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implications for acquirers' shareholder wealth and risk

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Mergers and Acquisitions: Implications for Acquirers' Shareholder Wealth and Risk

By

Ibrahim Yousef

July-2016

A thesis submitted in partial fulfilment of the University's requirements for the Degree of Doctor of Philosophy

Abstract

This study analyses the impact of M&As on acquiring company shareholder wealth and market risk through empirical evidence based on event study methods and cross-sectional regressions. The hypotheses investigated relate to the relevance of target status, method of payment, acquirers' bidding experience, and diversification motives. The evidence is based on a comprehensive sample of M&A transactions comprising 46,758 initial bids announced in 180 countries over the period 1977-2012, covering 88 industries. The study also investigates the relevance of deal and firm-specific factors affecting the likelihood of the success or failure of a deal once announced.

The results of the event study indicate that acquirers' abnormal returns are not influenced by uncertainty about whether the announced deals will succeed or fail, which is consistent with the efficient market hypothesis. The event study evidence also confirms that acquirers' gains are most significant in cross-border M&As with acquirers located in developed countries and targets in developing countries. Further evidence from cross-sectional regressions confirms that cross-border and cross-industry diversification yields significant announcement gains for acquirers, although in comparison with domestic and focussed deals, such deals carry a greater risk of failure. Diversification has no significant impact on acquirers' market or systematic risk.

In addition, the evidence with regard to the impact of target status and method of payment suggests that acquirers' gains are most significant in stock payment deals involving private or subsidiary targets, while stock payment deals involving publicly-listed targets yield lower returns. In general, cash payment for acquisitions serves to reduce the negative impact of acquiring public targets, while stock payment enhances the positive impact of acquiring private or subsidiary targets. Correspondingly, acquirers' market increases with the acquisition of non-public targets, while using cash payment reduces this risk. The overall findings in this regard are robust across various samples and are generally associated with the existence of information asymmetry between acquirers and targets. Finally, the findings reveal that acquirers' prior experience of bidding in M&A deals is associated with significantly lower shareholder returns for acquirers, and this also increases their risk. This finding, however, is specific to serial acquirers and generally supports the hubris motive.

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Dedication

To God,
To the Spirit of My Father,
To My Mother,
To My Beloved Wife

To My Daughters

Shahed, Tala, and Seham

For their Love, Patience, and Inspiration

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List of Abbreviations

APT	Arbitrage Pricing Theory
ARs	Abnormal Returns
CAPM	Capital Assets Pricing Model
CARs	Cumulative Abnormal Returns
CBCI	Cross-Border and Cross-Industry Deal
CBF	Cross-Border and Focussed Deals
DAF	Domestic and Focussed Deals
DCI	Domestic and Cross-Industry Deals
EMH	Efficient Markets Hypothesis
KS	Kolmogorov-Smirnov
LBOs	Leveraged Buyouts
M&As	Mergers and Acquisitions
MBOs	Management Buyouts
NAV	Net Acquisition Value
R&D	Research and Development
SIC	Standard Industrial Classification

Chapter 1: Introduction

1.1. Background

In the corporate world, businesses know they must either grow or ultimately fail. A growth path allows a company to remain competitive, create profits, and increase the wealth of its shareholders. Companies that fail to grow, however, tend to stagnate; they lose their customers and market share, and their shareholders lose their investments. Mergers and acquisitions (M&As) play an important role in this cycle by catalysing the growth of strong companies, preventing the survival of weaker ones, and rewarding entrepreneurs for their efforts. M&A transactions thus play a vital role in any healthy economy and comprise one of the primary ways in which companies are able to provide returns to their shareholders. Furthermore, such transactions have the potential to lead to exceptionally large returns, and this makes M&As especially attractive to both entrepreneurs and investors hoping to capitalise on a company's value.

Sherman and Hart (2010), for example, in their textbook 'Mergers and Acquisitions from A to Z' (3rd edition), have reported M&A deals that have created massive shareholder value. One such case involved a two-year-old technology company with only $150,000 of invested capital and no revenue which was nevertheless able to obtain a return of $13 million. Another deal involving a 30-year-old, family-run business achieved a return of almost $30 million for its shareholders. For many entrepreneurs, a merger or an acquisition provides the ultimate 'happy ending' they seek (Sherman and Hart 2010: 2).

Over the course of corporate history, M&As have played a number of different roles, from the infamous 'greed is good' mentality prevalent in the 1980s, which often involved hostile takeovers in which the acquired company was then broken apart and sold piecemeal, to the 1990s practice focussing on using M&As for purposes of industry consolidation and external growth. Nearly half of all companies in the United States were restructured during the 1980s, 80,000 were acquired/merged, and more than 700,000 were forced to seek bankruptcy protection in order to continue operating. In the 1990s, the focus switched to an emphasis on operational synergy and efficiency, the formation of strategic alliances, and obtaining access to new technologies, and this period was thus characterised by M&A transactions promoting growth and consolidation. When the technology bubble burst in 2002, however, and the ensuing global recession began, this period of corporate prosperity came to an abrupt end.

Since mid-2004, markets have seen a new surge in M&A activity, driven by certain key trends along with general economic recovery. Many businesses have found themselves no longer able to continue increasing their profitability through operational efficiency or cost-cutting and have thus begun to re-examine growth and expansion as a means to increasing shareholder returns. In addition, the return of corporate profits has provided support for the M&A market and, correspondingly, stock valuations have improved. This, in turn, has allowed public companies to acquire illiquid private target firms in exchange for stock. Finally, interest rates have continued to remain at historical lows, making even the use of debt a cost-effective way to finance M&A-based growth (Sherman and Hart 2010, Martynova and Renneboog 2009).

In general, M&As involve complex deals, and their precise impact on shareholder wealth is an area that has been debated from various perspectives in the mainstream literature. A common empirical finding is that target firm shareholders tend to achieve positive abnormal returns in connection with M&A announcements. Evidence on the average returns to acquiring companies, on the other hand, has not allowed clear conclusions to be drawn, though many researchers seem to agree that poor performance may be more commonly associated with M&A activity from this perspective (e.g. Walker 2000, Doukas, Holmen, and Travlos 2002, Martynova and Renneboog 2011, Jaffe *et al*. 2015). In other words, the evidence on acquirer returns following deal announcements is conflicting, particularly with regard to the impact of the method of payment for public vs. non-public targets, diversification, and acquirers' previous M&A experience. This study provides empirical evidence on announcement-period acquirer returns based on an extensive sample[1] of global M&A data, examining issues related to the impact of target status (i.e. public, private, subsidiary), method of payment (cash vs. stock), diversification, and acquirer bidding experience. The study also investigates the importance of these factors for acquirers' market (or systematic) risk. Additionally, the study evaluates the importance of these issues in assessing the likelihood that an M&A transaction, once announced, will be successful or not, drawing insights from the literature on why M&As ultimately succeed or fail.

[1] Compared to prior studies in the literature, as discussed further below, this study uses a much larger, global sample of M&A deals obtained from *Thomson One Banker*.

1.2. Research Problem and Motivation

Academic research has already devoted a good deal of attention to M&A activity. One line of research focusses on whether M&As tend to improve or destroy shareholder wealth, and many such studies have examined market reactions to the announcement of M&As using the event study methodology (e.g. Mullherin and Boone 2000, Kohers and Kohers 2000, Andrade, Mitchell, and Stafford 2001, Beitel, Schiereck, and Wahrenburg 2004, Choi and Russell 2004, Martynova and Renneboog 2011, Jaffe *et al*. 2015). The picture provided by the existing literature regarding the overall effects of M&As on shareholder wealth, however, is far from clear. While there is a general trend indicating that target companies tend to earn positive announcement returns, evidence on acquiring company (or bidder) returns has been quite mixed and inconclusive (Tang 2015).

Toyne and Tripp (2008) assert that empirical findings in this regard may be sensitive to the time-period selected for the event study and the corresponding market conditions. Other market-specific factors may also play a role. For example, theoretical and empirical studies on shareholder wealth have examined various deal and firm-specific characteristics associated with M&As. Most notably, the literature has related shareholder returns to (i) the method of payment used to finance the deal, distinguishing between cash or stock payment (or a combination of both), (ii) the role and nature of information asymmetry surrounding the status of target firms (whether publicly-listed or private), (iii) industry or cross-border diversification, and (iv) acquirer characteristics such as size and experience. Investigation of such relationships is typically determined by combining the event study and regression-based methods. The extant evidence relates mostly to M&A activity in the U.S. (e.g. Mulherin and Boone 2000, Walker 2000, DeLong 2001, Fuller, Netter, and Stegemoller 2002, Moller, Schinglemann, and Stulz 2004, 2007, Ismail 2008, Martinez-Jerez 2008, Santos, Errunza, and Miller 2008, Officer, Poulsen, and Stegemoller 2009, Akbulut and Matsisaka 2010, Boone, Lie, and Liu 2014, Jaffe *et al*. 2015), Europe (e.g. Doukas, Holmen, and Travlos 2002, Faccio, McConnell, and Stolin 2006, Kuipers, Miller, and Patel 2009, Raj and Uddin 2013), and other international markets combining developed and developing countries (e.g. Burns and Liebenberg 2011, Chari, Ouimet, and Tesar 2010).

Acquiring firms have often experienced negative abnormal returns associated with M&A announcements in the U.S. and slightly positive returns in Europe (DeYoung, Evanoff, and Molyneux 2009). Most of the research has focussed on the U.S. and Europe, with fewer

studies examining a combined sample of announcement return data (Beitel, Schiereck, and Wahrenburg 2004), and the wealth effects of M&As involving a variety of developed and developing markets is an area which remains underexplored. Studies involving a large, international sample covering a number of different regions are particularly lacking, and this study attempts to address the question of whether M&As improve or destroy acquiring company shareholder wealth using a global sample of M&A data. More specifically, it takes into account issues such as method of payment, target status, diversification, and acquirer bidding experience.

While most empirical studies on M&As have analysed shareholder wealth effects, a limited number of studies have examined their impact on acquirers' market or systematic risk (e.g. Lev and Mandelker 1972, Joebnk and Nielsen 1974, Chatterjee *et al*. 1992, Amihud, DeLong, and Saunders 2002, Mei and Sun 2007, Focarelli, Pozzolo, and Salleo 2008, Evripidou 2012, Bozosa, Koutmos, and Song 2013, Casu *et al*. 2015). This line of research, which combines the use of capital asset pricing models (CAPM) and risk regressions, has developed from portfolio theory, suggesting that the risk-return trade-off can be exploited via M&As owing to the tendency of both financial and non-financial firms to expand across industries and countries. However, most previous studies have investigated the impact of diversification on acquirers' risk while focussing on specific industries or country, and there is thus insufficient evidence at a global level on the implications of M&As for acquirers' market risk. This study also aims to contribute to the literature by taking advantage of a global sample of M&As and presenting new evidence on acquirers' market risk, investigating not only the impact of diversification but also other aspects of M&As, including method of payment, target status, and acquirer bidding experience.

Another dimension of M&A research relates to the pre-merger characteristics of targets and acquirers that affect their likelihood of being involved in M&As. The literature in this regard is well-established, offering evidence related to both financial and non-financial firms and focussing on specific regions, such as the USA, Europe, and Asian countries (e.g. Powell 1997, Gonzalez *et al*. 1997, Ali-Yrkko, Hyytinen, and Pajarinen 2005, Wheelock and Wilson 2004, Rossi and Volpin 2004, Focarelli and Pozollo 2001, Buch and DeLong 2004, Hannan and Pilloff 2009, Pasiouras, Tanna, and Gaganis 2011). Studies in this area have largely employed probit/logit regressions using combined samples of firms which are both involved and not involved in M&A transactions. Owing to the nature of the investigation, most of the

studies in this area have used data for completed M&A transactions only, thereby ignoring deals that ultimately did not succeed.

An interesting extension to this area of research, not explored in previous studies, is to assess the specific characteristics affecting the likelihood that M&A transactions, once announced, will ultimately succeed or fail. In this regard, it seems natural to ask whether the market reaction at the time of deal announcement reflects an expectation regarding deal completion which could be associated with specific deal or firm-level characteristics influencing shareholder returns or risk. According to the informational efficiency of markets, the market reaction at the time of a deal announcement should reflect all (publicly) available information regarding a deal, including both deal and firm-level characteristics. Conversely, if the market reflects uncertainty regarding deal completion or failure, this would be inconsistent with the efficient market hypothesis, which entails the implicit assumption that the market reaction at the time of a deal announcement is indifferent to the possibility of the deal being ultimately successful or not. Addressing this kind of enquiry requires (i) a sample of both successful (i.e. completed) and unsuccessful (i.e. terminated or cancelled) deals to avoid any sample selection bias and (ii) a combination of methods including the event study method and probit/logit regression. This represents a unique contribution to this thesis over and above the use of a global sample of M&A data, although it should be noted that this analysis is merely exploratory and purports to offer only limited evidence regarding specific deal-, firm-, and market-level characteristics.

In a broad sense, then, the problem this thesis attempts to address is whether specific characteristics of M&As (payment method, target status, diversification, and acquirer bidding experience) affect acquiring company shareholder wealth and risk. Additionally, the analysis attempts to identify which of these characteristics and other acquiring company attributes play a significant role in the probability of deal failure after announcement. The empirical analysis investigates these issues using an extensive, global sample of 46,758 M&A transactions from 180 countries and 80 industries which took place between the years 1977 and 2012.

1.3. Research Aims and Significance

The overall aim of this thesis is to provide new empirical evidence relating to the impact of M&As on (i) acquiring company shareholder wealth, (ii) acquiring company risk, and (iii) the probability of deal failure. The evidence draws on a global sample of 46,758 M&A transactions and reflects specific deal-, firm-, and country/industry-level characteristics.

Although the field of M&A is diverse and contains many unresolved issues, the empirical evidence normally relates to either industrial or financial entities, but not both at the same time, owing to their distinguishing characteristics. This distinction, however, is less important when controlling for specific industry or country-level characteristics in a global sample of M&A transactions, particularly in light of the fact that the specific hypotheses this research seeks to investigate relate to four main interrelated deal or firm-specific M&A characteristics. As stated above, these are: (a) method of payment, (b) target status, (c) diversification, and (iv) previous acquiring/bidding experience.

In principle, the specific aims of this thesis involve investigating these four main aspects of M&A transactions. While the literature has proposed a variety of motives for M&As which can have an impact on shareholder wealth, there is strong evidence based on both U.S. and European data which confirms that the method of payment used to finance a deal influences shareholder returns. Typically, three methods of payment are used by acquirers to finance M&As: stock, cash, or a combination of both. The choice between these is further motivated by the presence of information asymmetry between the two parties involved in M&As: acquirers (or bidders[2]) and targets. Theoretical research (discussed in Chapter 2) demonstrates than when the bidder and target have private information about their own intrinsic values, the presence of information asymmetry can influence the bidder's choice of payment method (i.e. cash vs. stock). The status of the target conveys a further degree of information asymmetry given that shareholders or investors generally have access to more information about publicly-listed targets (hereafter public) than non-public (i.e. private or subsidiary) targets. In this sense, bidders may be influenced by potential market reactions to the status of the target in determining their choice of payment method, which in turn may influence shareholder returns.

[2] The terms 'acquirers' and 'bidders' are used interchangeably when drawing upon relevant prior studies.

Diversification is another issue facilitated by the nature of this study's global M&A sample which cuts across both industries and countries, although the distinction drawn here is rather generic instead of sector-specific, drawing on the debate between focussed (i.e. domestic and within-industry) and diversified (i.e. cross-industry or cross-country) deals. Potential synergies from diversification include economies of scale/scope and increased market power, as well as tax or activity-based advantages, all of which can impact profitability. However, diversification guarantees neither an increase nor a decrease in shareholder wealth, and various theoretical arguments attempt to account for these uncertain effects (discussed in Chapter 2). However, diversification tends to be the main motivating factor for multinational firms seeking to achieve expansion through M&As rather than setting up subsidiaries, which influences both their shareholder returns and risk. It therefore seems appropriate to inform the academic debate with new empirical evidence highlighting the risk-return trade-offs associated with portfolio theory.

Empirical studies on M&As have also demonstrated increased interest in investigating the motives of serial acquirers by relating their previous experience of bidding to shareholder wealth. As discussed in Chapter 2, several hypotheses relate acquirers' bidding experience to performance, ranging from 'learning by doing' to 'hubris', although the number of empirical studies largely based on U.S. data tend to analyse the 'frequent bidder effect' by comparing shareholder returns associated with multiple versus single bidders. The global sample of M&As permits investigation of this issue at a broader level and also allows for investigation of the impact of acquirer bidding experience on risk.

Taking into account the above four interrelated considerations, namely (a) method of payment, (b) target status, (c) diversification, and (d) acquirer bidding experience, the empirical analysis seeks to investigate a number of hypotheses relating to the three main issues of (i) acquiring company shareholder returns, (ii) acquirers' market or systematic risk, and (iii) the probability of deal failure. As it will be discussed in Chapter 3, the existing empirical evidence regarding the aforementioned four M&A aspects relates primarily to their impact on shareholder wealth. There is also an existing body of literature relating diversification to risk, but there appears to be little or no research relating the impact of other deal characteristics, such as target status or method of payment on, for example, acquirers' risk or the probability of deal failure. This thesis therefore contributes to the literature by

presenting new evidence based on a global sample of M&A transactions combined with relevant firm-, industry-, and country-specific data to investigate the issues mentioned above.

To summarise, this thesis aims to investigate three sets of hypotheses associated with (1) acquirers' shareholder returns, (2) acquirers' market/systematic risk, and (3) the probability of deal failure. For each of these, specific sub-hypotheses will be explored in the empirical analysis which relate to the four main aspects of M&A transactions, i.e. (a) method of payment, (b) target status, (c) diversification, and (d) acquirer bidding experience.

1.4. Research Questions and Contributions

In view of the broad set of hypotheses to be investigated using a global, cross-country, and cross-industry M&A dataset, it is important to highlight the usefulness of this research. The research therefore seeks to answer the following three questions:

1. Does the cross-border and cross-industry nature of M&A data permit relevant investigation of the impact of payment method, target status, diversification, and acquirer bidding experience on acquirer shareholder wealth, acquirer market risk, and the probability of deal failure?

Given the global nature of the sample, the scope of this research is somewhat broad in terms of pursuing the same set of four hypotheses for each of the three main areas of investigation. However, the emphasis is more on the empirical analysis to provide new and robust evidence that is comparable with prior empirical literature. For example, the existing empirical literature on shareholder wealth has examined the effects of cash vs. stock as a method of payment as well as target status (public vs. private), but it has focussed mainly on the U.S. and Europe. The data collected here will therefore permit a more systematic investigation on a global scale, covering both developed and developing regions. Furthermore, investigation of the impact of cross-border M&As between developed and developing economies has been previously undertaken by only a limited number of studies, and this research will permit a broader investigation of the impact of activity and geographical diversification on both shareholder wealth and risk.

Additionally, while literature relating to shareholder wealth is abundant, the evidence pertaining to acquirers' market/systematic risk is relatively scarce. Hence, this research will

provide unique evidence relating to the impact of, for example, method of payment and/or target status on acquirers' risk, and the findings will be interpreted according to the theoretical analysis discussed in Chapter 2.

2. Does the sample of data on M&A transactions provide sufficient flexibility (in terms of scope and variability) to ensure that the evidence from the empirical analysis is robust across different sub-categories/regions?

A unique contribution of this thesis in terms of its data is the utilisation of a worldwide sample of 46,758 M&A initial bid announcements along with relevant deal-, firm-, and country-level data covering 180 countries over the period 1977-2012. While the dataset covers transactions across various industries (both financial and non-financial), more importantly for the purposes of this research, it facilitates investigation of the relevant hypotheses to establish new evidence for both developed and developing regions of the world. The majority of prior M&A research has involved small or medium sized samples.[3] Furthermore, the majority of the existing evidence on M&A transactions relates to developed countries, especially the USA. Therefore, this research is the first of its kind to include evidence for an extensive global sample of M&A data. To ensure robustness, the empirical analysis includes evidence for a variety of subsamples and event windows in order to investigate effects on shareholder wealth. In further regressions associated with all three of the main areas of investigation, robustness is pursued through a sensitivity analysis considering a set of variables which relate to specific hypotheses, as well for all variables included together, with relevant control factors. Furthermore, evidence is provided for the global sample as a whole as well as for subsamples comprising U.S. and non-U.S. acquirers.

3. Does the inclusion of unsuccessful deals in the sample represent any significant advances in terms of contributions or evidence?

Prior empirical studies on the impact of M&As have generally used only completed deals while ignoring unsuccessful deals (Mangold and Lippok 2008, Officer, Poulsen, and

[3] A majority of studies have used small samples, typically less than 1000 deals. For example, Raj and Uddin (2013) used a sample of 340 deals, Rani, Yadav, and Jain (2014) used 268 deals, and Bhabra and Huang (2013) used 136 deals. Studies involving relatively large samples include Ahern (2007) with 12,942 deals, and Moeller, Schlingemann, and Stulz (2005) who used 12,023 deals. In the middle of the spectrum, Andrade, Mitchell, and Stafford (2001) used 3,688 deals, Martynova and Renneboog (2011) used 2,149 deals, Fuller, Netter, and Stegemoller (2002) used 3,135 deals, Faccio, McConnell, and Stolin (2006) used 4,429 deals, and Jaffe *et al.* (2015) used 835 acquisitions of subsidiaries along with 2,571 acquisitions of public targets.

Stegemoller 2009, Rani, Yadav, and Jain 2014, Jaffe *et al*. 2015)[4]. Recently, however, some studies have focussed on the analysis of failed deals from various perspectives. Tang (2015), for example, analysed acquirers' termination returns in failed deals and found that acquirer gains vary significantly depending on target type. Becher, Cohn, and Juergens (2015) analysed the impact of analyst recommendations on the probability of completed deals and found that it increases (decreases) along with the favourability of acquirer (target) recommendations. Malmendier, Opp, and Saidi (2016) analysed unsuccessful takeover bids and found that the targets of cash offers are revalued on average by +15% after deal failure, whereas stock-funded targets returned to their pre-announcement levels. No prior studies, however, have analysed the impact of these attributes on the probability of deal failure. In a sense, this aspect of research is still in its infancy, and this study will add new evidence to the literature by using a combined sample of both successful and unsuccessful deals.

Given the uncertainty about whether a deal, once announced, will be successful or not, it is useful to ask whether the market reaction at the time of deal announcements reflects an expectation regarding deal failure. This may itself be associated with the specific deal in question or other characteristics influencing acquirer returns or risk. Using probit regressions, the results will show that certain deal characteristics which improve shareholder returns (such as non-public targets) will also improve the chances of completed deals.

1.5. Organisation of Study

The rest of this thesis is organised into the following chapters. Chapter two discusses a broad list of rationales which have been proposed as motives for M&A transactions, along with the relevant underlying theories. In addition, the chapter presents theoretical arguments regarding the relevance of method of payment, target status, bidder experience, and diversification to shareholder wealth. Finally, the typical underlying causes of M&A failure are briefly outlined.

Chapter 3 complements the previous chapter by focussing on the empirical evidence related to the theoretical issues already discussed. More specifically, the purpose of Chapter 3 is to review the existing evidence on the relevance of target status, payment method, acquirer

[4] Moeller, Schlingemann, and Stulz (2004: 205) indicated that "to estimate the shareholder gains from acquisitions, we consider successful and unsuccessful acquisition announcements to investigate whether this focus introduces a bias in our analysis and find that it does not".

experience, and diversification to shareholder wealth. Finally, the chapter discusses the evidence regarding the impact of M&A transactions on acquirers' risk.

Chapter 4 describes the methodology used in the empirical analysis. The first of these is the use of the event study methodology to analyse the impact of M&As on acquiring company shareholder returns, taking into account the primary assumptions used to calculate cumulative abnormal returns. Then, the chapter outlines the empirical strategy regarding the three sets of hypotheses related to (1) acquiring company shareholder returns, (2) acquirer risk, and (3) the probability of deal failure. Each of these hypotheses includes a number of sub-hypotheses based on the four main aspects of M&A deals: method of payment, target status, diversification, and acquirer bidding experience.

