors in your forecasts?	137	40.4%	202
Q13_Length of Time Series Forecast Horizons?	137	40.4%	202
Q15_Financial Analysts'_TRANSFORMED_ARE ABLE to make better predictions than simple econometric models?	136	40.1%	203
Q15_The timing of value investments mostly improves when momentum indicators are utilised?	136	40.1%	203
Q15_Because stock markets are subject to very strong fluctuations, market timing is critical?	136	40.1%	203
Q15_Financial Analyst forecast ability improves with age, experience and industry knowledge?	136	40.1%	203
Q14_How likely are you to include Portfolio-specific risk factors in your forecasts?	136	40.1%	203
Q14_How likely are you to include Country risk factors in your forecasts?	136	40.1%	203
Q15_Do you agree PE and PB are useful value-indicators?	135	39.8%	204
Q15_Valuation models_TRANSFORMED_produce theoretically valid & meaningful outputs?	135	39.8%	204
Q14_How likely are you to include Sector risk factors in your forecasts?	135	39.8%	204
Q2_Please indicate how often you use Intrinsic Valuation Models?	134	39.5%	205
Q1_(d)_What is the highest degree level of education you have completed?	133	39.2%	206
Q4_Please indicate how often you analyse 'Other' Equity Markets?	128	37.8%	211
Q2_Please indicate how often you use Other Accounting Valuation Multiples Models?	127	37.5%	212
Q11_'Quant' investors_Transformed_mostly attach importance to Sell-side research derived from conference calls & private meetings?	119	35.1%	220

Q11_'Quant' investors_Transformed_are mostly satisfied with sell-side Analysts' reports?	119	35.1%	220
Q10_How frequently do you adapt your research output to reflect client feedback?	119	35.1%	220
Q11_'Value' investors are mostly satisfied with sell-side Analysts' reports?	118	34.8%	221
Q11_Portfolio Managers mostly trust ''star' sell side analysts' stock recommendations?	118	34.8%	221
Q9_How often have you held private discussions with investment clients?	118	34.8%	221
Q11_'Quant' investors mostly prefer research on 'relationships' - like 'value investing', predictions, momentum, 'value traps', etc.?	117	34.5%	222
Q11_Higher_ranked sell side Analysts' mostly outperform lesser-ranked Analysts?	117	34.5%	222
Q11_Sell-side Analysts' Reports are more useful to institution investors when they combine accounting criteria with modern finance techniques?	116	34.2%	223
Q11_Portfolio Managers _Transformed_mostly trust TV & internet sell side analysts' stock recommendations?	116	34.2%	223
Q11_Sell-side Analysts' stock recommendations (stock picks) mostly outperform market indices?	116	34.2%	223
Q8_How much attention is given to quantitative financial modelling techniques?	116	34.2%	223
Q2_Please indicate how often you use Other Intrinsic Accounting Models?	107	31.6%	232
Q2_Please indicate how often you use EY Models?	105	31.0%	234
Q2_Please indicate how often you use the RIV Model?	105	31.0%	234
Q3_Please indicate how often you use Multi Factor Model_Other Multi Factor Model?	102	30.1%	237
Q3_Please indicate how often you use Multi Factor Model_Arbitrage Pricing Model (APT)?	102	30.1%	237
Q2_Please indicate how often you use DP Models?	102	30.1%	237
Q5_Please indicate the usefulness of the Shiller--Cape ratio?	101	29.8%	238
Q3_Please indicate how often you use Multi Factor Model_Inter-temporal Capital Asset Pricing Model (ICAPM)?	101	29.8%	238
Q3_Please indicate how often you use Multi Factor Model_Carhart Momentum Model?	101	29.8%	238
Q2_Please indicate how often you use PS Models?	101	29.8%	238
Q4_Please indicate how often you analyse South American companies?	100	29.5%	239
Q3_Please indicate how often you use Other SF CAPM Model?	100	29.5%	239
Q4_Please indicate how often you analyse Eastern European companies?	99	29.2%	240
Q3_Please indicate how often you use Multi Factor Model-Shiller-Cape Momentum Model (CAPE)?	99	29.2%	240
Q3_Please indicate how often you use Multi Factor Model_FF3F?	99	29.2%	240
Q2_Please indicate how often you use the DDM?	99	29.2%	240
Q3_Please indicate how often you use Single Factor Model_CCAPM?	98	28.9%	241
Q4_Please indicate how often you analyse Asian-Australian companies?	97	28.6%	242
Q2_Please indicate how often you use PC Models?	97	28.6%	242
Q2_Please indicate how often you use PB Models?	97	28.6%	242
Q3_Please indicate how often you use Single Factor Model_Momentum Pricing Model?	96	28.3%	243
Q3_Please indicate how often you use Single Factor Model_Sharpe Ratio?	95	28.0%	244
Q2_Please indicate how often you use the DCF Model?	93	27.4%	246
Q4_Please indicate how often you analyse Western European companies?	92	27.1%	247
Q2_Please indicate how often you use PE Models?	92	27.1%	247
Q4_Please indicate how often you analyse US companies?	91	26.8%	248
Q2_Please indicate how often you use EVEBITDA Models?	91	26.8%	248