The research methodology used to test these various hypotheses draws a distinction between univariate and multivariate analysis. Univariate analysis deals with the relationship between two groups of variables (i.e. dependent and independent variables) and uses both parametric and non-parametric tests to account for the continuous and discrete sets of variables included in the analysis. Multivariate analysis involves more than two variables and uses regression analysis along with a parametric approach to hypothesis testing. Chapter four also includes a discussion of the sampling procedure used for data collection and a preliminary empirical analysis to highlight the global trends in the field of M&A. Finally, the chapter undertakes some pre-regression testing of the cross-sectional data to examine the validity of the underlying assumptions.

Chapter 5 begin with the first empirical analysis relating to the impact of M&As on acquirer shareholder returns, presenting evidence from both the event study and CAR regressions. The analysis focusses on investigating the four main hypotheses relating to target status, method of payment, diversification, and acquirer bidding experience. The evidence is supplemented with appropriate robustness checks to ensure the consistency of the results.

Chapter 6 conducts further empirical analysis presenting evidence relating to the impact of M&As on acquirers' market risk as well as on the probability of deal failure following announcement. The first part of this chapter investigates the relative importance of the factors that can influence the change in acquirers' risk, and the second part investigates whether the probability of unsuccessful deals is influenced by the range of factors that influence

acquirers' characteristics as well as by the relevant deal categories relating to the aforementioned four hypotheses.

Finally, Chapter 7 concludes by summarising the empirical findings, discussing the limitations of the study, and providing suggestions for further research.

Chapter 2: Theories and Motives for M&As and Implications for Shareholder Wealth and Risk

2.1. Introduction

Although organisations may have different reasons for partaking in M&As, their intention is usually to generate higher shareholder value as a combined entity than they were previously able as two separate entities (Sudarsanam 2003, Chakravorty 2012, Dhir and Mital 2012). Sudarsanam (2003) posits that M&As serve to improve shareholder value, create or enhance competitive advantage (e.g. economies of scale, scope, or increased market power) and grow the acquiring party's asset base, revenues, and market share. Basically, this entails benefitting from a synergistic situation where 'one plus one equals three'. Although the specifics may vary according to the type of merger and the underlying characteristics of the merging parties, gaining such an advantage through the financing means available remains the key motivation for bidders to engage with a target in an M&A transaction.

In this chapter, a broad list of different rationales which have been proposed as motives for M&As will be analysed, and their underlying theories and motives will be discussed. The existing literature has proposed a variety of motives which can have an impact on shareholder wealth and has also shown that asymmetric information (between bidder and target) is a crucial factor determining the method of payment used in M&A transactions. Furthermore, the theoretical arguments highlighting the relevance of target status, bidder experience, and diversification motives are considered in terms of their relevance in determining shareholder value. Hence, in the analysis that follows, the importance of these attributes will be analysed along with how they affect bidding-company shareholder value and/or risk. Finally, the researcher will briefly analyse the underlying causes for the failure of M&As.

2.2. Theories and Motives for Mergers and Acquisitions

2.2.1. Motives

M&As are an important part of many firms' strategies, and the motivation to engage in this type of activity usually arises from the acquiring company's strategic objectives. Prior studies have proposed numerous motives and underlying theories for M&As, but the popularity of such transactions has also led researchers to examine the motivating factors which affect shareholder value. A review of the literature suggests that different motives or attributes have different impacts on shareholder value. This section sheds light on the motivating factors affecting shareholder wealth, which can be separated into three categories:

1. Factors that improve shareholder wealth.
2. Factors that destroy shareholder wealth.
3. Factors that have an uncertain effect on shareholder wealth.

The first group includes factors that improve the shareholder value of the merging firms due to the potential for increased profits or market value. The second group includes agency motives which emphasise managerial interests rather than the interests of shareholders; the rationale for these mergers is to increase the acquiring firm manager's wealth and prestige even if this may result in undermining the firm's value (Cartwright and Cooper 1996, Napier 1989, Halpern 1983, Firth 1980, Bhalla 2011). This distinction is important because acting in the interest of shareholders improves the firm's welfare through efficiency gains or the exercise of market power according to the neoclassical view. In contrast, agency cost considerations emphasise that managerial gains should not reflect any welfare improvement. Finally, the third group considers factors that could either improve or reduce shareholder wealth and could be associated with a firm's expansion or diversification, irrespective of whether managerial or shareholder interests are taken into account.

2.2.2. Factors Which Improve Shareholder Wealth

The motivating factors that improve shareholder wealth include synergy, economies of scale and scope, increased market power, and revenue growth. Each of these is considered in turn below.

2.2.2.1. The Synergy Motive

The word ‘synergy’ comes from an ancient Greek term meaning ‘working together’ (Bruner 2004: 325). It occurs when two entities come together to create a whole which is greater than the sum of its parts, such as when the reaction between two chemicals releases a great amount of energy. In the context of takeovers, this usually refers to firms producing greater combined profits after merging than before, so that there is a positive net acquisition value (NAV).

The synergy motive is the most common motivating factor for engaging in M&As (Alexandridis, Petmezas, and Travlos 2010). It refers to combining the assets of two companies to create a new, joint entity with a higher value than those of the two separate firms (Seth, Song, and Pettit 2000, Dhir and Mital 2012). Gondhalekar and Bhagwat (2003) found that in synergy-motivated M&As, the acquiring management seeks to benefit their shareholders through increased profitability associated with synergy gains. This may come through the transfer of some valuable intangible assets, such as know-how, between targets and acquirers (Seth, Song, and Pettit 2000).

Analysing the synergy effects of an M&A transaction is a key element for management in terms of determining success. Empirical studies indicate that the synergy motive is beneficial for targets, acquirers, and total gains (Berkovitch and Narayanan 1993, Gondhalekar and Bhagwat 2003). Sudarsanam, Holl, and Salami (1996) posit that the synergy motive improves shareholder wealth for both the acquirer and the target. Moreover, other empirical findings suggest that total gains (target + acquirer) from acquisitions are positive (implying that synergies exist) in tender-offers (Bradley, Desai, and Kim 1983, 1988). In addition, Hubbard and Palia (1999) find such gains in takeovers of cash-strapped companies by cash-rich companies. Maquieira, Megginson, and Nail (1998) also find this to be the case in stock-financed, non-conglomerate takeovers.

Chatterjee (1986), Sudarsanam, Holl, and Salami (1996), and Clougherty and Duso (2011) identify four different types of synergy creation: operational, financial, collusive, and managerial. These are each elaborated in turn below.

2.2.2.2. Operational Synergy

Operational synergy calls for a high degree of overlap in the activities, products, and markets of the acquiring and target companies (Sudarsanam, Holl, and Salami 1996). Increasing monopoly power means that there must be a horizontal or vertical association between the parties. When the companies are involved in the same industry, they are better positioned to gain from operational synergies. However, when their industries are unrelated and the merger or takeover is conglomerate, increasing shareholder wealth is dependent on financial or managerial synergies.

Operational synergy refers to efficiency gains at the production or administration level (Chatterjee 1986) and may be divided into revenue-enhancing operating synergy and cost-reducing operating synergy (Gaughan 2010) based on how the gains are achieved. This type of synergy can produce gains in areas including purchasing, training, and manufacturing (Bruner 2004).

2.2.2.3. Financial Synergy

According to Sudarsanam, Holl, and Salami (1996), there are three possible sources of financial synergy:

1. Tax benefits from unused debt capacity in the firm (directly related to the size of the gap in the firms' debt levels).
2. Complementary growth opportunities.
3. Debt coinsurance.

Fluck and Lynch (1999) and Chatterjee (1986) define financial synergy as when the capital of two firms is combined to reduce their collective capital costs and improve their cash flow. This often refers to financing expensive investments. It may, alternatively, refer to buying a target at a cheap price with a low Tobin's Q ratio (Copeland, Weston, and Shastri 2005). However, value creation in terms of financial synergy comes from the advantage of the lower cost of internal financing compared to external financing, which generates greater growth of investment due to excess cash flow (Copeland, Weston, and Shastri 2005). Sudarsanam (2003) further points out cost of savings as another aspect of value creation in M&A. Furthermore, according to Chatterjee (1986), financial synergies tend to be associated with

more value, on average, than do operational synergies.

2.2.2.4. Collusive Synergy

Collusive synergy refers to combining scarce resources to increase market power and reduce competition where prices and profits go up for all firms in a market (Clougherty and Duso 2011). Studies indicate that collusive synergies produce greater shareholder wealth than operational or financial synergies (Chatterjee 1986).

2.2.2.5. Managerial Synergy

Managerial synergy occurs when a firm with strong management acquires a target with weak management. This is referred to as a disciplinary takeover, and overall value gains are generally enjoyed as a result (Sudarsanam, Holl, and Salami 1996).

2.2.2.6. Efficiency Gains

The theoretical literature has emphasised the significance of the efficiency benefits derived from M&As. Jensen and Ruback (1983) discuss the reductions in average costs that can be achieved through economies of scale, and Williamson (2007) refers to the savings achieved through lower transaction costs. As a result of efficiency gains in whatever form, acquisitions should produce gains for both bidder and target shareholders. Where improved efficiency is the main motivating factor for a merger, both parties will gain if this is effective, producing a positive correlation between their respective benefits and overall improvements in efficiency (McCann 2004).

Efficiency gains include the potential for economies of scale/scope and vertical integration, which are each discussed in turn below.

2.2.2.7. Economies of Scale

Economies of scale occur when average unit costs fall in conjunction with rising output (Seth 1990, Brealey, Myers, and Allen 2008), i.e. there is inverse proportionality between output and marginal costs.

Short-term economies of scale arise when the merging of two firms allows the consolidation of fixed costs, such as those associated with administration, customer service, billing,

manufacturing, distribution, sales, etc. (Christensen *et al*. 2011). The underlying basis for short-term economies of scale is that after the merger, a single team is responsible for administration rather than two. Short-term economies of scale can also be achieved through the reallocation of output across various units of operation. Long-term economies of scale with respect to mergers result from an increase in output which is greater than any increase in combined inputs (including physical capital). This occurs, for example, when a larger and more financially stable firm invests in new technologies which could substantially improve its production process and R&D base (Roller, Stennek, and Verboven 2006).

2.2.2.8. Economies of Scope

Economies of scope usually occur after vertical takeovers, with efficiency gains resulting from a greater variety of products and the merging companies able to take on production of outputs where they have advantages over the other firm (Brealey, Myers, and Allen 2008). According to Amel *et al*. (2004), economies of scope (which may be based on either reducing fixed costs or boosting revenues through cross-selling to existing customers) are the second-most-common motivation for banking takeovers. In the banking sector, mergers may allow smaller banks to benefit from access to economic research facilities they had previously lacked so that fixed assets and IT resources may be more efficiently applied to a larger number of operations; cross-selling opportunities will arise, etc. An often-quoted example is that of banking and insurance products offered by a combined entity after the merger of a bank and an insurance firm (Pasiouras, Tanna, and Zopounidis 2005, Elyasiani, Staikouras, and Dontis-Charitos 2015).

2.2.2.9. Economies of Vertical Integration

Economies of vertical integration occur when efficiency gains generally entail one firm taking over another firm which has a separate stage of producing an output. These savings may come from technical gains or from a better distribution process. For instance, acquisitions involving promotion, technical support, training, equipment, and financing are often seen as factors generating efficiency gains from vertical integration. Further savings may come from the elimination of opportunism that one of the parties may have previously been able to benefit from and vertical restraints that may have formerly added to one of the firms' operating costs (Chemla 2003). For example, when an upstream firm finds it difficult to induce downstream retailers' behaviour to align with its own interests, vertical integration

could be a preferred alternative to vertical restraints (e.g. quantity discounts, exclusivity contracts, etc.), and the firm may thus also decrease its operation costs and improve efficiency through vertical integration (Chemla 2003).

2.2.2.10. Improved Market Power and Revenue Growth Motives

Seth (1990: 101) defines 'market power' as "the ability of a market participant or group of participants to control the price, the quantity or the nature of the products sold, thereby generating extra-normal profits". Gaughan (2010) posits that market power and higher revenue growth are the most common aims of merging parties, and according to Sudarsanam (2003), these motivating factors can be pursued through horizontal takeovers. Andrade, Mitchell, and Stafford (2001) note that market power gains can be achieved through the formation of monopolies and oligopolies. Furthermore, greater revenue may assist firms in becoming more competitive and benefitting from low pricing on products with high price elasticity of demand (Roller, Stennek, and Verboven 2006). Growth may be pursued through introducing new technologies and innovative products or from entering new markets (Sudarsanam 2003). The firm's improving financial position thanks to the takeover, in turn, improves market power and revenue growth, which can have benefits leading to greater profit and shareholder wealth (Gaughan 2010).

2.2.3. Factors Which Destroy Shareholder Value

Motivating factors which destroy shareholder value from M&As include managerial hubris, agency problems, and free cash flow. These are each discussed briefly below.

2.2.3.1. Managerial Hubris

The concept of managerial hubris, according to Seth, Song, and Pettit (2000), consists of a 'hubris hypothesis' and a 'managerialism hypothesis'.

The hubris hypothesis will hold if acquiring managers overestimate target value and gains from synergy (Berkovitch and Narayanan 1993, Dhir and Mital 2012). Roll (1986) and Hayward and Hambrick (1997) argue that takeovers occur because bidding managers are infected with over-optimism (hubris) and thus overestimate their ability to manage the target firm, which causes them to overpay for it.

A study by Roll (1986) found the hubris hypothesis to be a valid explanation for corporate M&As due to the fact that managers aim to take over firms for their own benefit rather than to benefit their firm as a whole. As such, acquiring firms sometimes pay excessive fees for target companies due to the overconfidence of their management (Roll 1986, Seyhun 1990, Martin and Davis 2010). Furthermore, Gaughan (2010) argues that senior management hubris is positively correlated to the size of the premium paid. Therefore, since target gains are merely a transfer of wealth from the acquirer, there can be no correlation between target and total gains (Berkovitch and Narayanan 1993).

According to the managerialism hypothesis, managers tend to engage in M&As in order to ensure that they themselves earn the highest possible compensation and to the detriment of shareholders (Firth 1980, Copeland, Weston, and Shastri 2005, Sharma and Hsieh 2011). Seth, Song, and Pettit (2000) found that due to the connection between managerial compensation and financial position, managers tend to prioritise growth over profitability. The managerialism explanation of conglomerate takeovers, as theorised by Mueller (1969), is that management sees a positive correlation between company size and their own compensation and thus aims to grow their organisation through takeovers, even when this does nothing to improve shareholder value. Lewellen and Huntsman (1970), however, argue against this, using empirical evidence of a stronger correlation between profitability and management compensation than between sales and management compensation.

In conclusion, as Figure 1 below illustrates, managerial factors tend to destroy the acquirer's performance in mergers (Morck, Shleifer, and Vishny 1990). Furthermore, it has been found that in cases where M&As are motivated by managerial hubris, "(a) the combined value of the target and bidder firms should fall slightly, (b) the value of the bidding firm should decrease, (c) the value of the target should increase" (Roll 1986: 213).

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Figure 2.1: Model of the Role of CEO Hubris in Large Acquisitions. Source: Hayward and Hambrick (1997: 111).

2.2.3.2. The Agency Motive

In some situations, the agency problem can motivate M&As (Dhir and Mital 2012). Given the separate functions of ownership and control, the agency problem occurs when M&As are motivated by managers' desire to increase their own wealth rather than prioritise shareholder value (Berkovitch and Narayanan 1993, Dhir and Mital 2012). The agency problem may stimulate competition between firms; however, it cannot be eliminated by such competition. The main beneficiaries of any such competition will be target shareholders (Berkovitch and Narayanan 1990, 1993). Although the agency motive can lower the acquiring company's shareholder value, managers still pursue M&As to maximise their own incomes (Morck, Shleifer and Vishny 1989). It may be argued that this motivation is the main source of shareholder wealth destruction after an M&A transaction.

2.2.3.3. Free Cash Flow Theory

The free cash flows theory assumes that management and shareholder interests are in conflict, with managers seeking to optimise their own compensation to the detriment of shareholder value by accumulating free cash flow (Jensen 1986, 1988, Amit, Livnat, and Zarowin 1989). Such cash is not injected into activities that, from the shareholders' point of view, possess positive value.

According to this theory, therefore, managers are prone to invest cash surpluses in M&A activity rather than paying out dividends or engaging in share repurchase because they see M&A investments as a way to increase their own power (Shleifer and Vishny 1991, Brealey, Myers, and Allen 2008). Jensen (1986, 1988) posits that free cash flow destroys shareholder wealth.

The argument behind such actions is that the cash injection to the target will create a gain for shareholders, but it is questionable whether acquiring shareholders actually do benefit. Amit, Livnat, and Zarowin (1989) argue that any gains are generally divided between the firms based on leverage, and accordingly, the stronger negotiating position of the target yields greater gains. For instance, when the stockholders of a viable target firm have other suitable potential bids, they will capture a larger share of the economic gain than when the target is facing bankruptcy. Correspondingly, the acquiring firm's shareholders tend to gain or lose depending on the target's alternatives.

Furthermore, a target's liquidity is directly proportional to the level of certainty regarding its valuation. For instance, if a target firm has a high proportion of liquid assets, then the bidder is less certain of its value. On the other hand, if a target is not considered a going concern, then there is much greater uncertainty about the value of its assets.

Finally, a financially distressed firm is not attractive to most potential bidders as a highly liquid target firm, even though such a firm may attract certain bidders who wish to enter new markets or who desire the tax benefits associated with acquisition. Thus, highly liquid firms are expected to make higher economic gains for stakeholders than highly illiquid firms. In turn, they will yield lower gains for bidders than those of financially distressed firms.

2.2.4. Motives with Uncertain Effects on Shareholder Wealth

2.2.4.1. The Diversification Motive

Diversification tends to be the main motivating factor for conglomerate M&As as it decreases the management's employment risk, i.e. the risk of losing jobs and corresponding loss of reputation (Amihud and Lev 1981). Many large firms seek to achieve diversification through M&As rather than setting up subsidiaries (Thompson 1984).

The diversification motive comes from the portfolio theory concept that gains can be made

from reducing risk through diversification (Zhang 1995). Zhang (1995) suggested that diversification within markets provides little variation in income, whereas out-of-market transactions tend to increase shareholder wealth. Efficiency gains usually occur in relatively small takeovers, while gains from geographic diversification generally occur in relatively large takeovers. However, diversification may be considered in terms of economic, financial, or strategic theory, or from a market power perspective (Pindyck and Rubinfeld 2005). Gains may come from mutual forbearance, cross-subsidising, or reciprocal buying, which may be used to put pressure on single-business rivals (Chevalier 2004).

However, diversification guarantees neither an increase nor a decrease in shareholder wealth, and there are theoretical arguments regarding these uncertain effects (Berger and Ofek 1995). Potential gains from diversification include operational efficiency, greater likelihood of engagement in positive net present value business activities, reduced taxes, and increased capacity to take on debt. Furthermore, a bidding firm may gain from economies of scale/scope and increased market power. Potential costs, on the other hand, may take the form of greater likelihood of loss-making investments, acquisition of poorly-performing units that reduce shareholder value, and inefficiencies created by divergent aims of central and division management.

Kuppuswamy, Serafeim, and Villalonga (2012) and Tate and Yang (2015) state that takeovers are related or focus-oriented when the parties belong to the same industry as represented by the two initial digits of their four-digit Standard Industrial Classification (SIC) codes. All other M&As are not related or are seen as diversification strategies.

Jensen (1986), Morck, Shleifer, and Vishny (1990), Stulz (1990), DeLong (2001), and Graham, Lemmon, and Wolf (2002) argue that focussed mergers (whether activity or geographical) can improve stockholder value, whereas diversifying mergers may be more likely to destroy value due to overinvestment and the necessity of supporting poorly-performing units. However, it is possible for the gains based on greater debt capacity and lower tax burdens to make up for the potential loss of profits. For example, Berger and Ofek (1995: 59) state that "diversification creates a further tax advantage by allowing the losses of some segments to be offset contemporaneously against the gains of others, rather than merely carried forward to future tax years". However, more recent research by Cornett, Mcnutt, and Tehranian (2006) finds that activity and geographically-focussed mergers produce greater performance gains than activity and geographically-diversified mergers.

2.2.5. Neoclassical and Behavioural Theories

Although there are a wide variety of motivating factors for M&As, as discussed above, the underlying theories which encompass these motives may be broken down into neoclassical and agency/behavioural theories (Sudarsanam, Holl, and Salami 1996, Bernile and Bauguess 2011).

Neoclassical theories posit that mergers take place as a result of the process of capital reallocation due to external shocks (e.g. economic, political, technological, financial, or regulatory) (Harford 2005). These are motivated by the desire to keep or create a competitive advantage (Jensen 1988) with the intention of maximising profits and shareholder wealth (Martynova and Renneboog 2008). A competitive advantage means that the combined entity is more efficient than were the two parties operating separately. The efficiency and synergy motives that improve shareholder wealth, as discussed above, are considered to fall within the scope of neoclassical theories.

In contrast, agency and behavioural theories posit that M&As may destroy shareholder value due to conflicts between management and shareholders or biased decision-making by management as a motivation for M&As (Jensen 1986, Roll 1986, Shleifer and Vishny 1991, Berkovitch and Narayanan 1993, Dhir and Mital 2012). Managers may seek to make acquisitions as a means to increase their own scale and power without necessarily fulfilling the shareholders' desire for value addition. Mueller (1969) argues that elements such as management compensation, bonuses, stock options, and promotions tend to be more associated with corporate size than a firm's profitability. Jensen (1986) assumes that as management salaries are linked to revenue growth, managers may push to keep the firm growing beyond its optimum size. Roll (1986) argues that managerial hubris makes overconfident managers overestimate the creation of synergy value, thereby tempting them to overpay and create value-destroying mergers.

According to the behavioural theory proposed by Shiefler and Vishny (1991), managers may take advantage of market timing and temporary market 'mis-valuations' (Rhodes-Kropf, Robinson, and Viswanathan 2005, Dong *et al*. 2006). This behavioural perspective originates from a study by Myers and Majluf (1984), who argue that management may use temporarily overvalued equity to fund the acquisition of real assets. In this regard, behavioural theories may be associated with either positive or negative effects on shareholder value.

As previous studies indicate, these theories are not mutually exclusive, and companies often have multiple motivations for engaging in M&A activity (Berkovitch and Narayanan 1993). Empirical research (discussed in Chapter 3) similarly suggests that no single theory encapsulates all the patterns of M&A activity/merger waves that have been observed. Based on an in-depth study of corporate takeovers during the 20th century, Martynova and Renneboog (2008) indicate that the most common finding about takeover motivation is that it varies with the stage of the merger wave. Furthermore, they suggest that wealth effects vary depending on whether a takeover occurs in the earlier or later part of a wave. Interestingly, their analysis indicates that companies benefitted from synergy gains in mergers that occurred in the first half of a takeover wave, whereas the majority of value-destroying acquisitions took place in the second half of a wave.

In terms of impacts on shareholder wealth, Table 2.1 below classifies the respective gains to acquirers and targets of combined entities, where the positive, negative, or zero changes refer to fluctuations in the market share price of companies as a result of deal announcements.

Table 2.1: Pattern of Gains Related to Takeover Theories. Source: Financial Theory and Corporate Policy (Copeland, Weston, and Shastri 2005: 760).

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The overall positive benefits may result from neoclassical motives resulting in more efficient production, synergies between the firms, and greater market power. Hubris theory (Roll 1986) assumes losses for acquirers along with zero net benefits due to overvaluation of target companies, who gain from mergers. Agency theory generally postulates negative overall benefits and losses to acquirers due to failure to accurately assess target value, potential synergies, etc. This could be due to managers acting in their own pecuniary or corporate interest rather than that of the company's shareholders. On the other hand, Jensen's (1986) free cash flow theory posits gains to targets but uncertain effects for acquirers, with a negative net acquisition value. The second column in the table indicates that target companies overwhelmingly tend to benefit from deal announcements.