Q6: Do you mostly prefer to use value-indicators (such as P/E and P/B) as?	90	26.5%	249
Q4_Please indicate how often you analyse UK companies?	90	26.5%	249
Q5_Please indicate the usefulness of the P/B ratio?	89	26.3%	250
Q3_Please indicate how often you use Single Factor Model_CAPM?	88	26.0%	251
Q5_Please indicate the usefulness of the P/E ratio?	87	25.7%	252
Q1_(l)_What is your investment management style?	8	2.4%	331
Q1_(k)_What investment management genre best describes you?	8	2.4%	331
Q1_(i)_What is your age?	8	2.4%	331
Q1_(n)_Does your choice of equity valuation method mostly?	7	2.1%	332
Q1_(j)_What is your gender?	5	1.5%	334
Q1_(h)_For what country are you a passport holder?	4	1.2%	335
Q1_(g)_In what country do you currently work?	2	0.6%	337
Q1_(e)_Which of the following best describes the field in which you received your highest degree?	1	0.3%	338
Q1_(c)_How long are you in your current position?	1	0.3%	338
Q1_(b)_What is your title/position within the company?	1	0.3%	338
Q1_(m)_What type of equity investments do you prefer?	0	0.0%	339
Q1_(a)_Please indicate the type of institution in which you work?	0	0.0%	339
Participant_ID	0	0.0%	339
* * SPSS Procedure -> Analyse -> Multiple Imputation -> Analyse Patterns ->			

Appendix 11

SURVEY QUESTIONNAIRE

University of the West of England
BRISTOL

Survey of Investment Management Professionals

Welcome to My Survey

Dear Participant,

My name is Kevin Kelly and I am a PhD candidate at The Centre for Global Finance, University of the West of England, UK. For my final project, I am conducting empirical research on European Equities and the European Investment Management industry by examining the inter-play between portfolio managers and investment analysts. That is, my study hopes to identify their choices of equity valuation models and the decision processes by which they reach their recommendations [i.e. accounting/financial] plus the influence of their personal characteristics. The empirical elements include a mix of questionnaires [buy/sell-side investment analysts] and interviews [buy-side portfolio managers] plus some econometric modelling. Please refer to the following link for confirmation of my PhD candidature status:
http://www1.uwe.ac.uk/bl/research/centreforglobalfinance/members.aspx

Because you work in the investment management industry, I am inviting you to participate in this research study by completing the attached survey. The questionnaire will require approximately 15 minutes to complete. There is no known risk for participants nor is there any compensation. However, in co-operation with the Munich Publishing Group **I am offering five randomly selected participants a hard-copy of** 'The Great Minds of Investing' **(2016) as a thank you for completing the survey. This masterful coffee-table book is beautifully illustrated and is resplendent throughout with helpful advice from such renowned investors as Warren Buffet, Hendrik Leber, Charlie Munger, Pat Dorsey, Georg von Wyss, etc; some of whom have already graciously contributed to this research study. I feel confident it will make a wonderful addition to any investment professional's literary art collection.**

In order to ensure that all information will remain confidential, please do not include your name. Participation is strictly voluntary and you may refuse to participate at any time. Copies of the project will be provided to my Bristol Business School Professors of Accounting and Finance and the Director of The Centre for Global Finance at the University of the West of England. If you have any questions about the survey, please email me: Kevin2.Kelly@live.uwe.ac.uk

Thank you for taking the time to assist me in my educational endeavours. If you would like to be entered in the free prize draw and/or receive a summary copy of the completed research study please complete the Prize Draw/Request for Completed Research Study Results Form **on Page 7 and return it to me using the email address provided.**

Sincerely,

Kevin Kelly B.Comm, MSc, ACMA, CGMA
PhD Research Department,
The Centre for Global Finance, UWE, UK.

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Survey of Investment Management Professionals

Part A – General Information

Q1: Background Questions

a. Please indicate the type of institution in which you work?

☐ Multinational Bank ☐ Stock Broker Firm ☐ Life Assurance Company Private

☐ Pension Funds ☐ Investment Funds ☐ Money Management Group

Other (please specify)

b. **What is your title/position within the company?**

○ a) Portfolio manager? ○ b) Buy-side analyst? ○ c) Sell-side analyst?

Other (please specify)

c. **How long are you in your current position?**

d. **What is the highest level of education you have completed?**

e. **Which of the following best describes the field in which you received your highest degree?**

f. **If you are a CFA, how long are you fully qualified?**

g. **In what country do you currently work?**

h. **For what country are you a passport holder?**

i. What is your age?

j. What is your gender?

Male Female

k. What investment management genre best describes you?

	'Quant' (machine-driven)	'Qual' (human-driven)	Hybrid (both Quant & Qual)
Are your investment decisions mostly based on 'Quant' or 'Qual' methods of analysis?			

l. What is your investment management style?

	Active	Passive	Hybrid (both Passive and Active)
Is your investment management approach mostly?			

m. What type of equity investments do you prefer?

	Value stocks	Growth stocks	Momentum stocks	Stocks that combine Value with Momentum	ETF's	Index funds
Do you mostly prefer?						

Other (please specify)

n. Does your choice of equity valuation method mostly?

o. Please indicate the type of industries in which you mostly specialise?

- Wholesale, Retail trade
- Electric, Oil, Gas, Coal Energy
- Water supply, Sewerage, Waste management
- Financial, Insurance activities
- Pharmaceutical, Health Care
- Agriculture, Fruticulture, Forestry, Fishing
- Metals, Iron, Steel, Artificial Limbs
- Air, Road Transport Hauliers, Storage
- Arts, Entertainment, Sports, Recreation
- Textiles, Leather
- Other Industries (please specify)
- Wood Industry, Upholstery
- Glass, Bricks, Tiles, Concrete
- Medical Services, Animal Hospitals
- Professional, Scientific, Technical activities
- Manufacturing
- Green/Bio/Wind Energy
- Nuclear Power Stations
- Education, Training
- Biotechnology
- Foods, Drinks, Tobacco
- Mining, Quarrying, Sand Pits
- Jewelers, Diamonds
- Gaming
- Chemicals, Rubber, Paints
- Printing, Paper
- Building Construction
- Real Estate activities
- Information, Communication

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Part B – Utility of Accounting and Finance Theories

Fundamental Accounting Valuation Models

(Does the fundamental analysis of a company provide information about potential future earnings and stock returns?)