Bidders receive net benefits when the market perceives synergies or efficiency savings from the takeover, where it is assumed that positive benefits outweigh any excessive premium.

Hubris theory indicates that the acquiring company's managers may overestimate target value and potential gains from synergy, and the agency problem occurs when the merger is motivated by managers' desire to increase their own wealth. Thus, hubris theory and the agency problem will lead to destruction of the acquiring company's shareholder value. Under free cash flow theory, where management seeks to maintain power and control of internal funds, the shareholders of bidding companies are assumed to lose out. However, Amit, Livnat, and Zarowin (1989) argue that bidder gains are related to target liquidity.

2.2.6. Information Asymmetry and Abnormal Returns

Theoretical studies (e.g. Hansen 1987, Eckbo, Giammarino and Heinkel 1990, Fishman 1989) suggest that in a merger transaction, considerable information asymmetry exists with respect to bidder or target intrinsic values, and this may provide incentive for merging parties to reveal private information in deal announcements. Hietala, Kaplan, and Robinson (2001) observe that such announcements often reveal information regarding the bidder's payment method or the target's valuation. Several studies have hypothesised a possible link between information asymmetry and the average announcement-time cumulative abnormal returns (CAR) of the bidder and the target.

Roll (1977) proposed a signalling model through which a firm can reveal its private value by announcing an intention to raise debt capital in the market, since investors may assume that a firm which declares debt capital is of high quality. This could extend to stock purchases as well, since when there is a high level of information asymmetry regarding the value of the target, the announcement of a stock purchase by the bidder may be perceived as a sign of confidence about the target's value. Various theoretical models relate to this. For example, Fishman (1989) analyses the bidder's use of cash in mergers transactions. In his model, a cash offer signals the bidder's high valuation of the target and has the advantage of serving to pre-empt competition from other bidders.

Therefore, although a stock offer may in general send a negative signal about the bidder's value, this could be the other way around in cases of large amounts of target information asymmetry. There is ample empirical evidence to support such observations, such as Officer (2006), who argues that the return should actually be positive when the target is extremely opaque (e.g. a private company). One explanation for this comes from contract theory: the stock offer could be thought of as a contingent contract and hence provide safety to the bidder

in case the target turns out to be a lemon. This theory can be applied to a private target since the degree of information asymmetry in such transactions tends to be very high.

2.3. Methods of Payment in M&As

Typically, three methods of payment are used to finance M&As: stock, cash, or a combination of both. The impact of the payment method on shareholder wealth is an ongoing debate among academics. Using stock to finance M&As became increasingly common during the 1990s, but its use declined after 2000. For instance, Heron and Lie (2002) demonstrated that 31% of the takeovers between 1985 and 1997 were financed through stock, whereas Faccio and Masulis (2005) found that only 26.8% of takeovers were financed through a stock swap between 1997 and 2000.

Moreover, Heron and Lie (2002) found that a predominance of takeovers was financed through cash before 1990, reaching a maximum of 74% in 1988. The contrary trend was observed over the following decade, with a majority of payment occurring through stocks at a maximum of 66% in 1996. Of the 859 takeovers observed by Heron and Lie (2002), 50% were acquired through stock payment, 40% through stock swap, and only 10% using a combination.

One of the benefits of the stock swap is the new share capital that is issued during the merger process, which alleviates the liquidity problem for the merging firms. Moreover, given that the target company is exposed to the same risk as the acquirer after the merger, the risk of a high premium is limited. This effect is referred to by Hansen (1987) as 'the contingent pricing effect of stock payment hypothesis', and it denies the theory that shareholders sell their stocks to generate profit once the target is acquired if they believe that the value of the bidder's shares are overvalued.

In contrast to Hansen's (1987) hypothesis, researchers have pointed out that purchasing a company with stocks may send a negative signal to the market. This argument relies on the signalling effect and information asymmetry theories and states that acquirers will choose to buy a company with stocks only if their own shares are overvalued (Myers and Majluf 1984, Berkovitch and Narayanan 1990). In addition, higher integration costs are incurred with the dilution of outstanding shares, and the remuneration of managers can no longer be directly related to their investment decision. Synergy is reduced due to these agency problems, and

this result in falling share prices at the time of the announcement as the market recognises the issues at hand.

On the other hand, financing the merger through cash generally has a positive impact on the share prices of the merging firms. In this case, the acquirer finances the cost of the merger directly, generally through long-term debt. This implies a belief that the company will generate high enough returns to cover the interest costs of the debt. Furthermore, a commitment to repay the long-term debt will also motivate the creation of synergy between the two companies in order to improve their financial performance. In order to understand how the bidder is influenced regarding choice of payment method, the next section considers the relevant underlying theoretical issues.

2.3.1. Information Asymmetry and Method of Payment

Given that both bidder and target have private information about their own intrinsic values, the presence of information asymmetry can influence the bidder's choice of payment between cash and stock. Several theoretical papers (e.g. Hansen 1987, Fishman 1989, Eckbo, Giammarino and Heinkel, 1990, Finnerty, Jiao, and Yan 2012) have argued that a cash offer enables a bidder to avoid potential mispricing arising from the bidder's private information about its value (bidder information asymmetry) and that a stock offer can help the bidder reduce the cost of overpayment which arises from the target's private information about its value (target information asymmetry). However, it is also acknowledged that all-stock or all-cash offers cannot simultaneously resolve both bidder and target information asymmetry. This dual problem has been referred to as the 'double-sided asymmetric information problem' (Finnerty, Jiao, and Yan 2012).

To further illustrate the issues at hand, consider cash and stock as the only two possible methods of payment. In an all-stock merger, the value of the offer made by the bidder is dependent on the combined value of the bidder and the target as well as the potential synergy resulting from the prospective merger. As argued intuitively by Finnerty, Jiao, and Yan (2012), the value of a stock offer is sensitive to both types of information asymmetries (i.e. bidder and target), and a high-value bidder may distinguish itself from a low-value bidder by offering stock. By doing so, the high-value bidder can share some of the overpayment with the target's shareholders, which reduces the bidder's overpayment cost. On the other hand, the value of an all-cash offer, unlike an all-stock offer, is unaffected by bidder information

asymmetry. However, in this case, the cash bidder must fully bear the cost of any overpayment because it cannot share this cost with the target's shareholders.

According to Finnerty, Jiao, and Yan's (2012) line of reasoning above, the choice between an all cash or an all-stock offer will be based on the trade-off between the costs associated with under-pricing (which arise from bidder information asymmetry) and the costs associated with overpayment (associated with target information asymmetry). In other words, a bidding company is more likely to offer stock when there is a greater level of target information asymmetry than bidder information asymmetry. Conversely, cash will more likely be offered. However, all-cash or all-stock offers, as noted above, can only address one type of information asymmetry or the other, but not both at the same time (Finnerty, Jiao, and Yan 2012).

A mixed offer, on the other hand, consisting of a combination of stock and cash, may be able to partially address both bidder and target asymmetries (Eckbo, Giammarino and Heinkel, 1990). For a high-value bidder, however, a fixed proportion of stock and cash will only resolve one type or the other, but not both. A mixed offer with a fixed combination will be more effective for resolving bidder information asymmetry if the cash fraction is higher than the stock fraction. Likewise, a fixed combination offer will be more effective for resolving target information asymmetry if the cash proportion is lower than the stock proportion.

Finnerty, Jiao, and Yan (2012) further rationalise this argument by proposing the use of convertible bond securities as a more flexible means to address the double-sided asymmetric information problem that exists in corporate M&As. As a hybrid comprising debt and stock payment, the convertible bond security which allows the issuer to call for 'forced conversion' or redemption at a suitable time in the negotiation process can help a high-value bidder mitigate the cost of both bidder and target information asymmetries.

There is now a strong, established theoretical and empirical literature which draws on the role of information asymmetry problems and the use of appropriate payment methods to solve these problems in merger transactions (e.g. Hansen 1987, Fishman 1989, Eckbo, Giammarino, and Heinkel 1990, Finnerty and Yan 2006, Finnerty, Jiao, and Yan 2012). This literature developed from the insights of Myers and Majluf (1984), who first highlighted the overvaluation problem: under information asymmetry, a public bidder's announcement of a stock transfer for takeover could cause a perception in the market that the bidder's stock is

overvalued, leading to an adverse reaction in its share price, which could then generate negative abnormal returns. This problem can be mitigated by using cash as the takeover mechanism. However, in cases of a cash transfer, a serious problem of overpayment may arise, and target shareholders will generally gain at the expense of bidder shareholders. Eckbo (2009) provides a cogent synthesis of the literature on the payment methods used in merger transactions and observes that under two-sided information asymmetry, convertible securities may have a certain value-adding role.

To summarise, it has been suggested (e.g. Eckbo 2009) that in the presence of bidder information asymmetry, the optimal mechanism is a cash offer by the bidder since it allows the bidder to mitigate the mispricing/undervaluation of its stock by an uninformed target (although the cost of such an offer is the possibility of overpayment by the bidder). Moreover, in the presence of target information asymmetry, it is optimal for the bidder to offer stock as this will mitigate the overpayment problem by the bidder, since a high-value bidder will share some of the overpayment cost with the target's shareholders. However, the cost of such a mechanism will be that the uninformed target may undervalue the bidder's stock.

2.3.2. Other Factors Influencing Choice of Payment Method

A. Growth Opportunities and Market Timing

The investment opportunities theory posits that a relationship exists between acquirer valuation and the mode of acquisition, as long as firms with more growth opportunities avoid the underinvestment problems caused by high levels of debt finance; in response to that, they prefer to use stock (Martin 1996, Jung, Kim, and Stulz 1996). Furthermore, according to the market overvaluation theory (Shleifer and Vishny 2003, Rhodes-Kropf and Viswanathan 2004), acquirers favour stock acquisitions when their equity is relatively overvalued compared to the target firm's equity in order to decrease acquisition costs.

B. Firm Control and Monitoring

Some studies have shown that managers are willing to realise a takeover through debt or internal resources (Stulz 1988, Jung, Kim, and Stulz 1996). This arises because issuing new shares will lead to a dilution of their ownership (and thus of their decisional power) in favour

of the acquirer. Moreover, if managers have a high stake in the acquiring company, it has been shown that they prefer to use cash as payment (Amihud, Lev, and Travlos 1990, Martin 1996, Ghosh and Ruland 1998, Faccio and Masulis 2005).

In the same regard, Shleifer and Vishny (1997) and Burkart, Gromb, and Panunzi (1997) emphasise that block holders can influence managers' actions and may be able to match shareholder actions with managerial decisions to increase financial performance. Block holders can also recommend action to a potential bidder's managers in order to launch a takeover process. Thus, they can influence the takeover terms, especially regarding financing methods (Travlos 1987, Brown and Ryngaert 1991, Schlingemann 2004).

C. Pecking Order and Free Cash Flow

The pecking order hypothesis developed by Myers (1984) suggests that in the presence of asymmetric information, agency costs may be mitigated consistent with financing investment projects by first using internal financing (reserve cash) as a method of payment, followed by debt, and finally by issuing new shares, in that order of preference. Furthermore, Jensen (1986) concluded that there is a positive relationship between free cash flow and decreases in the bidding company's shareholder wealth in cash takeovers. He also pointed out that companies with large volumes of cash, large cash flows, and low financial leverage are more inclined to use cash payment in takeovers.

D. Hostility, Competition, Mode of Acquisition, and Intra-Industry Deals

The terms of an incorporation contract comprise another factor which can influence the financing method in M&A transactions. Particularly in hostile acquisitions or when a target is coveted by various potential bidders, acquirers want to finalise the transaction as quickly as possible in order to prevent their competitors from winning the deal (Fishman 1989, Berkovitch and Narayanan 1990). In this kind of deal, cash is often used as a means to deter competitors.

Cash is also commonly used as a medium of payment during tender offers any time the management of the acquirer wants to finalise the deal quickly. This arises from the terms of the U.S. Securities Act of 1933, which requires an acquirer using stock as payment to wait an additional period of time between the offer and completion of the acquisition due to SEC

processes (Martin 1996).

2.3.3. Method of Payment and Implications for Shareholder Wealth

There is a voluminous literature relating to the valuation effects of takeovers on the bidding firm's share price and, as a result, it is important to highlight the fundamental factors which may influence shareholder wealth following the acquisition announcement. The literature suggests some prominent arguments and/or hypotheses relating to the influence of the method of payment on the acquirer's stock return upon announcement.

First, the information content theory proposed by Myers and Majluf (1994) is related to signalling models of investment developed by Leland and Pyle (1977). These models demonstrate that, in the world of asymmetric information characterising adverse selection, the method of payment conveys a signalling role for the bidder. Leyland and Pyle (1977) developed a simple model of collateral signalling in entrepreneurial finance, where the cost of capital can reduce if the entrepreneur is willing to invest his own capital in the project since that can work as a collateral, or serve to mitigate the adverse selection problem. Myers and Majluf (1984) adopted this setting in their model to argue that stock issuance is always perceived by the market as a negative signal, since market agents may think that the acquiring firm proposing stock (instead of cash) is overvalued. Inferring from the theory developed by Myers and Majluf (1984) model, if the acquiring firm's pre-announcement share price does not reflect the true value of the firm, the management will attempt to finance the acquisition using either cash or stock to signal its value to the market. For instance, if the management believes that their firm is undervalued they will choose the cash offer and if they believe their firms is undervalued they would go for the stock offer to finance the takeover. In particular, if the acquiring firm that is overvalued pledges cash, the market perceives it as a positive signal, and if it offers stock the market will perceive it as a negative signal. DeAngelo, DeAngelo and Rice (1984) confirm that for any corporate acquisition, the market participants would perceive cash offer as good news about the bidders' valuation.

Then there is the free cash flow hypothesis, developed by Jensen (1986), which states that the firms with excess free cash flows do have the managerial incentive problem to waste free cash flow in investing in negative NPV projects. The solution for the typical moral hazard problem is to force managers to pay out more dividends or go for stock buybacks. Acquisitions paid for in cash use up these excess cash flows, divert funds from other internal

investments or increase the indebtedness of the acquiring firm (McCabe and Yook 1997). The discretionary cash flow and the power of managers to use such cash flows will be reduced in these cases, and thus the alignment between the managers, shareholders and the bondholders will be strengthened. The smaller is the amount of cash flow in the hands of the managers, the less will be the possibility of misallocating the same. Based on this reasoning then, a cash financed acquisition will increase the stock price and return of the acquiring firm around the announcement period.

Another hypothesis is the risk sharing hypothesis put forward by Hansen (1987). This hypothesis is also based on the asymmetric information problem as in Myers and Mujluf (1984), but here there are adverse implications for the acquiring firms. There is always a degree of information asymmetry about the true value of the target firm. Moreover, there is information asymmetry around the expected synergy which is to be achieved after the takeover, hence information asymmetry problem about post acquisition synergy. Hansen (1987) has formulated the model based on the information asymmetry theory regarding the true value of the target firm, hence in such a scenario, the bidders would like to pay by stock since they would like the target shareholders to share the risk of the post-merger revaluations. Martin (1996), along with Hansen (1987), has also argued that if there is high uncertainty in the acquisition outcome then there is a high possibility of stock payments.

The last two hypotheses, namely, investment opportunity and risk sharing hypotheses have gained more attention over the years and there are some good reasons for the same. For example, there have been an increase in the number of mergers in several industries, for example, car industry, car supplier industry, food industry, which may be due to increase in competition, deregulation (e.g. telecommunication industry, utilities), surge of rapidly expanding new industries (technology sector), and increased globalisation (increase in cross-border transaction) – all this is evidence of a general increase in investment opportunities and appears to fit with the investment opportunity hypothesis.

There is also the agency conflict implying whether the managers are really concerned with the increase in the shareholders' value. Hence if there is stock offered then this may also mean that the managers of the acquiring companies are involving managers of the target companies also to achieve the synergy, which strengthens the case for risk sharing hypothesis.

To conclude, the information content and free cash flow hypothesis predicts that there should be negative abnormal return to the stock announcements or transactions, whereas the cash transactions should result in positive abnormal returns. On the other hand, the other two alternative hypotheses (investment opportunity hypothesis and the risk sharing hypothesis) have observed that the stock payments need not to be looked as the negative signals to markets. Such suggestions are at odds with Myers and Majluf (1984) and Jensen (1986).

2.4. Public vs. Non-Public Targets

Researchers have found that acquirers of non-public targets tend to achieve higher announcement returns than do acquirers of public listed targets, and this differential applies to both acquisitions of private targets and subsidiary firms (i.e. unlisted targets). In their brief review of previous literature, Faccio, McConnell, and Stolin (2006: 197) state, "Although various hypotheses have been proffered to explain this phenomenon, none have been fully successful", and they conclude that "[t]he fundamental factors that give rise to this listing effect…remain elusive".

Since about 75% of M&As performed by public companies involve non-public firms, it is important to highlight various arguments which have been proposed in the literature. The few existing studies which have examined the return differential between public and non-public firms focus mainly on the U.S. (Chang 1998, Fuller, Netter and Stegemoller 2002, Moeller, Schlingemann and Stulz 2004, Jaffe *et al*. 2015), though a few others have considered the situation in European countries (Faccio, McConnell and Stolin 2006), such as the UK (Draper and Paudyal, 2006), and one notable study uses a sample of M&As in the USA, the UK, and France (Capron and Shen 2007). Drawing upon these studies, the main explanations (or hypotheses) are considered below.

2.4.1. Managerial Opportunism and Hubris

When considering M&A activity, managers of acquiring firms may be motivated to either focus on value creation for their shareholders or pursue their own interests, which include benefits related to the size and prestige of the target company (Aggarwal and Samwick 2003). For example, managers may prefer to buy larger, more prestigious companies at higher prices if they are pursuing their own interests rather than those of shareholders. Public listed companies tend to be both larger and more prestigious than non-public ones, so greater levels

of managerial opportunism may be associated with the acquisition of public firms. On the other hand, the acquisition of non-public companies may be more likely to create value for shareholders, and the payment of an excessive price for such a target is less likely.

Opportunism may also be associated with excessive 'hubris' on the part of managers, who may overestimate their own ability to manage the target company (Roll 1986). This can also lead to overpayment for targets.

Since managerial opportunism and hubris tend to be associated with the payment of higher prices, or premiums, for target companies, shareholders may view an M&A transaction negatively if they perceive the price to be too high (Moeller, Schlingemann and Stulz 2004, Faccio, McConnell and Stolin 2006). On the other hand, if they perceive the M&A announcement as likely to create value, shareholders will perceive the deal in a positive light.

2.4.2. Negotiation Process: The 'Winner's Curse'

Whether or not a firm is public listed is one of the key aspects that can affect the negotiation process in a potential acquisition. The corporate governance mechanisms of public companies put pressure on managers to encourage competition among potential bidders in order to achieve a higher price for shareholders (Schwert 1996, Goergen and Renneboog 2004). For this reason, the sale of public companies often involves an auction process in order to increase the number of bidders hoping to gain control (Milgrom 1987).

However, this competition among bidders can lead to a phenomenon known as the 'winner's curse' (Roll 1986). The shareholders of acquired companies will, naturally, accept the best offer. The bidding prices are increased by the competition, especially when managers are guided by hubris, which can cause them to pay excessive amounts, more than the target is actually worth. Such an excessive price is known as a 'premium' (Jensen and Ruback 1983).

Non-public companies, on the other hand, are usually sold in direct negotiations between the acquirer and the target based on the free will of both parties (Koeplin, Sarin, and Shapiro 2000). While non-public firms can also create an auction process, it is uncommon for them to do so due to the fact that they tend to have neither the required financial resources nor the necessary contacts with investment intermediaries (Capron and Shen 2007). In addition, such targets may prefer to carry out negotiations with a specific buyer who can offer greater

guarantees regarding continuity of the company's activity, employment, or culture, for example, rather than merely seeking the highest price possible (Graebner and Eisenhardt 2004). Greater levels of information asymmetry in these cases increase the costs of information for acquirers, which reduces competition. For this reason, such transactions also tend to receive little or no publicity.

2.4.3. Information Asymmetry: Discount in the Acquisition of Non-Public Firms

Although a premium may be paid for the acquisition of public firms due to the so-called 'winner's curse', which can have a negative impression on shareholders, arguments also exist in favour of the positive valuation of non-public firms in the acquisition process. These are based on the discount expected in the price paid by the acquiring firm's shareholders (Feito-Ruiz and Requejo 2014). In other words, acquiring shareholders may take a positive view of an M&A transaction independent of whether the price paid for a non-public target firm benefits the acquirer. Koeplin, Sarin, and Shapiro (2000) estimate the discount for acquisition of private firms to be between 18 and 30%. Similarly, Kooli, Koratas, and L'Her (2003) estimate this value to be between 20 and 34%, and Officer (2007) sets it between 15 and 30%.

Such discounts in the price of acquiring non-public companies are associated with reduced levels of transparency and liquidity, greater information asymmetry, less market visibility, and the absence of a share market price, all of which reduce their negotiating power in the selling process (Feito-Ruiz and Requejo 2014).

2.4.3.1. Less Market Liquidity

Because it is more difficult to buy or sell a non-public firm, the market for acquiring such companies is less liquid than for public firms. The negotiating power of acquiring firms in such cases is thus increased, and such targets tend to accept lower prices for their shares is less liquid markets (Officer 2007). Conversely, public companies tend to have a wider range of potential buyers, and individual shareholders can always opt to sell their shares on the market itself if they so choose (Capron and Shen 2007).

2.4.3.2. Less Business Liquidity

If a company is experiencing liquidity problems, its difficulties obtaining funding may cause managers to sell up, or, in the case of groups, to sell off a subsidiary (Feito-Ruiz and Requejo 2014).

In terms of non-public firms, negotiating power will be lower in proportion to a company's need for liquidity or the extent of its difficulty obtaining funding. According to Faccio, McConnell and Stolin (2006), when the acquired company is not listed, the determinants of shareholders' valuation are the same whether the company is sold as a firm or as a subsidiary in a group.

2.4.3.3. Information Asymmetry Regarding a Firm's Value

When a target company is non-public, information about it is generally more limited. Public companies, on the other hand, are exposed to the scrutiny of the entire stock market. Once a company becomes publicly listed on the stock exchange, it is subject to regulations regarding transparency and the issuance of certain types of information. Public companies also tend to be extensively examined by financial analysts. All of this leads to great reductions in any uncertainty regarding their value (Capron and Shen 2007, Feito-Ruiz and Requejo 2014), and a public company's share price becomes a constant reference for potential buyers which can help them determine how much to bid. Non-public companies, however, have more control over the kind and amount of information they disclose to markets (Reuer and Ragozzino 2008).

This means that the managers of bidding firms tend to have less information about potential targets if they are non-public. This information asymmetry increases the risk of inaccurately valuing the target's assets (Reuer and Ragozzino 2008). In order to avoid adverse selection, therefore, shareholders of the acquiring company will lower the price offered for non-public firms (Akerlof 1970).

Information asymmetry is reduced when the bidder and target companies have had previous trading relations. In such cases, acquired companies have greater incentive to remain more transparent to the buyer and provide relevant private information for evaluation by the acquiring company's managers. This can help to mitigate the negative consequences

associated with adverse selection and achieve a higher offering price.

However, the information asymmetry which characterises non-public targets creates advantages for acquirers with access to private information. They may, for example, be able to obtain extraordinary gains by demanding and forcing the target to accept a substantial discount in the purchase price (Makadok and Barney 2001). Thus, information asymmetry can create investment opportunities for companies which hold more information, allowing them to make acquisitions which create value.

2.4.3.4. Less Transparency and Less Complete Accounting Information

Market regulations require publicly listed firms to disclose more complete accounting and financial information than non-public companies, even if regulations for the two types of companies are similar (Ball and Shivakumar 2005). Non-public companies, however, may not be required to perform any accounting audits at all.