Q2: ***When valuing stocks*, please indicate how often you use the following accounting models?**

	Almost all the time	Frequently	Sometimes	Once in a while	Almost never
Intrinsic Valuation Models [aka 'Fair' Value Models]	○	○	○	○	○
Dividend Discount Model (DDM)	○	○	○	○	○
Discounted Cash Flow Model (DCF or NPV)	○	○	○	○	○
Residual Income Model (RIV) [e.g. Economic Value Added - EVA]	○	○	○	○	○
Other intrinsic valuation model	○	○	○	○	○
Generic Value-Indicators [aka 'Multiples' Models]	○	○	○	○	○
Price-Book multiple (P/B model)	○	○	○	○	○
Price-Earnings multiple (P/E model)	○	○	○	○	○
Enterprise Value multiple (EV/EBITDA)	○	○	○	○	○
Price-Sales multiple (P/S model)	○	○	○	○	○
Price-Cash flow multiple (P/C model)	○	○	○	○	○
Earnings Yield multiple (E/Y model)	○	○	○	○	○
Dividend Yield multiple (D/P model)	○	○	○	○	○
Other 'multiples' valuation model	○	○	○	○	○

Please specify alternative 'multiples' and/or 'fair' value accounting model(s) used

Finance related Risk-adjusted Return Models

(Does mean reversion take place not because of changes in earnings but in prices? If so, does this enable more reliable long-term return forecasts than the classic fundamental analysis of a company's potential future earnings and stock returns?)

Q3: ***When valuing stocks*, please indicate** how often **you use the following financial models?**

	Almost all the time	Frequently	Sometimes	Once in a while	Almost never
Single-factor models Capital asset pricing model (CAPM)	◯	◯	◯	◯	◯
Consumption capital asset pricing model (CCAPM)	◯	◯	◯	◯	◯
Sharpe ratio model	◯	◯	◯	◯	◯
Momentum pricing model (e.g. current market price/average price data of previous 6 months)	◯	◯	◯	◯	◯
Extended CAPM or alternative single-factor risk-adjusted return model	◯	◯	◯	◯	◯
Multi-factor models Fama-French 3-factor model (FF3F)	◯	◯	◯	◯	◯
Carhart momentum model	◯	◯	◯	◯	◯
Shiller-Cape momentum model (CAPE)	◯	◯	◯	◯	◯
Arbitrage pricing model (APT)	◯	◯	◯	◯	◯
Inter-temporal capital asset pricing model (ICAPM)	◯	◯	◯	◯	◯
Extended Fama-French or alternative multi-factor risk-adjusted return model	◯	◯	◯	◯	◯

Please specify other 'quantitative' stock selection model(s) used

Global Stock Markets

(Opinions vary on whether the relationship between fundamental analysis and subsequent long-term earnings and stock returns is only visible at the company level or if it also exists at the sector level, in other international equity markets and in the emerging markets)

Q4: ***When valuing stocks*****, please indicate how often you analyse companies quoted on the following securities exchanges?**

	Almost always	Frequently	Sometimes	Hardly ever	Never
US Equities	○	○	○	○	○
UK Equities	○	○	○	○	○
Western European Equities	○	○	○	○	○
Eastern European Equities	○	○	○	○	○
Asian/Australian Equities	○	○	○	○	○
South American Equities	○	○	○	○	○
Other market(s)	○	○	○	○	○

Please specify alternative market(s)

Value and Growth Stocks

(The well-established 'value effect' suggests that under-valued stocks realise much greater capital growth than over-valued stocks)

Q5: ***When relating current market price to earnings and book values*****, please indicate the usefulness of P/E, P/B and the Shiller-CAPE ratios for identifying Value and Growth plus the Risk and Return in stocks?**

	Excellent indicator	Quite a good indicator	Somewhat of a good indicator	Not a good indicator	Very poor indicator
P/E	○	○	○	○	○
Shiller-CAPE	○	○	○	○	○
P/B	○	○	○	○	○

Q6: Do you mostly prefer to use value-indicators (such as P/E and P/B) as?