While public companies must transmit large amounts of financial information to creditors, potential investors, and other outside agents, the accounting activities of non-public companies are more likely to focus on internal uses such as tax payment, to aid in decision-making, and to provide information to shareholders. Financial relationships with creditors usually remain private for non-public companies, involving financial intermediaries rather than debt issuance in the market. In addition, non-public companies tend to have more concentrated ownership, reducing the necessity for financial statements to serve as a control mechanism in management decisions (Feito-Ruiz and Requejo 2014).

This reduced transparency of non-public companies' financial statements creates greater amounts of information asymmetry, which can lower the prices offered by potential acquirers in an attempt to avoid the consequences associated with adverse selection.

The potential for a premium to be paid for public companies and the discount typically associated with the acquisition of non-public ones raises the question of why public firms are acquired at all, since it would appear more efficient to acquire only non-public companies. However, despite the arguments mentioned above, there are cases in which it may be optimal for the shareholders of an acquiring firm to purchase a public company. An acquirer may wish to avoid purchasing a non-public firm when there is an excessive amount of information

asymmetry, even though it could lead to the payment of a discounted price. For example, if the acquirer believes the level of information asymmetry to be excessive, it may be wiser to avoid the deal altogether than simply to demand a greater discount.

In summary, the acquisition of non-public companies tends to lead to discounts in the purchase price, depending on the corresponding levels of information asymmetry and market liquidity. However, in cases where the level of information asymmetry is excessive, managers may prefer to purchase public companies.

2.4.4. Bargaining Power

There are several empirical studies which investigate the differential returns observed for bidders between the public and non-public (private and subsidiary) targets (Netter, and Stegemoller 2002, Moeller, Schlingemann, and Stulz 2004, Draper and Paudyal 2006, Faccio, McConnell, and Stolin 2006, Capron and Shen 2007, Rani, Yadav, and Jain 2014, Jaffe *et al.* 2015). One explanation is that the ownership structure of the private target is more concentrated, and therefore it is anticipated that the target shareholders can perform better monitoring, and also be more active in the negotiation process with the bidder, so that they can retain greater bargaining power during the merger. However, there can be situations also where the smaller targets may wish to cash out after the merger has happened.

The differential returns to bidders observed between the public and private targets remains an anomaly which researchers have tried to explain by the distinctive shareholder characteristics which the private targets have. Why the markets respond differently to these mechanisms for private targets relative to the public targets is an issue that has not been satisfactorily resolved yet, theoretically, it has been associated with the greater role of the bargaining power which private targets could exercise in their negotiations with the bidder.

For the private firms the ownership structure is often concentrated which avoids the agency problems associated with public targets. This is of crucial importance if the payment mechanism is based on stock, which confers significant bargaining strength of private firms allowing them to negotiate a premium and get better terms relative to the more dispersed shareholders of public targets, thus creating a belief in the market that the potential gains accrued to bidders are relatively greater in the case of private targets (Gonenc, Hermes and

Sinderen 2013). In addition, the monitoring hypothesis suggests that the concentrated shareholders of private targets have greater incentives to monitor the actions of the bidders.

However, there is also the cash out hypothesis, which predicts that the private targets would rather like to have the cash offer and move out of the game, and therefore cash offers yield a negative response of the market. Another point can be the higher risk in the cases of private target takeovers owing to less information and greater uncertainty about synergy gains, which suggests that such mergers are likely to be motivated by stock offers. Overall, there are various grounds to suggest differential bidder returns for private and public targets although empirical studies have not been successful in explaining such returns differentials.

2.5. Bidder Experience: Frequent bidders

Recent empirical studies on M&As have shown a substantial increase in the number of serial acquisitions. To support this, it will be shown that the present research found that 57% of the sampled bidders were frequent acquirers who made three or more acquisitions over the period studied.

Previous empirical studies relating to frequent-bidder acquisitions have arrived at various conclusions. For example, Stegemoller (2002) and Baker and Limmack (2001) argue that bidders realising a series of takeovers tend to experience better performance than their single-bidder counterparts. On the other hand, Aktas, de Bodt, and Roll (2011), Ismail (2008), Fuller, Netter, and Stegemoller (2002), and Haleblian and Finkelstein (1999) find a significant negative relationship between performance and bidders' experience.

2.5.1. Why Does It Matter? Relevant Hypotheses

Seven hypotheses exist regarding the effect of an acquirer's experience on its performance as represented by the number of takeovers in which it has recently engaged. These hypotheses are associated with (i) learning by doing, (ii) overvaluation, (iii) hubris, (iv) monopolisation, (v) indigestion, (vi) merger programme announcement, and (vii) accounting manipulation.

The 'learning by doing' hypothesis asserts that both the number and order of acquisitions will have a positive effect on the bidding company's shareholder wealth. This is underlined by the 'acquisition learning curve', which implies a positive correlation between experience and an acquirer's cumulative abnormal returns (CAR). In other words, the more takeovers in which a

company engages, the more successful each ensuing acquisition will be in terms of performance.

The ‘overvaluation hypothesis’ entails the belief that mergers will take place only if the acquiring company is in a good financial position, either in terms of recent performance of the share price or from a positive market situation where the company operates. It could also be due to the agency costs which arise in the acquisition of overvalued firms (Jensen 2004). Bidders in this case may be more likely to use a stock swap rather than cash to realise the acquisition in order to increase their share performance around the announcement date (short-run). In the same regard, this could lead to under-performance in the long-run. Recently, Dong *et al*. (2006), Ang and Cheng (2006), Shleifer and Vishny (2003) have demonstrated that this theory holds for both a single acquisition and for a series. This arises from the fact that while short-term results may be good, on a more long-term basis, their degradation often leads to a diminution in shareholder wealth.

Acquiring a large number of companies, as in the ‘monopolisation hypothesis’, can improve the financial performance of a bidding company, especially if the acquisitions are focussed on a single sector or industry. More specifically, it can increase the power of the firm within its market. Kamien and Zang (1993) find that bidding on companies within the industry is likely to increase the concentration of firms and lead to a monopolised market. However, Nilssen and Sorgard (1998) point out that considering the actual context of globalisation and the associated forces of competition, true global monopolisation is likely unachievable.

Nonetheless, other empirical papers have found no correlation between bidder experience and CAR. The ‘indigestion hypothesis’ states that, given the small amount of time between each acquisition, acquirers often do not gain the necessary experience to improve their CAR upon takeover announcement (Guest *et al*. 2004). This implies that every short-run takeover will lead to lower and lower CAR for bidding company shareholders.

The ‘accounting manipulation hypothesis’ states that financial statements can be manipulated in order to portray an overly-positive perception of the takeover. This can arise from corporate governance issues which lead managers to manipulate the figures in order to enhance their own rewards or prestige. One accounting explanation for declining performance is the price-earnings ratio game, which aims to increase earnings-per-share (EPS) by acquiring targets with lower P/E ratios. As it concerns only the accounting profit

and not the shareholders' wealth, this entails a short-term vision on the part of managers which could be totally offset in the long-run (Guest *et al*. 2004).

The 'merger programme announcement hypothesis' states that the first takeover in a particular period may be seen as part of a long-term merger strategy. This may be viewed positively by the market, leading to improvement in the performance of the firm and the shareholders' wealth. When the second takeover is announced, however, a short-term gain will be observed, but as a first takeover has already taken place, stock prices will already exhibit a decrease from this first acquisition. Thus, the merger programme announcement hypothesis states that a series of acquisitions will not have an overall positive effect on shareholder wealth (Guest *et al*. 2004).

2.6. Mergers and Acquisitions and Risk

In recent years, financial institutions have been exposed to a variety of risks in a volatile and uncertain environment, and this has had economy-wide spill over effects, as revealed by the recent global financial crisis. It is important to differentiate between uncertainty and risk. The former arises in situations where the probability of various effects is unknown, while the latter applies when the probability of prospective consequences *is* known. It is also important to bear in mind that risk which affects the financial system as a whole and can have economy-wide consequences is 'systemic' and can be attributed to causes other than M&As. Focussing on the financial industry, Murphy (2012: 1) defines systemic risk as "the possibility that the financial system as a whole might become unstable, rather than the health of individual market participants. Stable financial systems do not transmit or magnify shocks to the broader economy".

In more general terms, according to portfolio theory, the total risk of a firm operating within an industry, whether financial or non-financial, comprises of two major types of risk: systematic risk and unsystematic risk.

Systematic risk is related to the market or industry as a whole and is also known as 'un-diversifiable risk'. With regard to the financial industry, Hendricks, Kambhu and Mosser (2007: 65) define systematic risk as "the risk that an event will trigger a loss of economic value or confidence in, and attendant increases in uncertainty about, a substantial portion of the financial system that is serious enough to quite probably have significant adverse effects

on the real economy". However, several empirical studies emphasise that systematic risk is a difficult concept to accurately define.

In contrast, unsystematic risk is the risk that is idiosyncratic to a given company, such as a particular hazard that is inherent to an investment, and this kind of risk is diversifiable. In general, then, unsystematic risk is unique to a firm or industry. Factors such as management capability, consumer preferences, raw material scarcity, and labour strikes can cause unsystematic variability in a firm's returns.

It has been amply demonstrated in previous research that both systematic and unsystematic risk can have a strong impact on share prices and, particularly in times of economic distress, managers employ particular strategies to mitigate the impact of both kinds of risk through M&As. Although systematic risk can be reduced by employing a suitable assets allocation strategy or through risk-hedging transactions, unsystematic risk is often mitigated through diversification, such as by holding stock in various firms that operate in a variety of industries. This may entail that managers engage in M&As to control operating costs and increase the company's average market share in order to mitigate operating risk by diversifying the company's operation and producing benefits related to economies of scale. However, management decisions can also influence levels of systematic risk exposure, which are determined by a set of external factors and may reflect on firm performance (Lee and Jang 2007). It is therefore appropriate to consider the risk of management actions in terms of their impact on stock returns or divarication.

2.6.1. The Risk of Stock Returns

The empirical literature has considered the trade-off between portfolio returns and risk as well as demonstrated misperceptions surrounding the available definitions of stock returns and risk. Lubatkin and O'Neill (1987) suggest that modern portfolio theory distinguishes between risk factors which increase with general economic movements and those that do not.

For instance, a major customer bankruptcy is considered a source of unsystematic risk (or 'stakeholder risk' or 'business-specific risk'). This kind of risk can be associated with a wide variety of sources, such as a fire at a production facility, the death of a high-ranking executive, or the unexpected obsolescence of product technology. Miller and Bromiley (1990) emphasise that unsystematic risk correlates ($r = 0.32$) with several measures of income

variability, and hence the factors which affect this type of risk may not affect all returns.

With regard to systematic risk, Helfat and Teece (1987) suggest that the sources of this type of risk often involve changes in fiscal or monetary policy, tax laws, the cost of energy, and the demographics of the marketplace. A company's average systematic risk exposure is determined through the level of uncertainty related to responsiveness, general economic forces, or the sensitivity of a company's returns to those forces. Miller and Bromiley (1990) found that systematic risk correlates (r = 0.40) with several measures of income variability.

2.6.2. Market Risk vs. Diversification

The above analysis suggests that M&As which diversify a firm's activities with returns that do not correlate highly with those of the firm's existing portfolio will contribute to lowering unsystematic risk. However, if the diversification involves activities with higher risk, then overall portfolio risk could actually increase, even if the returns on the activities do not correlate highly with those of the existing portfolio.

Drawing on this line of reasoning, Berger *et al.* (2015) distinguish between a 'market risk hypothesis' and a 'diversification hypothesis' in their analysis of the relationship between internationalisation and bank risk. The market risk hypothesis implies that banks sustain lower levels of risk as they tend to diversify their portfolios internationally, while the diversification hypothesis asserts that banks actually face higher risk levels when operating abroad owing to market-specific factors which can make their foreign assets comparatively risky. In other words, foreign market conditions may cause international banks to face greater rather than lower levels of risk on their foreign assets due to a variety of market-specific factors. Gulamhussen, Pinheiro and Pozzolo (2014) emphasise the complexity of the relationship between internationalisation and bank risk, where potential risk-reducing gains from portfolio diversification can be offset by incentives which lead banks to take on excessive amounts of risk.

There is also literature which considers the effect of M&A diversification on the risk of nonfinancial firms; similarly, two opposing views are presented. Some studies point to the benefits of increased diversification which has been associated with generating cash flow in different countries, and this implies lower levels of risk for multinational corporations (MNCs) relative to purely domestic corporations (Hughes, Logue, and Sweeney 1975,

Amihud and Lev 1981, Michel and Shaked 1986). On the other hand, factors such as greater foreign exchange risk, political risk, local market conditions, regulatory barriers, agency problems or difficulty monitoring managers abroad, and unfamiliarity with foreign markets are common factors which imply greater cash flow volatility and higher risk levels for MNCs (Bartov, Bodnar, and Kaul 1996, Reeb, Kwok, and Baek 1998). In addition, there may be operational diseconomies associated with distance which can affect MNC performance or risk (consistent with the 'home field advantage hypothesis' of Berger *et al*. [2000]).

2.7. Factors Influencing M&A Value

As discussed earlier in this chapter, there are various theories and numerous studies which support the view that the method of payment, target status, diversification, acquirer's bidding experience as well as other factors (such as size of deal and bidder size) play an important role in explaining acquiring firms' stock returns This section summarises the main arguments and hypotheses and by doing so provides a rationale for the inclusion of main determining factors in the empirical analysis evaluating their their impact on the bidders' returns.

2.7.1. Method of Payment

Many studies examining the method of payment in M&As suggest that it has a strong impact on bidder firm's stock return (e.g. Travlos 1987; Wansley, Lane, and Yang 1987; Amihud, Lev, and Travlos 1990; Servaes 1991; Brown and Ryngaert 1991; Draper and Paudyal 1999; Eckbo and Thorburn 2000; Moeller, Schlingemann, and Stulz 2004; Faccio and Masulis 2005; Ismail 2008; Martynova and Renneboog 2011). There are principally four main hypotheses (i.e. information content, free cash flow, investment opportunity, and risk sharing) which offer a rationale to investigate why there should be such an impact of the method of payment on stock price.

First, the information content hypothesis, suggested by Travlos (1987) based on the theory developed by Myers and Majluf (1984), predicts that if there is stock offered by the bidder to finance an acquisition then the market may interpret that the firm is overvalued. Second, the free cash flow hypothesis, originally based on Jensen (1986), holds that acquisition paid for by cash can reduce the agency cost associated with free cash flows. These two hypotheses confirm that there should be negative abnormal returns around the announcement day if the

stock payment method is used to finance the acquisition, and positive abnormal returns for cash payments.

The other two hypothesesdo not necessarily suggest a negative reaction with stock payments. The investment opportunity hypothesis states that it is inefficient to pay by cash if the bidder has excellent investment opportunities. In most cases, it is assumed that cash transactions are to be financed by external debt. Hence, the free cash flows should not be used to pay up debt since that reduces the discretionary power of managers to use free cash flow in investments. The risk sharing hypothesis holds that for the high risk transactions it is inefficient to pay by stock since the target firm will have the incentive to make the takeover success. Hence, the implication of both these hypotheses is that the stock payment method may not be always have a negative reaction.

2.7.2. Target Status

There are several studies which show that acquirers of non-public targets tend to achieve higher announcement returns than do acquirers of public listed targets (Chang 1998, Fuller, Netter and Stegemoller 2002, Moeller, Schlingemann and Stulz 2004, Jaffe *et al*. 2015). As discussed in section 2.4, there are a number contending theories which seek to explain the differences of stock returns from between the private and public acquisitions, the most prominent ones relating to (a) managerial motive of bidders, (b) liquidity of targets, and (c) bargaining power of parties in the acquisition process. The relevance and predictions of these hypotheses which explain the bidder return differential observed in acquisitions of public vs non-public targets are summarised below.

The managerial motive hypothesis: The major motives of the managers of the bidding firms can be either maximising the private benefits accruing to them, or increasing the shareholders' wealth. There some private benefits of the managers which are related to the size and brand image of the firms they manage, and also the extent of their research control. Here the managers are motivated to increase prestige and maximise their firm size (maximising private benefits), so they will be prepared to pay high premiums for the large and reputed targets. Such activities may have adverse effect on the share price of their firms. Generally, the publicly listed targets are better known than the private firms. While the acquisition of less reputed private firms are not very well connected to the private wealth creation of the managers, they are more driven by the potential synergies from the acquisition

and a desire to maximise shareholders' wealth. Hence in such cases the mangers would be willing to pay lower premiums which won't adversely affect the acquiring firms share price (Faccio, McConnell and Stolin 2006). Smaller private firms are easily integrated into the business as compared to that of the large public targets. Hence the market may perceive the acquisition of a private firm more favourably than the bidding for the listed firms. Hence the testable hypothesis: 'bidders for private targets should gain more than bidders for listed targets'.

The liquidity hypothesis: Chang (1998) has hypothesised that, in a perfect competitive takeover market, any takeover transaction should be a zero NPV transaction, where the bidding firm should not earn any extra abnormal return when the bid is paid in cash. However, this result is based on the informational efficiency of the market. Compared to the listed target, the unlisted target is much more opaque and therefore there is much less information availability, which further reduces competition. Moreover, the market for privately held firms is very illiquid. Such factors may increase the bargaining power of the bidders and is likely to generate underpayment by bidding firms, leading to higher returns for bidders for private targets than for public targets.

The bargaining power hypothesis: For the private firms the ownership structure is often concentrated and a small group of partners mainly controls the ownership which may also reduce the agency problems which they may face. Such favourable conditions often help the firms to choose the time of sale and also the buyers whom to sale their business. This bargaining power is of special importance if the payment mechanism is based on shares, hence there is more ability to control the sale more closely suggests that closely controlled firms may have significant bargaining strength allowing the owners to receive a better price for their firm, and for the premium paid by the bidder to exceed the potential gains that may result from the merger (Gonenc, Hermes and Sinderen 2013).

2.7.3. Geographic Diversification

The location of the target firm is also an important characteristic which has been seen to affect the bidder returns (Markides and Ittner 1994, Bhagat, Malhotra, and Zhu 2011, Deshpande, Svetina, and Zhu 2012, Danbolt and Maciver 2012). There is, however, contradictory evidence of the impact of domestic or foreign acquisitions on bidder returns, and there are many factors which are related to the acquirer's home country and its cultural

and legal environment which may also be relevant. Dutta, Saadi and Zhu (2013) indicate that there is generally a higher concentration of larger value based transactions in the merger markets, and find that cross-border acquisitions generally seem to be regarded as more favourable than domestic acquisitions. On the other hand, Moeller and Schlingemann, (2005) find insignificant differences between domestic and cross-border acquisitions of the US firms.

Cross border acquisitions are generally more exotic alternatives available to bidders, and there are many reasons why the bidders would find them more attractive relative to domestic acquisitions. From the perspective of the portfolio theory, the opportunity of taking over firms in a different country would expand the portfolio diversification benefits (Moeller and Schlingemann, 2005). Such activities will increase the likelihood that the optimal synergy effects and efficiency gains of the acquisitions will be realized. From the perspective of corporate governance, the acquiring countries legal and regulatory set up can change the policies of the target firm and expectation of future dividends among their current shareholders. Bris, Brisley and Cabolis (2008) argue that in such cases the shareholder protection might be different between the countries. In this scenario if the target firm belongs to a country with better shareholder protection then the combined organisation may perform better, yielding shareholder benefits.

There are also other important considerations to account for in cross-border acquisitions, for example the integration of the shareholder interests with managerial and regulatory assets (Campa and Hernando 2006). There can be loss of synergy due to the lack of integration processes in place. One standard explanation as to why the cross-border mergers may generate greater returns is that there can be diversification benefits when businesses seek synergies arising from information based assets (Morck and Yeung 2003). Hence such mergers help to achieve synergies through internalisations which can otherwise be lost due to various market failures.

2.7.4. Industrial Diversification

An age old question is whether corporate diversification creates or destroys value? There are several empirical studies which show that diversifications may destroy bidders' shareholder wealth, which is reflected in the fact that the shares of the diversified, merged organisations

trade at a discount. In such scenarios, the opinions of managers, creditors, and stockholders differ greatly regarding the merits of corporate diversification (Martin and Sayrak 2003).

The standard reason for the firms to go for diversification is that managers would like to reduce their firm specific risks which can affect the value of future compensations. Moreover, the creditors of firms may also want managers to diversify since uncertainties about cash flows can further impact the default probabilities of firms. However, shareholders may not want the firms to diversify. Montgomery (1994) has listed some reasons why the managers might want to diversify, namely, agency theory, resource based theory, and market power theory. Agency theory may predict that diversification is a result of the managerial self-interest, or hubris. According to the standard agency theory explanation managers may want to diversify in order to (1) increase their compensation (Jensen and Murphy, 1990), power, and prestige (Jensen, 1986); (2) make their positions with the firm more secure (i.e., entrench themselves) by making investments that require their particular skills via manager-specific investments (Shleifer and Vishny 1990); and (3) reduce the risk of their personal investment portfolio by reducing firm risk since the managers cannot reduce their own risk by diversifying their portfolios (Amihud and Lev 1981).

From the perspective of the resource based theory, diversification takes place when there is excess capacity in resources and capabilities which can be transferred across the industries. Here the main driver of such diversifications is the economy of scope as theorised first by Penrose (1959). One example is that firms can use the same marketing or distribution channel for a variety of products. Again the firm may be able to utilize its corporate legal and financial staff to support a variety of different industries.

Finally, there is the market power theory from which diversification benefits can be viewed. Villalogna (2004) provided three different anticompetitive motives for diversifications. The first one is using profit in one industry to practise predatory pricing in another. The second motive is to collude with the firms which compete with the firm in multiple product markets, also known as the mutual forbearance hypothesis which is applicable in multiple markets. Third is the reciprocal engagement, i.e. firms might use corporate diversification to engage in reciprocal buying with other large firms in order to squeeze out smaller competitors, thus reaping market power benefits.

2.7.5. Bidder Experience

According to Roll (1986) the managers who go for frequent acquisitions are either poor managers with free cash flows or very good ones at evaluating potential synergies. These ideas are formalised in the form of empire building hypothesis or efficient market hypothesis, respectively. The theory also holds that these type of firms would increase their abilities of better mergers when they move up the learning curves. Hence, such firms should perform well and better than the average firms, specifically if the average firms are in the same industries. Moreover, such synergy gains should be reflected in the share prices also. A positive change in their operating performance will occur as costs decrease from the increase in the economies of scale and as the firm increases revenues and profits resulting from a gain in market power (Stegemoller 2002).

However, if there is no fundamental logic for acquisitions but the firms would simply like to race with their peers in multiple acquisitions, then there are unlikely to be significant benefits in terms of improved performances. Moreover, those firms with hubristic management will most likely decrease in value as the market observes shrinking margins and reduced cash flows at the expense of increasing size. Frequent acquirers should be the crown jewels of firms exhibiting poor use of discretionary cash flows (Roll 1986).

On the other hand, the market efficiency hypothesis holds that the mergers are nothing but zero NPV transactions. There can be some interpretations of takeover according to this hypothesis, for example, a takeover may represent any of the following: (1) a simple alternative to expanding capacity already impounded in the firm's stock price, (2) a vessel used by management to build an empire, and (3) an introduction of valued synergies not previously recognized by the market. The efficient market would see these hypotheses from a neutral, negative and positive light, respectively.

2.7.6. Other Explanatory factors

Value of Transaction

There is a large volume of literature which suggests that large firms which take over smaller firms actually destroy value of their shareholders. For example, BusinessWeek (2002) reports that 61% of merger deals worth at least $500 million ends up costing the shareholders.

Similarly, research by Boston Consulting Group (2007) shows that "megadeals" priced at more than $1 billion destroys nearly twice as much value relative to smaller transactions.

There are many hypotheses developed in the support of such results. Loderer and Martin (1990) argue in the line of overpayment, i.e. large firms tend to overpay for the merger, and such arguments are based on the managerial hubris hypothesis if the overconfident managers overestimate the synergy benefits (Roll 1986; Hayward and Habrick 1997; Malmendier and Tate 2008). Moreover, the managers can also overpay for larger targets since there are hidden private benefits (Morck, Shleifer and Vishny 1990; Loderer and Martin 1990; Grinstein and Hribar 2004; Harford and Li 2007).