○ Stand-alone indicators of Risk-Return-Value-Growth

○ Risk-Return 'factors' in asset pricing models, such as the Fama & French three-factor model [used to identify the value premium] or the Carhart 4-factor model [used to identify momentum]

○ Behavioural indicators of future pessimistic/optimistic market sentiment

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Part C – Utility of Sell-side Analysts' Reports

(How influential are Analysts' Reports within the Market-place for Sell-side Equity Research in Europe?)

Q7: How many clients regularly receive your Research Reports each year?

	1-10 clients	11-20 clients	21-50 clients	51-100 clients	101-1000 clients	More than 1000 clients	N/A
Research Reports are distributed to approximately	◯	◯	◯	◯	◯	◯	◯

Q8: How much attention does your firm give to quantitative financial modeling techniques?

Q9: *In the past year,* how often have you held private discussions with investment clients (e.g. portfolio managers) in person, over the phone or Skype?

- ◯ Almost never
- ◯ Once or twice
- ◯ Every few months
- ◯ Monthly
- ◯ Weekly or more

Q10: How frequently do you adapt your research output to reflect feedback received from investment clients?

- ◯ Never
- ◯ Hardly ever
- ◯ Sometimes
- ◯ Quite often
- ◯ Extremely often

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Q11: Please indicate whether you mostly agree or disagree with the following statements?

	Strongly Disagree	Disagree	Strongly Agree	Agree	Not sure/not applicable
Sell-side Analysts' stock recommendations (stock picks) mostly **outperform** market indices	○	○	○	○	○
Higher-ranked sell-side Analysts (e.g. European Institutional Investors' Research Team Rankings) mostly outperform **lesser-ranked Analysts**	○	○	○	○	○
Portfolio Managers mostly trust the 'favourite stock' opinions of **'star'** sell-side research Analysts	○	○	○	○	○
Portfolio Managers seldom trust the **'**favourite stock' opinions of popular internet & TV based **'Star'** research analysts, e.g. Gerald Celente of the Trends Research Institute, Max Keiser of the Keiser Report, Peter Schiff, CNBC, Bloomberg, etc.,	○	○	○	○	○
'Value' investors are mostly satisfied with the content of **sell-side Analyst Reports** i.e. mostly believing they receive adequate **'fundamental knowledge'** of the firms, industries, sectors & regions of most concern to them	○	○	○	○	○
'Quant' investors are almost never satisfied with the content of **sell-side Analysts' Reports** i.e. seldom believing they receive adequate analysis of the **risk-adjusted return factors** of most concern to them	○	○	○	○	○
'Quant' investors mostly prefer research on **'relationships'** - like 'value investing', stock market predictions, price momentum, 'value traps', etc - over the classic **'fundamental analysis'** of companies, industries, sectors & regions	○	○	○	○	○
Quantitative investors seldom attach importance to sell-side research content that is derived from **conference calls** or **private meetings** with companies	○	○	○	○	○
Sell-side Analysts' Reports are likely more useful to institution investors when they **combine** fundamental **accounting criteria** with **modern finance techniques** to deliver (say) more innovative stock recommendations - eg, value-momentum strategies	○	○	○	○	○

Predicting the long-term outlook of Investment Returns

(Analysts' forecasts - earnings and cash-flow expectations, opinions, as well as buy and sell recommendations - are the basis of countless investment decisions worldwide)

Q12: How many companies do you regularly analyse each year?

Q13: Time Series Forecasts

	Less than 1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-10 years	10-15 years	More than 15 years
Do your estimates of variables normally extend over periods of?	○	○	○	○	○	○	○	○

Q14: How likely are you to include the following risk factors in your analyses and forecasts?

	Extremely likely	Very likely	Moderately likely	Slightly likely	Not at all likely
Global risk factors	○	○	○	○	○
Regional risk factors	○	○	○	○	○
Country risk factors	○	○	○	○	○
Sector risk factors	○	○	○	○	○
Industry risk factors	○	○	○	○	○
Firm-specific risk factors	○	○	○	○	○
Portfolio-specific risk factors	○	○	○	○	○
Factor Relationships (e.g. price momentum)	○	○	○	○	○

Q15: Which of the following statements do you mostly agree or disagree with?