On the other hand, there are many reasons for which there should be lower premiums for larger deals. There is a risk taking hypothesis which suggests that if greater value is at stake then there can be more accurate valuations and also make the managers or the boards hesitant to offer greater premiums (Alexandridis, *et al.* 2013). Furthermore, there can be better incentives for the managers to hire reputed advisors for negotiating better deals. There can be greater uncertainties also from larger deals, which may be the result of too large diversities of products and sources of cash flows, which can also lower the premium. From the perspective of the competition theory also the large targets have less number of bidders, hence lower levels of premium (Gorton, Kahl and Rosen, 2009), which however also mitigates the 'winners curse' problem up to a certain extent, and can lower premium. There can also be lower managerial ownership which can also make the management accept lower price, which leads to lower gains for their shareholders (Bauguess, *et al.* 2009).

Alexandridis *et al.* (2013) have provided evidence for the fact that not only that the bidders pay lower premium for the larger deals, the effect also persists over time. Their results are quite robust when a set of control variables for other known determinants is used. The same authors have shown that the uncertainty of return measurements also increases while larger acquisitions are considered, which shows that the investors think that larger acquisitions are very uncertain investments. Alexandridis *et al.* (2013) show that returns from the large deals tend to be lower in the long run, whereas the abnormal returns from the smaller transactions generate positive abnormal returns for the acquiring shareholders. There can be post-merger integration problems also which may make the abnormal returns go negative for larger transactions

Common Law (Target)

By reshuffling control over companies, M&As help to reallocate corporate assets to their best possible use. Greater investor protection in the target country can affect the shareholder wealth because of lower frictions and inefficiencies in the target country (Rossi and Volpin 2004). The importance of the legal traditions, emanating from the pioneering work of La Porta *et al* (1998), is based on the critical impacts of ownership structures, shareholder protections, and capital markets. There are striking differences in ownership structures between the common law and civil law countries, in the former the ownership is rather dispersed among large number of outsider investors and the concentrated ownership is rather limited. Hence the control of the shareholders on the managers is very less which again generates various agency conflict issues (Franks and Mayer 2001). Therefore, the principal agency conflicts are taken be more pervasive in the common law economies like UK. Moreover, since the voting power is dispersed there is a greater incidence of free rider problems in case of corporate control which affects their stock markets (Shleifer and Vishny: 1997).

These differences in investor protection laws give rise to different market reactions to the M&A announcements. Empirically, therefore, in cross-country analysis of shareholder returns it appropriate to distinguish between common law and civil law countries (using a dummy variable in regressions). La Porta, *et al*. (1998) argue that legal origin is a broad indicator of investor protection and show that countries with common law legal origin protect minority shareholders more than do countries with civil law as the legal origin.

GDP for Target Country

The literature suggests that cross-border acquisitions are less valuable than domestic acquisitions (e.g. Aw and Chatterjee 2004, Soussa and Wheeler 2006, Moeller and Schlingemann 2005, Mangold and Lippok 2008) due to the differences in cross border cultures and regulations. Hence, in cross-country analysis, it is important to investigate whether the GDP of the target nations have significant impacts on the bidder returns. Gravity models hold that the flow of bilateral trades should be inversely proportional to the distances between the countries and is proportionate to the size of the economies as measured by GDP (Giovanni 2005). There are some oversimplifications in such a model, for example the trade and FDI flows between countries depend on relative trade costs rather than absolute trade

costs, for example there is strong evidence that neighbouring nations trade more with each other since they have fewer alternative trade partners, as in the case of the EU countries (Giovanni 2005).

The fundamental premise behind cross border mergers is that the firms enter the target markets to exploit resources and market imperfections in the target country (Buckley and Casson 1976; Morck and Yeung 1992). For identifying such opportunities, the size of the target countries can be used, proxied by its GDP, as one of the determinants of value in cross-border mergers.

Bidder Size

Bidder size is another determining factor of value in M&As, where the conventional argument is that small bidders may earn significantly higher abnormal returns than large bidders upon announcements. The reason is that large firms pay higher premiums and enter acquisitions with negative synergy gains. This finding is consistent with managerial hubris playing a significant role in decision making by large firms. Large firms generally experience significant shareholder wealth losses when they announce acquisitions of public companies irrespective of how the acquisition is financed, while small firms gain significantly when they announce an acquisition unless it is paid with equity (Moeller, Schlingemann and Stulz 2004). Hence, bidder asset size, proxied by the log of market value of the acquiring firm around four weeks prior to announcement, can be used in determining its effect on shareholder wealth.

Market to Book Ratio

As is standard in the corporate finance literature, the ratio of market to book value of a firm conveys information regarding the past and future investment opportunities or the cash flow for the acquirer's stock performances. There is ample empirical evidence suggesting that the high market to book value acquirers (or the value acquirers) earn higher abnormal returns upon announcement (Lang *et al.* 1989). However, Rau and Vermaelen (1998) and Petmezas (2009) found that the low value acquirers have outperformed the value acquirers in the short term. There are also some studies which hold that the relative size of acquirer and the target's market to book ratio influences the abnormal returns; for example, Rau and Vermaelen (1998) found that that the acquisition of firms with low market-to-book ratios generates high

abnormal returns for the shareholders of the bidding firm whereas the takeover of firms with high market-to-book ratios yields substantial negative abnormal returns.

2.8. Conclusion

This chapter has discussed the various motives for M&As and the corresponding underlying theories. The literature has proposed a variety of motives which can have an impact on shareholder wealth and has also shown that asymmetric information (between bidder and target) can be a crucial factor in determining the method of payment used in M&A transactions. Furthermore, the theoretical arguments highlighting the relevance of target status, bidder experience, and diversification motives have been considered in terms of their relevance in determining shareholder value. The next chapter will review a number of existing empirical studies related to the impact of payment method, public target status, acquirer bidding experience, and diversification on acquiring company shareholder wealth.

Chapter 3: Evidence on the Impact of M&As on Shareholder Wealth and Risk

3.1. Introduction

Mergers and acquisitions are generally viewed as a way of reallocating corporate assets in order to influence shareholder value according to the motives discussed in Chapter 2. Accordingly, researchers have studied the implications of M&As on shareholder value by providing empirical evidence based on the use of event studies and cross-sectional regressions. The purpose of this chapter is to provide a review of the relevant evidence in terms of the impact on shareholder wealth while assessing the relevance of target status, method of payment, acquirer bidding experience, and diversification motives. Additionally, evidence relating to the impact of M&As on acquirers' risk will also be assessed. This chapter thus complements the previous chapter by focussing on the empirical evidence pertaining to the theoretical issues discussed in that chapter.

The chapter begins with a brief introduction in Section 3.2 to the use of the event study method that is commonly used to measure shareholder wealth[5]. This is followed by a broad overview of the evidence based on acquirer, target, and combined firms' shareholder wealth. Section 3.3 then reviews the empirical literature on CAR regressions, focussing on evidence relating to method of payment, public target status, diversification, and bidder experience. Section 3.4 discusses the evidence relating to the impact of M&A on acquirers' risk, and finally, Section 3.5 provides a brief summary identifying the potential for further research.

[5] Chapter 4 further illustrates the use of this methodology as well as the accompanying cross-sectional CAR regression method.

3.2. Evidence Based on Event Studies

Event studies aim to analyse shareholders' abnormal returns during the period of transaction announcement. In order to analyse the impact of M&As on shareholder returns, abnormal returns have to be calculated for each day in the event window period, which incorporates the announcement day of the event itself. As highlighted by Bruner (2002: 49), an event study calculates "the abnormal returns to shareholders in the period surrounding the announcement of a transaction". For each day in the event period, the raw return is calculated as the change in market share price from the day before divided by the closing share price of that day. Essentially, abnormal returns are the raw return less a benchmark of what was required by investors that day. This benchmark is usually the return base outlined by the either the capital assets pricing model (CAPM) or the market model. The cumulative abnormal return for the event period starts at T_1 and ends at T_2 and can be denoted as CAR (T_1,T_2), which represents the sum of the abnormal returns for each day over the event period. The average CAR is the computed average of each CARs(T_1,T_2) for all M&A announcements included in the sample.

As Fama *et al.* (1969) predicted, event study methods have become recognised as the key approach for establishing the quantitative impact of an event on stock returns, and as such, it has become a valuable instrument of analysis for assisting firms in establishing whether or not the returns over a given event period are abnormal (MacKinlay 1997, Kolari and Pynnönen 2010, McWilliams and McWilliams 2011). According to Bodie, Kane, and Marcus (2005: 351), an event study "describes a technique of empirical financial research that enables an observer to assess the impact of a particular event on a firm's stock price". It has been widely acknowledged that the reliability of an event study ultimately rests on the various statistical assumptions used in calculating abnormal returns. For instance, an event study could relate to an assessment of the impact of a firm's announcement of a dividend payment on stock returns, based on the typical assumption that, in the absence of the event, the returns are normally distributed.

A good deal of literature has centred on analysing the impact of mergers and acquisitions on shareholder wealth using CARs for different window lengths around the announcement date. In this section, a broad outline of the evidence based on CARs is provided, with emphasis on target, bidder, and combined entity shareholder returns. The earlier event study evidence is primarily drawn from the works of Bruner (2000), Campa and Hernando (2004), although

attention is also given to more recent studies which have examined deals made within the last ten years.

3.2.1. Evidence on Target Company Shareholder Returns

In a majority of cases, the shareholders of target firms generally enjoy announcement returns which are positive. Table 3.1 below presents the findings of 18 different studies, and it can be seen that, irrespective of time period variations, deal type, sector, and observation period, the returns were positive and relatively significant. Broadly speaking, these results are in line with those detailed in other literature surveys (e.g. Datta, Pinches, and Narayanan 1992, Bruner 2002, Campa and Hernando 2004).

As detailed in Table 3.1, the average cumulative abnormal returns for target firms were 16.95%. Overall, cumulative abnormal returns tend to be somewhat lower in the financial sector than in industrial sectors. Karceski, Ongena, and Smith (2005), for example, report negative target returns for the banking sector.

The majority of previous studies, however, recognise that positive CARs tend to occur in the days before and immediately following the announcement. The fact that positive CARs tend to be seen in the days before the announcement date implies that the market expects a target run-up as information leaks out about the deal. In a recent survey of the U.S. literature, Eckbo (2009: 153) suggests that the target run-up before an announcement typically constitutes about one-third of the total run-up (i.e. target plus bidder value-weighted sum) plus the announcement abnormal returns. In addition, the researcher notes that the largest target abnormal returns tend to occur in all-cash offers.

Table 3.1: Returns to Target Firm Shareholders.

Returns to Target Firm Shareholders						
Study	**CAR**	**Sample Size**	**Sample Period**	**Event Window (days)**	**Industry Coverage**	**Country Coverage**
Schwert (1996)	23.40%	1,814	1975-1991	(–42,+126)	Diversified	U.S.
Maquieira, Megginson, and Nail (1998)	41.65% conglomerate	47	1963-96	(–60,60)	Diversified	U.S.
	38.08% non-conglomerate	55				
Frederikslust *et al*. (2000)	11.94%	101	1954-1997	(–1,0)	Diversified	Netherlands
	11.02%			(–1,+5)		
	16.76%			(–10,+5)		
Mulherin (2000)	10.14%	202	1962-1997	(–1,0)	Diversified	U.S.
Mulherin and Boone (2000)	21.20%	376	1990-1999	(–1,+1)	Financial and Non-financial	U.S.
Schwert (2000)	20.00%	2,296	1975-1996	(–63,+126)	Diversified	U.S.
Andrade, Mitchell and Stafford (2001)	16.00%	3,688	1973-1998	(–1,+1)	Diversified	U.S.
	16.00%	598	1973-1979			
	16.00%	1,226	1980-1989			
	15.90%	1,864	1990-1998			
DeLong (2001)	16.61%	280	1988-1995	(–10,1)	Banking	U.S.
Houston, James, and Ryngaert (2001)	15.58%	27	1985-1990	(–4,1)	Banking	U.S.
	24.60%	37	1991-1996			
	20.80%	64	1985-1996			
Beitel, Schiereck, and Wahrenburg (2004)	14.16%	98	1985-2000	(–20,0)	Financial	Developed and Developing Countries
	12.39%			(–1,+1)		
	14.39%			(–10,+10)		
	16.00%			(–20,+20)		
Danbolt (2004)	2.32%	514	1986-1991	(–2, –1) M	Diversified	UK Domestic
	18.33%			(0,+1) M		
	20.64%			(–2,+1) M		
	8.33%	116		(–2, –1) M		UK Cross-Border
	22.38%			(0,+1) M		
	30.71%			(–2,+1) M		
Goergen and Renneboog (2004)	9.01%	129	1993-2000	(–1,0)	Diversified	18 European Countries
	12.96%			(–2,+2)		
	15.92%			(–5,+5)		
	23.43%			(–30,+30)		
	21.78%			(–60,+60)		
	21.59%			(–90,+90)		
Kiymaz (2004)	3.41%	391	1989-1999	(–1,1)	Financial Institutions	U.S.
	4.12%			(–5,5)		
	5.12%			(–10,10)		
Karceski, Ongena, and Smith (2005)	8.48%	39	1983-2000	(–7,0)	Banking	Norway
	–1.52%			(+1,+7)		
Martinez-Jerez (2008)	13.37%	335	1990-1998	(–1,1)	Diversified, Non-financial	U.S.
Kuipers, Miller, and Patel (2009)	35.83%	181	1982-1991	AD –20 to ED+5	Diversified, Non-financial	OECD Countries
	32.22%			AD –5 to ED+5		
Martynova and Renneboog (2011)	26.70%	760	1993-2001	(–60,+60)	Diversified	Continental European
	15.83%			(–5,+5)		
Liargovas and Repousis (2011)	10.00%	26	1996-2009	(–30,+1)	Bank	Greek
	9.00%			(–10,0)		

3.2.2. Evidence on Acquiring Company Shareholder Returns

According to the literature, results regarding returns to bidding company shareholders are generally thought to be less conclusive. The evidence is relatively evenly-distributed between studies showing negative CARs and those detailing slightly positive and zero CARs. Dodd (1980), for example, found that acquiring firm shareholders often face negative abnormal returns, while target shareholders tend to earn significant positive abnormal returns. In the U.S., Eckbo (2009) concludes that most of the research acknowledges that bidding firm abnormal returns are typically small and often negative around an announcement. In the case of the EU, Mangold and Lippok (2008) analysed the impacts of M&As on acquiring firms' shareholder wealth and found that such transactions can induce notable shareholder wealth destruction, with the cumulative abnormal returns (CAR) for the (–1,+1) window recorded at –0.3%. More recently, Rani, Yadav, and Jain (2014) analysed the impact of domestic completed M&A deals over the period 2003-2008. Negative abnormal returns were experienced by the acquirers for the post-event window spanning 19 days (+2,+20) in the case of all acquisitions.

Tables 3.2 and 3.3 below list the outcomes of a total of 28 studies, broken down into those showing negative CARs (Table 3.2) and those showing positive or zero CARs (Table 3.3).

Table 2, which details 16 studies ranging from the U.S. to developing countries and covering financial as well as diversified M&As, shows variation in negative announcement CARs ranging between –13% and –0.1%, with an average of –2.14%. On the other hand, as shown in Table 3.3, 12 studies, some of which have common authors, illustrate either positive or zero returns in the range of 0.18% to 6.14%. Thus, a majority of the studies surveyed here report bidder announcement returns that are typically small and often negative, which is consistent with what Eckbo (2009) reports for the U.S. Importantly, the evidence is fairly evenly-distributed between studies that report small but positive returns and those which report small and negative returns. Accordingly, unlike the case for target company shareholders, no strong evidence is demonstrated in the aggregate for one-sided negative or positive CARs for acquirers, which are typically positive and significant.

It should be noted that the majority of studies report CARs which appear to increase for short window lengths surrounding the announcement date. Studies examining bidding company announcement returns for a longer period commonly establish negative and statistically

significant CARs, particularly in diversified M&As (e.g. Martynova and Renneboog 2011, Nnadi and Tanna 2013, Raj and Uddin 2013, Rani, Yadav, and Jain 2014).

Table 3.2: Studies Reporting Negative Returns to Acquirers.

Studies Reporting Negative Returns to Acquirers						
Study	**CAR**	**Sample Size**	**Sample Period**	**Event Window**	**Industry Coverage**	**Country Coverage**
Mulherin and Boone (2000)	–0.37%	281	1990-1999	(–1,+1)	Diversified, Non-financial	U.S.
Walker (2000)	–0.84%	278	1980-1996	(–2,+2)	Non-financial and Non utilities	U.S.
Andrade, Mitchell & Stafford (2001)	–0.70%	3,688	1973-1998	(–1,+1)	Diversified	U.S.
	–0.30%	598	1973-1979			
	–0.40%	1,226	1980-1989			
	–1.00%	1,864	1990-1998			
DeLong (2001)	–1.68%	280	1988-1995	(–10,1)	Banks	U.S.
Houston, James, and Ryngaert (2001)	–4.64%	27	1985-1990	(–4,1)	Banks	U.S.
	–2.61%	37	1991-1996			
	–3.47%	64	1985-1996			
Doukas, Holmen and Travlos (2002)	–2.37%	101	1980-1995	(–5,+5)	Diversified	Sweden
	–0.52%			(–1,+1)		
Beitel, Schiereck, and Wahrenburg (2004)	–0.10%	98	1985-2000	(–1,+1)	Financial	Developed and Developing
	–0.20%			(–20,+20)		
Soussa and Wheeler (2006)	–0.22%	215	199-2003	(–1,+1)	Bank	Acquirer: Developed, Target: Developing
	–0.36%			(–1,+5)		
	–0.41%			(–1,+7)		
	–0.15%			(–10,+7)		
Martinez-Jerez (2008)	–2.92%	335	1990-1998	(–1,1)	Diversified	U.S.
Kuipers, Miller, and Patel (2009)	–2.12%	138	1982-1991	AD–20 to ED + 5	Diversified	OECD
	–1.32%			AD-5 to AD + 5		
Liargovas and Repousis (2011)	–13.00%	26	1996-2009	(0,+30)	Bank	Greek
	–2.00%			(0,+10)		
Martynova and Renneboog (2011)	–2.83%	2,419	1993-2001	(–60,+60)	Diversified	Continental European
Nnadi and Tanna (2013)	–12.25%	62	1997-2007	(–30,+30)	Bank	European Union
Raj and Uddin (2013)	–0.75% Unrelated	340	1994-1998	(–15,+15)	Diversified	UK
	–18.93% Unrelated			1 M to 36 M		
Rani, Yadav & Jain (2014)	–0.36%	268	2003-2008	(–20,+20)	Diversified	India
Jaffe *et al*. (2015)	–0.58%	3,406	1981-2012	(–1,+1)	Diversified	U.S.

Table 3.3: Studies Reporting Zero or Positive Returns to Acquirers.

Studies Reporting Zero or Positive Returns to Acquirers						
Study	**CAR**	**Sample Size**	**Sample Period**	**Event Window (days)**	**Industry Coverage**	**Country Coverage**
Maquieira, Megginson, and Nail (1998)	6.14% non-conglomerate	55	1963-1996	(−60,60)	Diversified	U.S.
Frederikslust *et al*. (2000)	0.25%	101	1954-1997	(−1,0)	Diversified	Netherlands
	0.81%			(−1,+5)		
	0.21%			(−10,+5)		
Kohers and Kohers (2000)	1.37% cash deals	961	1987-1996	(0,1)	Technology	U.S.
	1.09% stock	673				
	1.26% whole	1,634				
Mulherin (2000)	0.85%	161	1962-1997	(−1,0)	Diversified	U.S.
Floreani and Rigamonti (2001)	3.65%	56	1996-2000	(−20,+2)	Insurance	U.S., Europe, Australia
Beitel, Schiereck, and Wahrenburg (2002)	0.42%	98	1985-2000	(−20,0)	Financial, Insurance	Developed and Developing Countries
	0.18%			(−2,+2)		
	0.46%			(−5,+5)		
Doukas, Holmen, and Travlos (2002)	2.74%	101	1980-1995	(−5,+5)	Diversified	Sweden
	1.19%			(−1,+1)		
Choi and Russell (2004)	2.41%	171	1980-2002	(−20,+20)	construction industry	U.S.
	2.37%			(−10,10)		
	0.96%			(−5,5)		
	1.66%			(−1,+1)		
Kiymaz (2004)	0.38%	391	1989-1999	(−1,+1)	financial institutions	U.S.
	0.57%			(−5,5)		
	0.61%			(−10,10)		
Raj and Forsyth (2004)	0.09%	199	1990-1998	(−60,+10)	Diversified	U.K.
Christopoulos and Vergos (2008)	0.40%	11	1998-2006	(0,5)	Banks	Greek
	5.90%			(0,160)		
Ismail (2008)	1.22%	16,221	1985-2004	(−2,+2)	Diversified	U.S.
	0.97% Multiple Bidder			(−2,+2)		
	2.63% Single Bidder			(−2,+2)		

3.2.3. Evidence on Total Gains

The combination of positive cumulative abnormal returns to target firm shareholders and breakeven returns to acquiring firm shareholders raises a question concerning combined entity value creation. From the evidence presented in Tables 3.1 to 3.3, it appears that a significant positive gain to target firm shareholders is counterbalanced by an often negative but small loss to bidding firm shareholders, making the total combined value (target and bidder) generally positive.

Numerous studies, both in the U.S. and in other countries, have recorded positive and significant value-weighted combined target/bidder announcement abnormal returns. Table 3.4 below reports a selection of eight such studies, all of which highlight positive combined abnormal returns ranging between 0.05% and 5.73%, implying an average CAR of 2.54%.

Table 3.4: Combined returns to shareholders of acquiring and target firm.

Combined Returns to Shareholders of Acquiring and Target Firms						
Study	**CAR**	**Sample Size**	**Sample Period**	**Event Window (days)**	**Industry Coverage**	**Country Coverage**
Frederikslust *et al*. (2000)	2.73%	101	1954-1997	(–1,0)	Diversified	Netherlands
	1.47%			(–1,+5)		
	3.35%			(–10,+5)		
	3.99%			(–20,+5)		
	4.80%			(–40,+5)		
Mulherin (2000)	2.53%	116	1962-1997	(–1,0)	Diversified	U.S.
Mulherin and Boone (2000)	3.56%	281	1990-1999	(–1,+1)	Diversified nonfinancial	U.S.
Andrade *et al*. (2001)	1.80%	3,688	1973-1998	(–1,+1)	Diversified	U.S.
	1.50%	598	1973-1979	(–1,+1)		
	2.60%	1,226	1980-1989	(–1,+1)		
	1.40%	1,864	1990-1998	(–1,+1)		
Houston, James, and Ryngaert (2001)	0.14%	27	1985-1990	(–4,1)	Banking	U.S.
	3.11%	37	1991-1996			
	1.86%	64	1985-1996			
Aktas, Bodt, and Declerck (2002)	0.05%	80	1995-1999	(–5,0)	Diversified	France
	5.73%			(0,+5)		
Beitel, Schiereck, and Wahrenburg (2004)	2.01%	98	1985-2000	(–20,0)	Financial, insurance	Developed and Developing
	1.40%			(–1,+1)		
	1.35%			(–10,+10)		
	1.29%			(–20,+20)		
Kuipers, Miller, and Patel (2009)	5.03%	120	1982-1991	AD–20 to ED+5	Diversified	OECD
	4.27%			AD–5 to ED+5		

3.3. Evidence Based on CAR Regressions

Most of the event studies on M&As (including those reported above) supplement their analyses with cross-sectional CAR regressions in order to identify the key drivers affecting abnormal returns, whether to targets, bidders, or combined-entity shareholders. Focussing on abnormal bidder returns (which is the primary purpose of this research), the literature surveyed by Eckbo (2009) shows that two key drivers of negative returns are 1) bidder size and 2) target status (i.e. as a public or private firm). According to the evidence presented in Betton, Eckbo, and Thorburn (2008), the average three-day CAR was found to be –2.21% and arose in situations where the bidder was (i) relatively large, (ii) bidding for a public target, and (iii) offering an all-stock payment. However, while this evidence was based on U.S. data, other factors inevitably come into play regarding shareholder returns in global M&A transactions. In this section, the evidence on bidding company shareholder wealth relates to the impact of the following factors: method of payment, target status, diversification (both activity and geographical), and bidder experience. These main issues will be the focus of further attention in the empirical analysis of acquiring firm shareholder returns in this section.

3.3.1. Method of Payment in M&As

As demonstrated in Chapter 2, three payment methods are commonly used to realise a merger transaction: all cash, all stock, or a combination of cash and stock. As noted above, the literature suggests that the choice of payment method has an impact on bidding company shareholder wealth (Fuller, Netter, and Stegemoller 2002).

The evidence relating to the impact of stock payment deals is generally inconclusive. While Moeller, Schlingemann, and Stulz (2004) and Ismail (2008) found a positive correlation between stock swaps and acquiring company shareholder wealth, Andrade, Mitchell, and Stafford (2001) and Fuller, Netter, and Stegemoller (2002) found a negative relationship. On the other hand, while the impact of the stock payment method is uncertain, the consensus seems to be that acquiring firm shareholder wealth increases if cash is used as payment rather than stock.

Travlos (1987), Wansley, Lane, and Yang (1987), Amihud, Lev, and Travlos (1990), Servaes (1991), and Brown and Ryngaert (1991) studied deals involving the acquisition of public

targets and found that, on average, acquirers experienced significantly negative abnormal returns when the payment method was stock rather than cash. One dominant explanation for this pattern is that stock financing creates an adverse selection effect similar to a seasoned stock offering. Leland and Pyle (1977) and Myers and Majluf (1984) used signalling theory to prove that, due to the existence of information asymmetry, managers prefer to use cash as payment if they believe that the bidding firm's shares are undervalued and stock if that firm's shares are overvalued. In other words, these researchers demonstrated that payment method can serve as a signal regarding the value of shares. Thus, investors will interpret a cash payment as a positive signal and a stock payment as a negative one. In consequence, cash payments will be more likely to have a positive impact on shareholder value while stock payments will tend to have a negative effect.

In line with the above reasoning, Ismail (2008) and Martynova and Renneboog (2011) empirically demonstrate that cash acquisitions lead to higher abnormal returns for bidding company shareholders. Since paying cash implies a general market belief that the bidder's stock is undervalued, investors begin to buy its shares, causing the share price to increase.

Berkovitch and Narayanan (1990), Fishman (1989), and Eckbo, Giammarino, and Heinkel (1990) further developed the above idea by arguing that high-value bidders will use cash (or a higher proportion of cash/stock) in order to signal their value to the market. However, they also demonstrated that if the value of the target is difficult to determine, managers will prefer to offer stock rather than cash in order to avoid overpaying for the target.

In terms of the effects of the choice of payment method on the bidding company's returns during the announcement period, Travlos and Papaioannou (1991), Draper and Paudyal (1999), and Faccio and Masulis (2005) demonstrate that these vary. In general, the evidence regarding the impact of stock payment acquisitions on acquiring firms' returns is mixed. For instance, Travlos (1987) has shown that financing the deal with stock yields significant negative abnormal returns of 1.03% for the bidder. Similarly, Wansley, Lane, and Yang (1987) demonstrated that the bidder earns insignificant negative abnormal returns for acquisitions with stock payments. Finally, Moeller, Schlingemann, and Stulz (2004) report significant positive abnormal returns for the bidder in both cash and stock acquisitions.

Hansen (1987) explains the puzzle of stock swap offers by explaining that due to the 'contingency pricing effect', the target will share the risk with the acquirer if the bidder

overpays when evaluating a stock offer. Moreover, acquirers prefer to use cash when there is high level of uncertainty about their own firm's value and stocks when there is a high level of uncertainty about the target's value.

Eckbo and Thorburn (2000: 17) suggest that when the target's value is uncertain and the bidder's value is known, the 'expected overpayment cost of cash' is greater than the 'expected overpayment cost of stock'. Therefore, bidders prefer to make stock offers in such cases. However, if the valuation of both the acquirer and the target is uncertain, the bidder will be more likely to make a cash offer.

Thus, as has been shown earlier, the theoretical analysis regarding payment choice focusses on the relationship between method of payment and information asymmetry surrounding the valuations of the target and the acquirer. Some empirical studies support these arguments, concluding that acquirers paying cash will have higher returns than acquirers buying with stock (Fishman 1989, Travlos 1987, Brown and Ryngaert 1991, Martin 1996). Moreover, these studies have determined that stock payments are preferred over cash offers if there is more uncertainty about the bid.

Amihud, Lev, and Travlos (1990), Martin (1996), and Ghosh and Ruland (1998) investigated the determinants of payment methods in U.S. M&As over the period 1978-1988, examining the importance of buyer management stockholdings. All three studies conclude that this factor has a negative effect on stock financing, which is consistent with a corporate control motive. Amihud, Lev, and Travlos (1990) report the results of an early test of the Stulz (1988) theory by estimating a probit regression to explain the choice of stock versus cash-financed acquisitions as a function of officer/director share ownership and target size. The researchers concluded that managerial share ownership measures had a significant negative impact on stock financing, suggesting that ownership factors have a substantial effect on the choice of payment method.

In a more recent study, Rani, Yadav, and Jain (2014) investigated domestic M&As between 2003 and 2008 focussing on the impact of payment method on bidding company shareholder wealth. The study concluded that acquisitions financed through cash payments led to positive cumulative abnormal returns for bidding firms, while the results were inconclusive regarding stock payment transactions.

3.3.2. Public vs. Non-public Targets

In M&A research, deals involving non-public targets have received relatively little attention, even though such deals represent around 70% of all merger transactions. Unlisted targets may include private firms or subsidiaries of independent firms. In both cases, the evidence overwhelmingly supports the view that bidder announcement returns will be positive when acquirers engage in deals with non-public as opposed to public targets (Chang 1998, Fuller, Netter, and Stegemoller 2002, Moeller, Schlingemann, and Stulz 2004, Draper and Paudyal 2006, Faccio, McConnell, and Stolin 2006, Capron and Shen 2007, Rani, Yadav, and Jain 2014, Jaffe *et al*. 2015).

Examining a sample involving 281 private and 255 public target companies between 1981 and 1992, Chang (1998) performed one of the first studies to compare and analyse returns to U.S. acquirers. For 131 acquirers of private targets paid for with cash, no significant abnormal returns were observed using a two-day window. However, regarding stock payment for private targets, abnormal bidder returns were significantly positive at 2.64%. The researcher suggests that stock payment for private targets can create large block holders who are better able to monitor the actions of bidding firms, thus leading to improved shareholder returns. In order to further observe this characteristic, the acquirers were divided according to whether or not a new block holder emerged in the acquiring firm from acquisition of the target. The study concluded that the abnormal returns were significantly positive at 4.96% when a new block holder was created while only 1.77% when block holding was not created. Moreover, even if this effect was present for both public and private targets, it was demonstrated that block holders were created more frequently from the acquisition of private targets.

Another early study analysing differences in bidding company investor returns while merging with public and non-public targets was performed by Hansen and Lott (1996). Their sample included 252 firms between 1985 and 1991, and the analysis revealed that acquirers obtained announcement returns which were 2% higher when merging with private targets rather than publicly-held firms. Moreover, it was demonstrated that in 65% of cases, acquisition of a public target led to a loss on the part of bidding company shareholders. This was the case only 43% of the time in mergers with private firms.

Fuller, Netter, and Stegemoller (2002) observed 3,135 M&As and found that overall, returns were significantly positive for bidders buying private or subsidiary targets but significantly negative for bidders buying public targets. In addition, no significant returns to public targets were observed for cash or combination offers, but significant negative returns to bidders were experienced when stock was offered for public targets. Finally, regardless of payment method, bidder returns were significantly positive when the targets were private and subsidiary, though abnormal bidder results were higher if financed through stock.

Capron and Shen (2007) analysed the impact of non-publicly held targets on acquiring company shareholder wealth. It was found that on merger announcements, acquirers of private firms generally performed better than acquirers of public firms. In addition, acquirers of private targets generally performed better than if they had acquired a public target, and acquirers of public targets usually performed better than if they had acquired a private target.

While the above studies focussed on U.S. M&As, Faccio, McConnell, and Stolin (2006) analysed abnormal bidder returns for listed and unlisted target firms using a sample of 4,429 acquisitions in 17 Western European countries between 1996 to 2001. The results indicated that bidders experienced higher abnormal returns in the case of unlisted targets (+1.48%) than in the case of listed ones (–0.38%). This listing effect is present in the full sample and in each year of the analysis. Further, when the sample of unlisted targets is split into unlisted stand-alone targets and unlisted subsidiaries targets, the average abnormal return for each set is significantly positive and higher than the acquirers' average abnormal return for listed targets. Moreover, the effect persists after controlling for acquirers' size or relative size, the method of payment, pre-announcement leakage of information about the transaction, acquirers' Tobin's Q, and ownership structure. One implication of this listing effect is that it is not due to an institutional or regulatory feature that is unique to the US. Rather, the effect appears to be due to some factor that distinguishes acquisitions of listed targets from acquisitions of unlisted targets more generally. The implication is that shareholders of acquiring firms fare better when the firms they own are smaller and when the targets their firms acquire are not traded on an exchange.

More recently, Rani, Yadav, and Jain (2014) analysed bidding firm shareholder wealth between 2003 and 2008. The authors perform a disaggregated analysis with sub-samples created using the status of the target based on (i) target to be totally absorbed with the acquiring firm (ii) target firm remaining as subsidiary (51-100 %). The study further

investigates the effect of the method of payment (cash or stock) and the status of the target firm (listed or unlisted) on the stock returns of the acquiring firms' CARs. The results indicate that acquisitions generate 1.60 % significant CARs during the event window of 5 days (-2, +2) for the entire sample. The major finding of their disaggregated analysis is that when target remains as a domestic subsidiary, the acquirer earns 2.82%. In contrast, the acquirer loses 0.41% when the target firm is absorbed with the acquiring firm during the same period. The acquirers of unlisted domestic target firms experienced higher returns than the acquirers of listed domestic target firms.

In another recent paper, Jaffe *et al*. (2015) analysed a large sample of acquisitions in the U.S. over the period 1981 to 2012. More specifically, the sample involved only completed deals and contained 835 acquisitions of subsidiaries and 2,571 acquisitions of public targets. The researchers found that acquirers achieved three-day announcement period returns averaging 2.14% for subsidiary targets and –1.46% for public targets. This difference was statistically significant and persisted over several sub-periods.

As discussed in some of the aforementioned studies and to a certain extent in the previous chapter, several explanations or hypotheses have been put forward for the positive bidder gains derived from the acquisition of private or subsidiary target firms, though in the view of some authors, none of these have been conclusive or satisfactory. Jaffe *et al*. (2015: 247), for example, tested and rejected several hypotheses and concluded that "the acquirer announcement returns differential [remains] an unsolved puzzle". In order to elucidate the nature of the ongoing debate, a synthesis of the relevant arguments is presented below.

The first explanation that has been suggested is that the takeover market for private targets is far less competitive than the market for public targets (Chang 1998, Moeller, Schlingemann, and Stulz 2004, Capron and Shen 2007). This notion relies on the hypothesis that while a large amount of information is available on public companies (which increases the competition between potential acquirers), the comparative lack of public information on non-publicly held firms corresponds to a lack of effective competition among private acquirers. Added to this is the claim that non-public targets are typically less liquid than public firms, which heightens the negotiating power of potential acquirers and thus results in lower payment for the target, creating shareholder wealth and explaining the abnormal returns (Capron and Shen 2007).

Second, in the case of the comparatively lower bidding company shareholder returns in the acquisition of public targets, an appeal is often made to Jensen's (1986) agency cost theory, which explains that managers may be inclined to increase their own prestige and power by using M&As to engage in 'managerial empire building'. In this scenario, consistent with Rolls' (1986) hubris hypothesis, managers tend to overpay for targets, which reduces bidder returns. However, since the average size of public targets is larger than that of private companies, the acquisition of such targets tends to dramatically increase the prestige and power of managers, and this may ultimately have a greater impact on the bidding company's shareholder wealth. Furthermore, managers of large public companies tend to have incentives in the form of stockholdings which encourage them to acquire publicly-held targets with relatively high values.

Third, since public firms are generally larger than non-public firms, the cost of integrating a public target into the structure of the acquiring firm can be much higher than that of integrating a non-public target, which may reflect on bidders' share price performance.

Fourth, the financing method used to acquire a target can have an impact on the bidder's returns. Due to information asymmetry, if the bidder pays for the target with stock, the effect on the acquirers' stock returns may vary depending on the target's status. Furthermore, takeovers of private firms via stock payment can create block holders in the bidder firm, since the owners of private firms are typically highly-concentrated. As explained earlier, this can enhance the monitoring of the acquiring management, which can lead to improvements in financial performance. On the other hand, it should be pointed out that since publicly-held targets are, on average, larger than non-publicly held firms, they also tend to receive a larger ownership stake in the acquiring firm. Moreover, managers of private target firms can use the merger as an exit strategy and thus become uninterested in (or incapable of) acting as effective monitors. Thus, the block holder argument cannot be considered conclusive in explaining differences in bidder returns based on the public/private distinction (Fuller, Netter, and Stegemoller 2002).

Fifth, where a bidder's stock is pledged to acquire a public firm, the corresponding market belief that the target is overvalued implies a negative reaction of the bidder's share prices during announcement. However, as noted above, the share price reaction is generally positive when the target is private. In this context, Officer, Poulsen, and Stegemoller (2009) have shown that bidder returns will be significantly higher in stock-swap acquisitions if valuation

of the target is difficult to perform, especially when the target is a private firm. Moreover, a stock-swap for a private firm creates a market belief that the target will own a large amount of shares in the acquirer (block holders), and this characteristic of private target takeover seems to send a positive message to the market, thus increasing the acquiring firm's shareholder value.

Sixth, related to the above argument, M&A payment methods be influenced by tax considerations which can impact the bidder's stock prices. If takeovers are financed through cash, the shareholders of target firms will be subject to a higher tax rate. In contrast, payment through a stock-swap will lead block/shareholders of private firms to claim a higher offer price from the bidder in order to counterbalance the tax effect, which may reduce bidder returns.

A seventh explanation relies on Hansen and Lott (1996), who pointed out that the objective of managers should not be to maximise shareholder wealth but instead to maximise the 'portfolio value' of the shareholder. In this case, assuming they own stock in both firms, diversified shareholders of public bidders will be indifferent to how the gains from the acquisition are divided. Thus, the bidder's negative returns when acquiring a public target are offset by the target's positive gains. On the other hand, when a public bidder acquires a private target, the acquiring company's shareholders will receive a greater portion of the gains from the acquisition, assuming the bid is value-increasing.

A further explanation, proposed by Fuller, Netter, and Stegemoller (2002), highlights the fact that, unlike public firms, the lack of liquidity in the acquisition of private and subsidiary targets can lead to difficulty in trading with them. This characteristic of non-public targets can deter public acquirers. Since private firms are generally less well-known than public ones, the bidder may achieve a discount when buying private and subsidiary target firms. This argument is also is consistent with the view that the greater the relative size of the target, the returns to acquirers of non-public targets are more positive (and, likewise, the returns to acquirers of public targets are more negative).

Lastly, in view of the numerous explanations and hypotheses that have been proposed in the literature, it is not surprising that empirical studies often take into account a combination of factors, including the size of the target, uncertainty with respect to target valuation, the existence of liquidity discounts, the level of investor protection in the target's country, etc.

(Jaffe *et al*. 2015, Gonenc, Hermes, and Sinderen 2013). Moreover, the analysis of bidding company shareholder returns has shown that, with regard to the status of target, the method of payment should be considered in the following 'pecking order': 1) purchase of a private company with stocks, 2) purchase of a private company with cash, 3) purchase of a public company with cash, and 4) purchase of a public company with stocks (Fuller, Netter, and Stegemoller 2002, Conn *et al*. 2005, Faccio, McConnell, and Stolin 2006).

It can thus be seen that several elements must be considered in tandem when analysing discrepancies in bidder returns in the takeover of public and private targets. One notable gap in the analysis of the literature above is the issue of diversification in conjunction with the status of the target and the method of payment; the impact of this will be explored further in the empirical analysis.

3.3.3. Focussed vs. Diversified M&As

The main question surrounding corporate diversification is whether it affects value, as well as when and how. As classified by the Standard Industrial Code, a diversified organisation operates in more than one sector (Maksimovic and Phillips 2007). Realistically, firms may be described as focus-oriented when the parties belong to the same industry as represented by the two initial digits of their four-digit Standard Industrial Classification (SIC) codes, while all other M&A transactions which are not related are seen as diversified (Kuppuswamy, Serafeim, and Villalonga 2012, Tate and Yang 2015).

The literature reveals mixed findings in terms of market reactions to diversifying acquisitions. For example, Morck, Shleifer, and Vishny (1990), Flanagan (1996), DeLong (2001), Santos, Errunza, and Miller (2008), Akbulut and Matsusaka (2010), and Choi and Russell (2004) demonstrate that associated industry mergers yield greater performance than those that are not associated (activity diversification). In contrast, Raj and Uddin (2013) and Focarelli, Pozzolo, and Salleo (2008) consider related versus unrelated M&As and suggest that related mergers which improve performance arise predominantly in underperforming markets.

A study conducted by Morck, Shleifer, and Vishny (1990) is commonly cited as evidence of a negative market reaction to diversifying acquisitions. They considered a sample of 326 U.S. acquisitions spanning the period 1975-1987 and reported negative announcement day returns

for the bidding firms. Following this study, Flanagan (1996) utilised a stronger approach to establishing related mergers in which targets and bidders have the same SIC code and unrelated mergers where targets and bidders do not have same codes. The results confirmed that bidding company shareholder returns were higher for related mergers than for unrelated mergers. Choi and Russell (2004) examined mergers in the U.S. construction industry and also found that related mergers performed slightly better than unrelated ones, suggesting that related mergers benefit more from the operational synergy associated with horizontal or vertical integration.

In the specific context of the UK, Raj and Uddin (2013) analysed the performance of related and unrelated acquisitions in the short- and long-term over the period 1994-1998, allowing for size and industry control portfolios. Their analysis suggests that related acquisitions which improved short-term performance occurred in the context of underperforming industries, though notable variations were identified in longer-term performance in relation to bidder size and payment method.

In a more recent study, Akbulut and Matsusaka (2010) considered a sample of 4,764 mergers which occurred over a period of 57 years (1950-2006) with the aim of shedding light on a number of different issues related to corporate diversification. One key assumption in their analysis was that diversification reduces value as a result of agency issues or internal investment distortions. However, they established that the combined announcement returns were significantly positive in the case of diversifying mergers and no lower than the returns for associated mergers, though the returns from diversifying mergers were seen to decline after 1980.

Focarelli, Pozzolo, and Salleo (2008) examined the impact of financial industry M&As on bidder company announcement returns. Their findings indicated that activity diversification deals enhanced overall shareholder wealth with an average CAR of 0.52%. In contrast, related M&As were seen to reduce shareholder wealth with an average CAR of –0.875%, and the difference in CAR between related and unrelated deals was –1.397%, which was statistically significant at a level of 10%.

Focussing on the banking industry, DeLong (2001) classified mergers according to activity and geographic similarity or dissimilarity (i.e. focus versus diversification, respectively) and evaluated announcement returns for each group. The findings revealed that focussed mergers

(both geographic and activity-based) improved shareholder value by 3.0%, whereas diversified types were not able to create value.

Markedly, few studies have considered the shareholder wealth effects of diversified mergers in developing countries. In one study, acquisition announcement abnormal returns were analysed for public firms operating in East Asian countries over the period 1993-2003 (Cai 2004). Data gathered from a number of different sources were utilised, along with information garnered through a standard event study methodology, with the researchers directing attention towards the effects of corporate ownership and control structure on acquiring firms' market valuation in a short event window. Whether diversified acquisitions were a result of agency problems and therefore viewed in a negative light by investors was also tested. Despite the diversification variable (dummy 1 if the acquirer and target were not from the same industry) failing to demonstrate significance, the researcher argued that diversification destroyed shareholder wealth.

On the other hand, Selcuk and Kiymaz (2015) examined 98 deals among Turkish companies over the period 2000-2011 and found positive announcement returns for the bidder firms. In addition, the results of their cross-sectional regression indicated that diversification generated higher returns for the bidder firms compared with focussed deals.

Finally, Santos, Errunza, and Miller (2008) examined the valuation impacts associated with industrial versus international diversification by analysing U.S. acquirers engaged in cross-border transactions. The period under analysis spanned from 1990 to 2000. It was found that, overall, the acquisition of 'fairly valued' foreign entities did not result in value discounts. On the other hand, unrelated transactions resulted in a notable diversification discount of approximately 24% after accounting for the valuation of foreign targets. More notably, wealth gains were accrued by foreign target shareholders irrespective of the acquisition type. Generally, these findings imply that international diversification does not necessarily decrease value, while industrial diversification has the potential to result in discounts even after taking into account the target's pre-acquisition value.

3.3.4. Domestic vs. Cross-Border M&As

Many studies have analysed shareholder wealth effects in cross-border M&As, but the literature provides mixed evidence, with most studies observing small but statistically

significant gains (e.g. Doukas and Travlos 1988, Morck and Yeung 1992, Markides and Ittner 1994, Kiymaz and Mukherjee 2000, Bhagat, Malhotra, and Zhu 2011, Deshpande, Svetina, and Zhu 2012, Danbolt and Maciver 2012). Some studies draw a comparison between cross-border and domestic acquisitions, with a majority showing cross-border deals yielding lower shareholder value than domestic deals (e.g. Eckbo and Thorburn 2000, Aw and Chatterjee 2004, Soussa and Wheeler 2006, DeLong 2001, Moeller and Schlingemann 2005, Mangold and Lippok 2008). Owing to the numerous studies available, the discussion in this section focusses only on a selection of them.

Kiymaz and Mukherjee (2000) suggest that country diversification helps improve shareholder wealth by delivering advantages that are typically unattainable in domestic M&As. Using data for U.S. firms involved in cross-border mergers over the period 1982-1991, the results revealed variation in wealth effects with differences depending on various country-specific characteristics and being inversely linked with the extent of co-movement in the target and bidder countries' economic growth. In subsequent research, Kiymaz (2004) analysed the effects of U.S. firms involved in cross-border financial M&As to find that U.S. target organisations experienced significant positive increases in wealth, while U.S. bidders attained insignificant wealth gains. Moreover, differences were identified in terms of sector classification as well as in the case of foreign bidder and target regional locations. Markedly, the wealth gains to both targets and bidders could be explained by various macroeconomic factors such as the level of the target country's economic development, the volatility of the exchange rate, the effectiveness of the foreign government, the management of the target, and the relative size of the organisations involved.

Danbolt and Maciver (2012) examined the effects of cross-border acquisitions involving UK firms on both bidders and targets, comparing them with the wealth effects of domestic acquisitions. It was established that bidders and targets alike were able to gain more in cross-border acquisitions than in domestic acquisitions, with targets gaining significantly more than bidders in cross-border acquisitions. The cross-border effect was notably greater for targets acquired by firms from countries with governance systems superior to their own. In addition, the researchers argued that there is a lack of evidence to support the belief that bidders gain as a result of entering new markets but that targets gain more when the bidder is already in operation.

Other studies that compare domestic and cross-border M&As draw the conclusion that cross-border deals produce fewer benefits to shareholders than domestic deals. In this regard, Eckbo and Thorburn (2000) present a large sample of evidence centred on comparing the performance of U.S. bidders acquiring U.S. and Canadian targets. Their findings indicated that U.S. bidders acquiring domestic targets earned notable positive abnormal returns during the announcement, while U.S. bidders on Canadian targets earned abnormal returns that were indistinguishable from zero.

Moeller and Schlingemann (2005), who examined a sample of 4,430 acquisitions for the years spanning 1985-1995, also found evidence suggesting that, relative to companies that acquired domestic firms, U.S. companies acquiring cross-border companies had lower announcement returns (amounting to an estimated 1%) as well as much lower operating performance.