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not sure/Not applicable
Long-term earnings and **equity return expectations** can be derived using **fundamental valuation factors**					
Most of the **commonly used valuation models** do not produce **theoretically valid**, **meaningful** or **scientifically relevant outputs**					
Financial analysts are able to make **accurate predictions** of future earnings and stock returns on a **single company** level					
PE and **PB** are useful value-indicators					
PE and **PB** are almost never useful for finding **growth companies**					
Analyst forecast **ability** mostly improves when **Shiller-CAPE** is used in conjunction with **traditional value indicators**					
Analyst forecast **accuracy** mostly improves in line with **age**, firm-specific **experience** and **industry knowledge**					
Financial analysts are able to make **accurate predictions** about the general future **direction of stock market indices**					
Because stock markets are subject to very strong fluctuations, **market timing is critical** [i.e. achievable returns mostly depend on expected market movements, upheavals & anticipated crises]					
The **timing of value investments** mostly improves when **momentum indicators** are utilised					
Forecasting earnings and **stock returns** is empirically **nearly impossible**					
Since the future is neither **foreseeable** nor **predictable**, financial analysts are mostly not able to make more accurate predictions than **simple econometric models**					
If forecasting **earnings** & **stock returns** is empirically nearly impossible, then financial analysts should mostly focus on **last published fundamental data** e.g. ttm eps and use forecasts only to help 'quant' and 'qual' investors to exclude **'value traps'**					

Q16: **How confident are you that investment clients find your research output relevant?**

- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident

Q17: **How confident are you that your future research output will remain relevant in the wake of the Brexit vote and subsequently should Brussels implement the currently proposed CMU [Capital Market Union]?**

- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident

Q18: **Please indicate whether you mostly agree or disagree with the following statements?**

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not sure/Not applicable
Actively Managed stocks mostly outperform **Index Funds**					
Small-cap stocks (small firms) mostly outperform **Large-cap** stocks (big firms)					
High P/E (*growth*) stocks (e.g. SME companies) mostly outperform **Low P/B** (*value*) stocks					
Global diversification mostly improves the **return/risk/value/growth** performance of investments					
Frequent stock trading mostly improves investment **performance**					
Brokerage fees (research costs & trade commissions) mostly **inhibit** the ability of investors to **re-act** to new market information					
UK Financial Analysts mostly welcome **US** and **EU** proposals for enhanced **'fee transparency'** and **'performance reporting transparency'** for clients of **brokerage firms**					
EU proposals that currently call for **EU brokerage firms** to separately disclose **research costs** and **trade commission costs** will, if implemented, most likely enhance the competitive strength of **EU investment firms** -v- **UK brokerage firms** post-brexit					
EU calls for a **single capital market Union (CMU)** - whereby **EU** investors/analysts can invest/market their funds/products without hindrance across borders & businesses - will most likely decrease the competitiveness of **UK analysts** in Europe post-brexit					

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Final End of Survey Questions

Thank you for completing this survey

Your feedback about this survey

Q19: Did the questionnaire give too much detail, too little detail, or about the right amount of detail?

- Much too much
- Somewhat too much
- Slightly too much
- About the right amount
- Slightly too little
- Somewhat too little
- Much too little

Q20: Would you like to participate in a follow-up Questionnaire?

- Yes
- No

At what email address would you like to be contacted?

Prize Draw / Request for Completed Research Study Results Form

Please copy and paste this form into your email and send to me using the email address provided below.

(This prize draw / request for information form is an optional part of the survey)

(Select all that apply)

- Please enter my name in the **free prize draw** for a hard-copy of "The Great Minds of Investing"
- Please send me a copy of the **research study** results sometime in 2017
- Please do not return this form with your survey. Instead, copy & paste this form along with your name and email address and return under *separate cover* to:

Kevin2.Kelly@live.uwe.ac.uk