Aw and Chatterjee (2004) conducted a three-way comparison between the post-takeover performance of UK acquirers of domestic continental European, UK, and U.S. targets covering the period 1991-1996. They established that UK organisations acquiring large foreign targets experienced negative cumulative abnormal returns. Moreover, the post-merger performance of UK firms acquiring UK targets exceeded that of UK firms acquiring U.S. targets.

In the context of the EU, Mangold and Lippok (2008) investigated whether or not cross-border M&As create value relative to domestic transactions spanning the period 2000-2007. Their findings indicated that cross-border deals cause notable wealth destruction for shareholders, whereas domestic transactions create value for acquiring company shareholders. The cumulative abnormal returns (CAR) for the (–1,+1) window were –0.3% for the entire sample, 0.2% for domestic M&As, and –0.9% for cross-border M&As.

Several studies have also examined shareholder wealth effects in cross-border transactions with target firms located in developing markets (Kiymaz 2004, Chari, Ouimet, and Tesar 2010). These studies typically observe significant positive abnormal returns for the acquiring firms. For instance, Chari, Ouimet, and Tesar (2010) argue that when a multinational firm based in a developed-country acquires majority control of a firm in a developing market, the acquiring organisation's stock prices increase significantly. Their findings, based on stock

market returns over a three-day event window, cover both significant and positive abnormal returns amounting to 1.16% overall.

Another study involving developing -market targets and developed-country acquirers by Chari, Ouimet, and Tesar (2004) covered the years 1998 to 2002 and suggests notable value creation for acquirers. Their panel data estimations revealed that overall, monthly returns for target firms increased by 5.05%-6.68% upon announcement of a cross-border deal, while for the acquirers, returns rose by 1.65%-3.05% on average. These benefits derive from the transfer of majority control from developing market targets to developed market acquirers. Generally, such findings imply that the significant growth in cross-border M&As in developing markets during the 1990s resulted in key gains for the shareholders of both acquiring and target organisations.

In cross-border acquisitions involving developing market acquirers, Bhagat, Malhotra, and Zhu (2011) examined announcement day stock returns for a sample of 698 deals spanning the period 1991-2008. They established that developing region acquirers experienced average positive significant returns of 1.09% on the announcement day.

In the context of the banking sector, Soussa and Wheeler (2006) conducted a study of cross-border bank acquisitions with targets in developing markets and established that such deals do not necessarily achieve benefits for the acquiring bank. The researchers posit that possible drawbacks include legal and social obstacles, operational risk, and political risk, which outweigh the possible advantages. Furthermore, decreases in value following acquisition were recognised as being greater in all regions directly after the Asian crisis.

Nnadi and Tanna (2013) also analysed the impact of cross-border diversification on acquirers' returns for large commercial banks in the European Union over the period 1997-2007. Based on a sample of 62 bank mega-mergers, event study is employed to analyse acquirers' CARs around the announcement date followed by cross-sectional regression analysis to determine specific characteristics driving acquirers' CARs. The findings showed that cross-border M&As had a negative impact on the acquirers' banks. Despite a growing trend of banking sector consolidation in the EU, cross-border banking mergers are found to yield significant negative announcement period acquirer returns, while domestic ones have marginally positive but insignificant returns.

Rad and Van Beek (1999) analysed a sample of 17 targets and 56 bidding financial institutions and found that target shareholders experience positive abnormal returns while the returns to bidders are insignificant. They also find that cross-border mergers do not yield returns that are significantly different from domestic ones. Cybo-Ottone and Murgia (2000) study 54 large European financial deals (including 18 cross-border) between 1988 and 1997 and find positive and significant average returns around the time of announcement. Furthermore, they find that only domestic deals create shareholder value while cross-border deals reveal positive but insignificant abnormal returns. They show that the difference in the results between domestic/cross-border deals is not driven by country-specific effects and their value creating result for domestic deals is attributed to a sub-sample of mergers between banks and product diversification of banks into insurance. Scholtens and Wit (2001) compare shareholder wealth effects of bank mergers in Europe to the US and Japan. For Europe, they examine a sample of 17 targets and 20 bidders using event study methodology with a 31-day window, and find that targets realize positive excess returns while the returns to bidders are small, but also significant and positive.

Recent studies for Europe focusing on the distinction between domestic and cross-border mergers have expressed similarly differing opinions on wealth implications. Beitel, Schiereck, and Wahrenburg (2004) examine the value implications of 98 large bank M&A transactions between 1987 and 2000 and find that the overall returns are higher for non-diversifying transactions, particularly by domestic bidders who are involved in previously less merger activities and when the targets show poor past performance. Using regression analyses, they also test different value drivers regarding their influence on the CARs. Their findings indicate that cross-border deals seem to increase the CARs of the target bank, while the bidders create more value in domestic transactions. Campa and Hernando (2004) look at financial and non-financial M&A transactions over the period 1998-2000 and find that, in the case of cross-border deals, both targets and acquirers receive significantly lower cumulative abnormal returns. However, they report larger value creation from domestic mergers in a regulated (e.g. financial) industry.

In summary, numerous studies have examined the implications of cross-border M&As on shareholder value, but the findings have been mixed. However, the evidence generally points to the conclusion that benefits from diversification tend to be small, which leads to the question of whether a discount can be associated with diversification (Aw and Chatterjee

2004, Mangold and Lippok 2008, Nnadi and Tanna 2013). Some studies imply that the diversification discount could be due to a number of factors, including biases related to the COMPUSTAT database, endogeneity, improper measurement techniques, or sample selection bias (Erdorf *et al*. 2013).

3.3.5. Evidence on the Acquirer Bidding Experience (Frequent Bidder Effect)

Numerous empirical studies have investigated the impact of bidder experience on bidding company shareholder wealth. Furthermore, as noted in Chapter 2, the research has investigated a number of hypotheses and observed the impact of a hierarchy of acquisitions on merged entity performance. Again, due to the variety of studies investigating the frequent bidder effect on performance, the discussion in this section concentrates only on a selection of studies, beginning with earlier ones.

In their sample of 156 acquisitions that occurred between 1963 and 1979, Asquith, Bruner, and Mullins (1983) discovered that up to 45% of bidders were serial acquirers realising gains after four or more takeovers. They investigated the CARs of serial acquirers at each stage of acquisition and determined that the CAR increased to +2.5% after the fourth acquisition, thus rejecting the merger programme announcement hypothesis which suggests that bidder gains are mostly achieved near the beginning of an acquisition.

Loderer and Martin (1990) analysed the short-term effects of acquisitions using a sample of 1,538 bidders and 5,172 targets between 1966 and 1984. They found that the first takeover presented greater announcement effects than the subsequent takeovers. Moreover, they determined that one acquisition alone generated greater CAR than if it was paired with a series of acquisitions. They explained these results by suggesting that investors are able anticipate the long-term lack of performance and therefore show less confidence in relation to the series of takeovers.

Haleblian and Finkelstein (1999) observed a sample of 449 takeovers between 1980 and 1992 in the U.S. and found an overall U-shaped relationship between performance and bidders' experience. This is consistent with behavioural learning theory.

Stegemoller (2002) investigated the long-term performance of 542 companies in the U.S. which had realised more than five takeovers between 1990 and 1999. The targets could be

public, private, or subsidiary companies. It was found that serial bidders tended to outperform their single-bidding counterparts in terms of accounting profits and share performance, and these conclusions held irrespective of target status and payment method. This is consistent with the learning-by-doing hypothesis. Baker and Limmack (2001) reached the same conclusions observing the UK market.

Fuller, Netter, and Stegemoller (2002) analysed the short-term performance of 539 acquirers over the period 1990 and 2000, concentrating on those with five or more successful bids within three years. They found that the first takeover led to highly significant positive returns while the rerun from the fifth takeover were negative or null, a finding which is consistent with the hubris hypothesis. They also found that acquirer returns tended to be lower when the time period between acquisitions was shorter. Their suggested explanation for this finding is that bidders either negotiate less efficiently or create less synergy in later deals after making a series of quick acquisitions.

Ismail (2008) investigated the performance of 16,221 acquisitions in the U.S. from 1985 to 2004 and found that single acquirers generated a value 1.66% higher than frequent acquirers, with this gap widening to 5% in equity exchange offers. Their assertion and finding suggests that unsuccessful first-time bidders learned from their mistakes while successful first-time bidders suffered in subsequent acquisitions. This is consistent with the hubris hypothesis.

Aktas, De Bodt, and Roll (2011) reported similar findings suggesting that managers consider the reaction of shareholders during subsequent takeovers and adapt their takeover strategy to these reactions, thus implying that lower returns in serial acquisitions are in line with the CEO learning curve.

Dandapani, Hibbert, and Lawrence (2013) investigated the effect of U.S. bidders' experience in cross-border mergers, comparing acquisitions in developed and developing markets and taking into account public, private, and subsidiary targets. They found that bidders experienced significantly positive abnormal returns in developed markets whether the target was public or private, and for acquisitions in developing markets when the target was private. Moreover, using a cross-sectional analysis based on a sample of acquisitions between 1998 and 2010, they showed that prior experience had a more significant and positive impact on bidding company shareholder wealth in the case of private targets in developed markets.

To conclude, some empirical studies show that serial acquirers achieve better performance than single acquirers while other studies find the opposite, and thus the overall evidence is mixed.

3.4. M&As and Risk: The Evidence

Most of the empirical studies discussed here investigate the impact of M&As on systematic or market risk, although in the aftermath of the recent global financial crises some recent studies have also emerged to examine the effect of banking M&As on systemic risk.

Focussing on the elements of systematic/market risk, as discussed in Chapter 2 (section 2.6) standard portfolio theory suggests that such risk cannot be diversified away by creating a portfolio of bidders and targets that are uncorrelated. Therefore, the main issue is whether and how M&As affect systematic/market risk (beta) in practice, as reflected in the cost of capital and shareholder wealth (i.e. the value of the firm).

The empirical evidence on this relationship, however, is ambiguous. For example, Lev and Mandelker (1972), Sharma and Thistle (1996), and Amihud, Delong, and Saunders (2002) argue that M&As have no impact on acquirer risk, while Rahim and Ananaba (2000), Chatterjee *et al*. (1992), Mei and Sun (2007), Evripidou (2012), Mishra *et al*. (2005), and Chen *et al*. (2011) find that M&As reduce acquirer risk. On the other hand, Joehnk and Nielsen (1974), Rahim and Ananaba (2000), Focarelli, Pozzolo, and Salleo (2008), Bozos, Koutmos, and Song (2013), and Casu *et al*. (2015) find that M&As may actually increase acquirer risk.

Table 3.5 below summarises the results of these studies on different measures of risk, which in some cases include total and systematic risk, where total risk (measured by the variance of the acquirer's returns) is the sum of both systematic and unsystematic (or idiosyncratic) risk. Most studies have focussed on evaluating systematic risk (beta) because of its direct relationship with shareholder wealth and required rate of return, as increasing the beta is synonymous with an increase in the cost of capital. As Table 3.5 shows, studies have focussed on financial as well as non-financial sectors, and investigated the impact of focussed as well as diversified M&As.

Table 3.5: M&As and Acquirer Risk.

Authors	Period	Sector	Geography	Type of Deal	Type of Risk*	Results*
Lev and Mandelker (1972)	1952-1963	Diversified	U.S.	69 deals, Diversified	SR	No effect
Joehnk and Nielsen (1974)	1962-1969	Diversified	U.S.	21 Conglomerate and 23 Non-Conglomerate	SR	Increased SR
Lubatkin and O'Neill (1987)	1954-1973	Diversified	U.S.	297 Vertical, Related, and Unrelated Mergers	TR, SR, USR	Increase USR, reduce SR & TR
Chatterjee *et al.* (1992)	1962-1979	Concentric, conglomerate mergers	U.S.	120 Vertical Mergers	SR	Reduce SR
Sharma and Thistle (1996)	1981-1984	Diversified, excluded banking, insurance, investments	U.S.	120 Horizontal Mergers	SR	No effect
Allen and Jagtiani (2000)	1986-1994	Bank, Insurance, and Securities	U.S.	729 banks, Diversified	TR, SR	Increase SR, reduce TR
Rahim and Ananaba (2000)	1975-1992	Diversified	U.S.	148 Conglomerate, 117 Non-Conglomerate Mergers	TR, SR	SR & TR increase in both cases
Amihud, Delong, and Saunders (2002)	1985-1998	Banking	Europe, U.S., Australia, Canada, Japan.	214 Cross-Border Mergers	TR, SR	No effect
Mishra *et al.* (2005)	2002-2004	Banks with Banks	U.S.	14 banks, Non-Conglomerate	TR, SR, USR	Reduce TR & USR, no effect for SR
Mei and Sun (2007)	1990-2004	Forest Industry	U.S.	57 Horizontal Mergers	SR	Reduce SR
Focarelli, Pozzolo, and Salleo (2008)	1988-2007	Financial Industry	75 countries	1400 cross-border and cross-industry deals	SR	Increased SR & WACC
Chen *et al.* (2011)	1986-2004	Banks and Insurance	Europe	42 Domestic and Cross-Border	TR, SR	Reduce SR, no effect for TR
Evripidou (2012)	2005-2010	Airline Industry	European, U.S.	5 Horizontal Mergers	SR	Reduce SR & WACC
Bozos, Koutmos, and Song (2013)	1998-2010	Bank	U.S.	177 Large Deals	SR	Increased SR
Casu *et al*. (2015)	1991-2012	Bank/Non-Bank Combinations	U.S., Europe, Canada, Asia, Australia, South America, Africa	218 bank-insurance deals, 54 bank-securities mergers	TR, SR, USR	Bank-insurance increase SR, bank-securities increase TR

* Note: TR is total risk, SR is systematic risk, USR is unsystematic risk, WACC is weighted average cost of capital

Lev and Mandelker (1972) argue that unless the returns to both parties involved in the merger are perfectly correlated, the variances of the combined firms' returns will be less than the weighted average of the variances of the individual firms' returns (based on the diversification principle of portfolio theory). They therefore assess the reduction in the acquirer's risk by analysing the systematic risk (beta) for over five years, pre- and post-

month of announcement. However, they find that M&As have an insignificant impact on systematic risk.

Joehnk and Nielsen (1974) examined the effects conglomerate and non-conglomerate mergers have on the beta of the acquiring firms. The results indicate that systematic risk tends to be responsive, in varying degrees, to major conglomerate mergers, with betas changing as a function of the confined pre-merger values. The results also indicate that conglomerate mergers only contribute to increased absolute and relative systematic risk levels - the same pattern exhibited by the non-conglomerate, non-merging sample of peers included in their study.

Lubatkin and O'Neill (1987) examined the effect of 297 large merger transactions on three measures of risk: total, systematic, and unsystematic risk. Their results revealed that mergers tend to be associated with increased levels of unsystematic and total risk. This finding is inconsistent with predictions based on modern financial theory and therefore points out a fundamental difference between the challenges facing securities managers and corporate managers. The findings also show that at least one type of merger - that involving related businesses - demonstrates the ability to reduce systematic risk regardless of market conditions. Although inconsistent with modern financial theory, that finding is grounded in the evolving literature on strategic management.

Sharma and Thistle (1996) evaluated the impact of horizontal mergers (based on SIC codes) which occurred over the period 1981-1984 for acquirers listed in AMEX or the NYSE index in order to examine whether market power was a motive for these merger activities. They suggest that an increase in market power was a possible source of reduction in systematic risk (beta). However, their empirical findings revealed insignificant market power, and systematic risk was thus found to be unchanged as a result of the acquisition.

Chatterjee *et al.* (1992) evaluated the influence of concentric mergers and conglomerate mergers on the risk features of the bidding companies by using the acquiring company industries, the average of competition of the acquired company, and the average of industry growth of the acquiring industry. After controlling for the target company's systematic risk, heteroskedasticity, and estimating shifts in risk over daily as well as monthly time horizons, the empirical findings indicated that bidding firms which combine through merger non-competing products that share core technologies are able to reduce the systematic variability

in the returns to their securities. Chatterjee *et al.* (1992) also suggested that unrelated mergers may be as effective at mitigating general environmental risks. While the latter result is surprising, it may be explained by the different risk characteristics depicted by related and unrelated bidders prior to merging.

Mei and Sun (2008) analysed the impact of forest industry M&As and found that merger activity decreased acquirers' systematic risk (beta). Evripidou (2012) analysed the influence of merger activities in the airline industry in the U.S. and Europe using small samples (five deals). Evripidou (2012) found that horizontal mergers reduced systematic risk which in turn reduced the cost of capital. A reduced post-merger systematic risk indicates success in achieving management objectives. Mergers can generate synergetic gains from increasing cost efficiencies and/or scale economies and can also increase shareholders value through the reduction in the new firm's cost of capital.

Rahim and Ananaba (2000) examined the impact of non-conglomerate and conglomerate mergers on the risk of merged entities by comparing the difference between pre-merger and post-merger market risk (beta) and total risk. The empirical results showed that, first, total risk increased in both cases, and second, the post-merger betas increased significantly in both cases (0.08 for conglomerate and 0.153 for non-conglomerate mergers). This supports the view that conglomerates are better able to diversify their risk. Results of the paired sample analysis indicate that the difference in risk between the two groups of mergers is due to the difference in their non-systematic risk.

As noted in Table 3.5 above, subsequent empirical studies analysed the impact of M&As within the financial or banking sectors (e.g. Allen and Jagtiani 2000, Amihud, Delong, and Saunders 2002, Mishra *et al*. 2005, Focarelli, Pozzolo, and Salleo 2008, Chen *et al*. 2011, Bozos, Koutmos and Song 2013, Casu *et al*. 2015).

Allen and Jagtiani (2000) evaluated the impact of diversified M&As with acquirers from the banking sector and targets in the insurance and securities industries. They found that non-bank activities increased banking bidders' systematic risk, while total risk was reduced. In addition, the unit price of risk did not appear to contain a risk premium to price the enhanced systemic risk exposure that might be engendered by greater convergence across financial firms. However, Allen and Jagtiani (2000) suggested that the benefits of diversification are not large enough to justify the increase in bank power to operate in the insurance

underwriting business and non-bank securities. They also indicated that bank holding companies' systematic risk exposure may be considered a proxy for the *systemic* risk faced by the U.S. banking system. If the expanded bank powers into securities and insurance activities increased bank holding companies' systematic risk, this would suggest that it would be more likely that a common economic shock could lead to massive bank failures across the entire banking system.

Amihud, Delong, and Saunders (2002) analysed cross-border bank mergers from three perspectives. First, they examined the change in total risk of an acquiring bank as a result of a cross-border banking merger. According to the authors, it is the acquiring bank's total risk relative to the risk of home banks that is of greatest concern to bank regulators (such as the Federal Deposit Insurance Corporation and Federal Reserve) in the acquirer's home country, because of the regulators' undiversified exposure to domestic bank risk. Second, they examined the changes in the systematic risk of acquiring banks relative to three bank indexes: the world bank index, the domestic bank index and the bank index of the host country (i.e. the country where the target is located). Third, they studied the reaction of stock prices to news about the acquisition and examined the relationship between the stock price reaction and changes in risk brought about by cross-border bank mergers. They found an insignificant impact on the total and systematic risk of acquirer banks. As a result, they emphasised that regulators need not be concerned with the risk implications of cross-border mergers.

Similarly, Mishra *et al.* (2005) found an insignificant impact of non-conglomerate U.S. mergers (banks with banks) on the systematic risk of acquiring banks, while such mergers reduced the unsystematic risk (and hence the total risk) of the banks. On the other hand, Bozos, Koutmos, and Song (2013) analysed 177 large bank-to-bank merger deals which occurred in the U.S. during the period 1998-2010. Their findings showed that large bank mergers not only increased acquirer systematic risk, but there was also a tendency for beta to rise immediately following deal announcements and remain relatively high for up to two years afterwards. This corroborates the view that the newly consolidated big banks resulting from mergers entail higher systematic risk and, instead of providing risk diversification to shareholders, exhibit greater co-movement with the market. The broad asset pricing implication here is that the 'too big to fail' mentality that arises from large bank mergers actually translates into more risk for shareholders and susceptibility to adverse movements in the aggregate market.

Focarelli, Pozzolo and Salleo (2008) examined the impact of financial industry M&As on the systematic risk of acquirers by analysing 1,400 deals that occurred in 75 countries during the period 1988-2007. The empirical findings of this study indicated that the systematic risk - and hence the cost of capital - of acquirers increased in the overall sample after announcement, though in the case of cross-border M&As, systematic risk decreased somewhat for acquirers that had a high *ex-ante* beta. The study also found that M&As in which the acquirer was an insurance company were followed by a relative decrease in systematic risk.

Chen *et al.* (2011) examined the impact of M&A transactions between banks and insurance companies on the total and systematic risk of acquirers and found that systematic risk decreased after announcement while total risk remained constant. When comparing risk and returns for both domestic and cross-border acquirers, the results revealed that total risk was reduced without loss of wealth for the acquiring banks, and the reduction in systematic risk was associated with negative abnormal returns. The results also indicated that, due to high leverage in banks, there is a transfer of wealth from stockholders to debt holders due to a reduction in beta risk.

Casu *et al*. (2015) analysed the impact of bank activity diversification on systematic and unsystematic risk by examining the influence of bank-insurance and bank-securities deals over the period 1991-2012. They found that M&As between banks and securities firms yielded increases in the total risk through higher levels of systematic and idiosyncratic risks. In contrast, bank acquisitions of insurers (underwriters and agents) realised an increase in betas. In addition, Casu *et al*. (2015) argued that bank size is an important and consistent determinant of risk whereas diversification is not, which confirm the continuing debate on diversification versus functional separation of bank activities.

While the findings of the above studies indicate that the effects of mergers on systematic risk are mixed, there are other studies which have pointed out that consolidation in banking industry reduces idiosyncratic bank risk and hence improves the overall solvency of the financial system. Here, the theoretical reasons for mitigation of risk are based on the concepts of geographical and loan portfolio diversification (Boyd and Prescott 1986; Mishra *et al*. 2005).

Furthermore, Emmons *et al.* (2004) investigated the default probabilities of the US banks and found a significant reduction after consolidation through mergers, since the mergers help

create greater diversified portfolio. Other studies show that consolidations can increase collusion between banks, increasing profits of the remaining banks and thus reducing their vulnerability to system wide shocks (Boyd *et al.* 2004; Uhde and Heimeshoff 2009). Boot and Thakor (2000) have argued that larger banks have the tendency to limit extension of credit only to quality borrowers with reliable credit history, and such practices help boost profitability and reduce their insolvency risk levels.

Other studies investigate whether individual risk reduction of banks through diversification or consolidation generate systemic risk reduction in the banking sector, and this issue has become important owing to the recent banking crisis. One strong argument is that banks motive to become 'too big to fail' by merging with other banks clearly increases system wide risk as the individual bank risk becomes socialised. The implicit or explicit bail out guarantees increases the moral hazard problem in banking. Moreover, the decrease in the costs for monitoring competitors could be exceeded by the increase in the monitoring problems regarding the customer base and the operating cost structure of the target, thus increasing the individual default risk and therefore the systemic risk of banks (Weiß, Neumann and Bostandzic 2014).

The possibility of regulatory arbitrage can also induce further risks typically associated with cross border bank mergers. As financial institutions can alter their poorly monitored risk by shifting their geographic locations to new countries, such regulatory arbitrage can increase the overall fragility of the financial system, which can be traced back to an increase in the individual banks' default and systemic risk (Campa and Hernando, 2008, Carbo-Valverde *et al.* 2008, Kane, 2000). A similar argument is put forward by Caminal and Matutes (2002), who show that monopolistic banks are more likely to make riskier loans which can potentially destabilize the financial system. Similarly, the collusion of banks in the aftermath of bank mergers could also destabilize the financial system as the joint defaults of customers become more likely. Boyd and De Nicolo (2005) investigated this issue and provided empirical support for the concentration hypothesis, which suggest a positive relationship between concentration and the fragility of banks using a Z-score measure of risk. Carbo-Valverde *et al.* (2008) show that European bank mergers between 1993 and 2004 were driven mainly by the desire to shift the risk towards the EU safety nets. Finally, Boyd and Graham (1998) have also reported a negative impact of bank concentration on the financial stability of the banking sector. This last study also showed that large banks have a greater propensity to

failure than smaller banks. However, Beck *et al.* (2006), Cihák *et al.* (2009) and Schaeck and Cihiak (2012) have found little support for this 'concentration-fragility' hypothesis.

Apart from the concentration-fragility hypothesis, there is also the concentration-stability hypothesis, which argues that consolidation in the banking sector decreases individual bank risk hence also decreases the systemic risk. The theoretical motivation behind such hypothesis is provided by Freixas and Rochet (1997) and Allen and Gale (2004), who argue that monopolistic banks can provide higher capital buffers that can serve as a cushion against external shocks to the financial system. Boot and Thakor (2000) have also provided arguments for the better credit quality and loan diversification via the credit rationing channel. One additional benefit can be that due to the reduction in market participants there can be better supervision and monitoring, which may again lead to decrease in systemic risk.

While numerous studies have investigated the impact of bank consolidation on systemic risk, the change in the systematic risk (beta) of the acquiring banks have not been the concern of these studies. There are, however, a few such risk related studies, for example, Craig and Cabral dos Santos (1997), Amihud *et al.* (2002), Bharath and Wu (2005) and Vallascas and Hagendorff (2011), which have used Z-score measure of bank risk., as well as the acquiring banks' stock volatility, Distance-to-Default (DTD), or the implied volatility of the at-the-money call options for acquirers' equity. The systemic risk of the banking system is typically measured by the correlation of the joint cash flows of banks in the system (Weiß, Neumann and Bostandzic, 2014). Hence, systemic risk can hardly be relevant in assessing the beta factors or the implied volatilities of banks' stock prices as a result of mergers. In general, there are more sophisticated concepts like extreme value theory, or copula theory, which attempt to measure any dependence between the acquiring bank returns and the rest of the system in the tail regions of joint return distributions, although such measures are rarely in bank merger studies.

There are, however, some recent studies which have proposed systemic risk measures in the wake of global financial crisis. Weiß, Neumann and Bostandzic (2014), for example, have analysed portfolio (systematic), systemic and default risk of bank mergers in an attempt to test the concentration-fragility versus the concentration-stability hypotheses. Using a sample of 440 international and cross border mergers which happened between 1991 and 2009, and addressing reverse-causality issues, they find clear evidence of increase in the default and

systemic risk of the acquiring banks following the mergers, confirming support for the concentration-fragility hypothesis.

Muhlnickel and Weiß (2015) have investigated the impact on systemic risk of mergers/ consolidation in the international insurance industry. They find that firm size, leverage and diversification across insurance lines all add to the destabilizing effect of insurance industry consolidation while geographic diversification is found to contribute to financial stability.

3.5. Conclusion

This chapter has discussed the empirical evidence relating to the impact of M&As on acquiring company shareholder wealth, focussing on studies that cover both the industrial and financial sectors and referring to issues relating to method of payment, public target status, diversification, acquirer bidding experience, and acquirer risk.

Most of the evidence relates to M&A deals in developed countries, especially the U.S. and European countries (e.g. Walker 2000, DeLong 2001, Martinez-Jerez 2008, Kuipers, Miller, and Patel 2009, Martynova and Renneboog 2011, Raj and Uddin 2013, Nnadi and Tanna 2013, Ran, Yadav, and Jain 2014, Jaffe *et al*. 2015), although a limited number of studies have taken into account cross-border deals with targets in developing or emerging markets (e.g. Beitel, Schiereck, and Wahrenburg 2004, Soussa and Wheeler 2006). In the same regard, the literature has traditionally focussed on M&As involving publicly-held companies, though more recently, interest in deals involving private and subsidiary targets has increased (Draper and Paudyal, 2006; Faccio, McConnell, and Stolin 2006, Capron and Shen 2007; Jaffe et al. 2015). Furthermore, many of the studies examine only completed deals, thereby excluding deals that were unsuccessful. It is therefore appropriate to extend this analysis to include a broader sample which covers both developed and developing economies as well as deals that are both completed and terminated, while distinguishing between public and non-public targets and taking into account issues such as method of payment, diversification, acquirer bidding experience, and the implications for risk.

Chapter 4: Research Methodology and Preliminary Analysis

4.1. Introduction

This chapter aims to elaborate on the methodologies that will be subsequently employed in the empirical analysis. These include, first and foremost, the use of the event study methodology to analyse the impact of M&As on acquirers' shareholder returns, taking into account the main assumptions and factors used in the calculation of cumulative abnormal returns. This is followed by a discussion of the empirical strategy which highlights three sets of hypotheses associated with (1) acquiring company shareholder returns, (2) acquirer market risk, and (3) the probability of deal failure. For each of these hypotheses, various sub-hypotheses relate to four main dimensions of M&A transactions, as covered in the literature review: (a) method of payment, (b) target status, (c) diversification, and (d) acquirer bidding experience.

The empirical methodology for testing these hypotheses draws a distinction between univariate and multivariate analysis. The former deals with the investigation of an association between two groups of variables (i.e. dependent and independent variables) and involves the use of both parametric and non-parametric tests to account for the continuous and discrete set of variables which are included in the analysis. The latter deals with issues relating to a set of multiple variables and involves regression analysis accompanied by a parametric approach to hypothesis testing. A discussion of the sampling procedure for data collection is also included in this chapter, together with a preliminary empirical analysis highlighting global trends in M&As and some pre-regression testing of cross-sectional data to examine the validity of the underlying assumptions.

Section 4.2 discusses the use of the event study methodology, including the use of a MATLAB code that was developed for calculating measures of abnormal returns and risk. Section 4.3 highlights the process of sample construction and discusses the preliminary data analysis. Section 4.4 proposes an empirical strategy covering both univariate and multivariate analysis and includes discussion of CAR, risk, and probit regressions for testing the relevant hypotheses. Section 4.5 concludes.

4.2. Event Study Framework

The event study methodology is commonly used to analyse the impact of initial bid announcements for a sample of M&A deals on shareholder stock/share price returns. Abnormal returns on a stock/share are computed as the difference between the actual return and the expected return (Peterson 1989). As the impact of the announcement can be observed immediately, the event impact will be observed in the stock return over a short time period surrounding the announcement date (MacKinlay 1997).

Conducting an event study requires, as a first step, to determine the interest of the event. In the case of this research, the interest is to measure the impact of deal announcements on acquirers' stock returns. The next step is to generate the sample of data, which will be discussed in Section 4.3. The third step is to determine the time period for base estimation and the event period (or window) for the calculation of abnormal returns. The estimation period must be prior to the event period in order to observe the market reaction around the actual event. The final step is to calculate the abnormal return and the cumulative abnormal return (CAR) and to analyse their statistical significance, which will be discussed in Section 4.2.3.

Estimation requires the specification of a model for the calculation of expected returns. There are two statistical and two economic models which are widely considered. The two main economic models are the capital asset pricing model (CAPM) and arbitrage pricing theory (APT). Under the CAPM assumption, the expected return of a stock relies on the covariance of the market portfolio (MacKinlay 1997). This takes into account a risk-free rate to determine the expected return. This risk-free rate generally depends on government bond returns, such as treasury bills and gilts. However, the financial markets in many developing markets are inefficient, and the use of government bond returns may therefore not be appropriate, since using the CAPM can lead to biases in the calculation of expected and abnormal returns for M&A announcements using a cross-country sample (Ma, Pagán, and Chu 2009).

Arbitrage pricing theory (APT), on the other hand, takes into account different factors which underlie the belief that if all stocks are impacted by the same factors, then the expected returns depend on the risk associated with the security (Binder 1998). Thus, the expected

return on a stock is a linear equation tempered by the risk involved. On the other hand, as MacKinlay (1997: 19) indicates,

> the gains from using an APT motivated model versus the market model are small. The main potential gain from using a model based on the arbitrage pricing theory is to eliminate the biases introduced by using the CAPM. However, because the statistically motivated models also eliminate these biases, for event studies such models dominate.

As a result of the difficulties associated with the use of the above economic models, MacKinlay (1997) suggests the use of alternative statistical models based on their higher discriminatory power compared to that of the economic models. The two key statistical models are the constant mean return model and the market model. The constant mean return model is used to calculate mean-adjusted returns by deducting the return for a stock during the estimation period from the stock's return during the event period. The methodology for determining mean-adjusted returns does not take into account an accurate measurement of the risk or the market portfolio returns during the estimation window. Furthermore, the abnormal returns value will exhibit higher variance than the market model disturbances (Binder 1998). In addition, MacKinlay (1997: 15) indicates that, "the constant mean return model, as the name implies, assumes that the mean return of a given security is constant through time. The market model assumes a stable linear relation between the market return and the security return".

The market model, on the other hand, offers an advantage over the constant mean return model in that the portion of the return which is related to variation in the market's return is removed. This results in lower variance in the abnormal returns and is considered to be more accurate for observing the event impact (MacKinlay 1997). Thus, the market model is adopted here in the calculation of abnormal returns.

4.2.1. Assumptions

A number of assumptions underlie the use of the event study methodology. The first is the fact that the efficient market hypothesis (EMH) should hold in the semi-strong form (McWilliams and Siegel 1997, Eckbo 2008, Chandra 2011). The EMH asserts that market stock prices reflect all available information, that there are no transaction costs and full public disclosure. Given the existence of transaction costs and information asymmetry in reality, this obviously does not hold in the real world. However, the weak form of the EMH describes a market in which historical price data are efficiently digested and, therefore, information on historical price trends is of no value for the prediction of either the magnitude or direction of subsequent price changes (Fama 1970).

The EMH also precludes opportunities for arbitrage. Jensen (1978: 3) defines it as follows: "A market is efficient with respect to information set θt if it is impossible to make economic profits by trading on the basis of information set θt". However, three different formulations of the EMH have been proposed: the weak form, the semi-strong form, and the strong from (Jensen 1978).

The main differences between these three forms rely on Jensen's definition of *information set θt*. The weak form of the EMH implies that the information set includes partial historical data only, the semi-strong form states that the information set includes all publicly available information, and the strong form assumes that all public and private information on share prices is available (Frankfurter and McGoun 2002).

The event study methodology assumes that the semi-strong form of the EMH holds in the real world. Under this assumption, stock prices reflect all publicly available information (Binder 1998). Moreover, the event study methodology assumes that an M&A deal is an unpredictable event and that no other events in the event window period could also lead to abnormal returns for the acquirer. Therefore, any M&A deals for firms which have made other announcements during the short event window must be excluded from the sample. Elimination of these additional announcements allows more accurate calculation of the abnormal returns (McWilliams and Siegel 1997).

4.2.2. Determination of Event and Estimation Windows

Stock returns which are expected if no event occurs or if public information is fully available are called 'expected' or 'normal' returns (Pablo and Javidan 2009, Jeng 2015). In order to observe the impact of an M&A on shareholder wealth, the expected returns for a given stock must be calculated for the period of interest (Armitage 2006). In other words, expected returns must be calculated during a specific period before the acquisition announcement date. This period is called the 'estimation period' or 'estimation window'.

The next step is to determine the period over which the share price reaction will be analysed as a result of the M&A announcement. This period is called the 'event window' (Kliger and Gurevich 2014). As there is no consensus in the literature about the use of a standard event window, in this study a small window of three trading days (-1,+1) has been used, which is also the most common practise among the academics (see Eckbö 1983, Graham, Lemmon and Wolf 2002, Mulherin and Boone 2000, Andrade, Mitchell and Stafford 2001, Bouwman, Fuller and Nain 2003, Sudarsanam and Mahate 2003, Moeller, Schlingemann and Stulz 2004, Campa and Hernando 2004, Moeller and Schlingemann and Stulz 2005, Moeller and Schlingemann 2005). The conventional view is that very short windows of 1-3 days can avoid confounding biases which are very likely to be present in the longer windows, hence the conventional view is that shorter windows can provide better empirical results, particularly in multi country event studies (Binder, 1998; MacKinlay, 1997; Park, 2004).

There are further considerations about the shareholder valuations which may be underestimated due to any leakage problem before one day of the announcement. For example, if the window length is greater than one day prior to the announcement, there can be overvaluation of managerial estimations as well as private benefits. However, there are many researchers who prescribe that longer windows should be used, since it is uncertain when the information regarding the event is revealed to the market (Keown and Pinkerton 1981; Jarrell and Poulsen 1989; McWilliams and Siegel, 1997; Aktas *et al.* 2001; Nicolau 2010). Hence, different window lengths are used to ensure consistency of results, as follows.

1. Event window of 21 working days (–10,+10)
2. Event window of 11 working days (–5,+5)
3. Event window of 7 working days (–3,+3)
4. Event window of 5 working days (–2,+2)
5. Event window of 3 working days (–1,+1)

The use of the above five event windows follows several previous empirical studies including Beitel, Schiereck, and Wahrenburg (2004), Choi and Russell (2004), Ismail (2008), Andrade, Mitchell, and Stafford (2001), Martynova and Renneboog (2011), Rani, Yadav, and Jain (2014), and Jaffe *et al*. (2015). Observing the impact of announcements over five different event windows will help assess the consistency of the results. Furthermore, observing the impact over the short-term implies that it is not necessary to control for the impact of acquirer size, which is important in evaluating long-term performance in relation to an M&A announcement (Gregory 1997).

The estimation period, however, has to be pre-determined, and such estimation periods are different for different types of models used. For example, if the market model is used then a common estimation period is 120 days prior to the event. This means that the parameters of the model can be estimated using daily prices over 120 days prior to the event. Generally, the event period itself is not included in the estimation period to prevent the event from influencing the normal performance model parameter estimates (Mackinlay 1997).

There are certainly some complex problems related to the pricing of assets during the event periods, hence several authors have used estimation periods other than the period just prior to the event window, though there are generally for long run studies using monthly data. Mandelker (1974) estimated separately the parameters in the model before and after the event period. Copeland and Mayers (1982) have also used post event estimation data, which is due to bias associated with the event which generates abnormal returns. Agrawal *et al.* (1992) and Gregory (1997) have used post-estimation data for investigating mergers over the long run. In the present study pre event data are used for model estimation, since that is the most common procedure (Ahern 2009).

Regarding the length of the estimation period, again there are many contradicting views (Pettengill and Clark 2001). Some authors have used dates ranging from 90 business days to 255 business days. The study by Aktas *et al.* (2001) used 90 daily observations from a period prior to their initial announcement (going from -180 to -91 relative to the announcement date). Keown and Pinkerton (1981) have used 100 trading days, Ma *et al.* (2009) have used 125 days prior to the event till six days prior to the event, Liargovas and Repousis (2011) has used a period of 100 trading days. Chang (2008) used 200 days as estimation period (from day -210 to day -11). Martynova and Renneboog (2009) used 240 days starting 300 days prior to the acquisition announcement. As longer estimation period reduces the number of

deals (due to the unavailability of share price data for long periods), this study considers an estimation window which includes 100 working days prior to the event period along with the five different event periods as mentioned earlier.

Figure 4.1 below illustrates the estimation and event windows. The event day is *t*, the estimation window runs from T_0 to T_1–1, and the event window runs from T_1 to T_2.

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Figure 4.1: Estimation and event windows. Source: MacKinley (1997)

4.2.3. Calculation of Abnormal Returns and Cumulative Abnormal Returns

The abnormal returns associated with an announcement are calculated as the difference between the actual returns and the expected returns during the event period (MacKinlay 1997). Accordingly, for an acquirer *i* at time *t*, the abnormal return is calculated as follows:

$$AR_{i,t} = r_{i,t} - E(r_{i,t}) \qquad (4.1)$$

Where:

- $AR_{i,t}$ is the abnormal return for stock *i* at time *t*
- $r_{i,t}$ is the actual return for stock *i* at time *t*
- $E(r_{i,t})$ is the expected return for stock *i* at time *t*

The expected return is based on the estimation of the market model using ordinary least squares (OLS) specifying the relation between the stock return and the market return as follows:

$$E(r_{i,t}) = \alpha + \beta r_{m,t} + \varepsilon_{i,t}\ t = -111, \ldots\ldots, -11 \qquad (4.2)$$

Where:

- $r_{i,t}$ is stock return *i* at the time *t*
- $r_{m,t}$ is the market return based on an index (benchmark) at time *t*
- $\varepsilon_{i,t}$ is the error term
- α_i and β_i are the parameters of the model

Following MacKinlay (1997), the parameter estimates of the model are:

$$\widehat{\beta_i} = \frac{\sum_{t=T_0+1}^{T_1}(r_{i,t}-\widehat{\mu_i})(r_{m,t}-\widehat{\mu_m})}{\sum_{t=T_0+1}^{T_1}(r_{m,t}-\widehat{\mu_m})^2} \qquad (4.3)$$

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i\hat{\mu}_m \qquad (4.4)$$

$$\hat{\sigma}^2{}_{\varepsilon_i} = \frac{1}{L_1-2}\sum_{T_0+1}^{T_1}(r_{i,t} - \widehat{\alpha_i} - \widehat{\beta_i} r_{m,t})^2 \qquad (4.5)$$

$$\hat{\mu}_i = \frac{1}{L_1}\sum_{t=T_0+1}^{T_1} r_{i,t} \qquad (4.6)$$

$$\hat{\mu}_m = \frac{1}{L_1}\sum_{t=T_0+1}^{T_1} r_{m,t} \qquad (4.7)$$

Where:

- $L_1 = T_1 - T_0$ corresponds to the period of the estimation window (see Figure 4.1 above).

The actual return of the stock *i* at time *t* will be:

$$r_{i,t} = \ln(\frac{P_t}{P_{t-1}}) \qquad (4.8)$$

The return of the market index is calculated as follows:

$$r_{m,t} = \ln(\frac{MP_t}{MP_{t-1}}) \qquad (4.9)$$

The daily market share price data for the acquirer and the market index have been collected from DataStream. The DataStream code for the firm price is P (Close Price) and the index

price code is LI (Local index price[6]). For example, LI for Lloyds Bank is "FTSE ALL SHARE - PRICE INDEX". As a robustness check, the abnormal returns were re-calculated using MSCI World Index from DataStream, and the same results were obtained for betas and returns.

The abnormal return is the difference between the actual return and the expected return for every share *i* at time *t* for the event window (T_1, T_2), calculated as follows:

$$AR = r_{i,t} - \alpha - \beta r_{m,t}\ t = -30, \dots\dots, +30 \qquad (4.10)$$

In order to calculate the M&A announcement impact over the event period, the abnormal return values must be summed for the event window period. The cumulative abnormal return CAR (T_1, T_2) for each share during the event period starting from T_1 and ending at T_2 is calculated as follows:

$$\widehat{CAR}(T_1, T_2) = \sum_{t=T_1}^{T_2} \widehat{AR}_{i,t} \qquad (4.11)$$

Then, for a sample of size *N* (number of announcements), the average abnormal return for each date *t* is calculated as follows:

$$\overline{AR_t} = \frac{1}{N}\sum_{i=1}^{N} \widehat{AR}_{i,t} \qquad (4.12)$$

The variance of the abnormal return for each date *t* in the event window is:

$$var(\overline{AR_t}) = \frac{1}{N^2}\sum_{i=1}^{N} \sigma_{\varepsilon_i}^2 \qquad (4.13)$$

Finally, the cumulative average abnormal return (CAAR) for the event period (i.e. the overall impact of the announcement) is calculated as follows:

$$\overline{CAAR}(T_1, T_2) = \sum_{t=T_1}^{T_2} \overline{AR}_t \qquad (4.14)$$

Then, the variance of the CAAR can be calculated as follows:

$$var(\overline{CAAR}(T_1, T_2)) = \sum_{t=T_1}^{T_2} var(\overline{AR}_t) \qquad (4.15)$$

[6] A robustness check is done using the return index for potential variations in the results compared with the price index, and it is found that there are no significant differences in the abnormal returns whether the price index or the return index is used.

Or, instead:

$$var(\overline{CAAR}(T_1, T_2)) = \frac{1}{N^2}\sum_{i=1}^{N} \sigma_i^2(T_1, T_2) \quad (4.16)$$

Where:

- $\sigma_i^2(T_1, T_2) = (T_2 - T_1 + 1)\,\hat{\sigma}_{\varepsilon_i}^2$ (4.17)

4.2.4. Testing the Statistical Significance of Abnormal Returns

In order to test the hypotheses relating to the impact of M&A announcements on acquirer returns, the statistical significance of the CAR can be determined using the following formula:

$$\overline{CAR}(T_1, T_2) \sim N[0, var(\overline{CAR}(T_1, T_2))] \quad (4.18)$$

To test that the CAR is statistically significant, MacKinlay (1997) shows that a parametric test can be conducted for the following hypothesis:

$$H_0: CAR(T_1, T_2) = 0 \text{ vs. } H_1: CAR(T_1, T_2) \neq 0 \quad (4.19)$$

which is calculated as follows:

$$\theta_1 = \frac{\overline{CAR}(T_1, T_2)}{var(\overline{CAR}(T_1, T_2))^{1/2}} \sim N(0,1) \quad (4.20)$$

4.2.5. Matlab Program

In order to derive all the CAR results for different window lengths, a Matlab™ code was programmed using the Matlab R2010a edition of the software (developed by MathWorks), which is a numerical computing environment and fourth-generation programming language. This program was chosen in order to take advantage of the latest and fastest procedures available.

The program was written using a begging algorithm which calculates all the mathematical equations given above, including a price-to-return converter for the acquiring firms and the market index for each date during the estimation and event periods, along with the estimates of the alpha and beta parameters as well as the expected, abnormal, and cumulative abnormal returns during the event periods, etc. The data for the announcement dates and share prices were sourced from the Thomson One Banker and DataStream databases, respectively. The program facilitates the calculation of CARs for a large volume of data on deals and daily share prices via an iterative process.

This program was checked for consistency with a sample of results obtained using the Excel spreadsheet that was initially considered, but it was found to be limited in handling the large volumes of data and the required repeated calculations of CARs for different event windows. The Matlab code incorporates the flexibility of calculating all CARs for shorter window lengths within the maximum window length. Matlab coding was added to the appendix.

4.3. Sampling and Data Collection

4.3.1. Basis for Construction of the Global Sample

Prior studies in the literature have examined a range of M&A characteristics that influence bidding company shareholder wealth, as discussed in Chapter 3, although much of the empirical evidence is limited to specific industries in specific regions or countries. No previous empirical work has tackled a worldwide sample of M&A deals spanning a broad set of countries and industries and including failed deals. This study aims to contribute to the literature by investigating the relevance of M&A characteristics relating to the method of payment, target status, diversification and acquirers bidding experience on acquirers' performance based on a worldwide sample of 46,759 deals, covering 180 countries and 88 industries. This has been selected on the basis of data availability with information sourced primarily from two databases, Thomson One Banker's M&A Database and Datastream. It should be noted that the data from Thomson One Banker M&A Database were originally collected by Securities Data Corporation (SDC) and accessed for this study through a program called SDC Platinum, which often appears as a source in many empirical studies[7].

[7] See the University of Chicago Library http://guides.lib.uchicago.edu/mergers , and Thomson ONE Banker - Thomson Financial http://www.tfsd.com/marketing/banker_r2/HomeFAQs.asp

4.3.2. Sampling Criteria

The M&A data include, as far as possible, all initial bids announced between 1977 and 2012. At the time of data collection in 2014, the status of many of the deals announced after 2012 was uncertain (incomplete) and so such deals could not be included, given that the analysis of acquirers' risk requires not only certainty about completed deals but also daily share price data availability for at least one year before and one year after announcement date. Lack of share price data also meant that deals announcement before 1997 could also not be considered.

Table 4.1 depicts, step-by-step, the criteria for inclusion in the sample of M&As deals announced between 1997-2012:

Table 4.1: Sampling Criteria

#	Criterion	Operator	Description / Code	Count
1	Acquirer Public Status (Code)	Include	P	362396
2	Target Public Status (Code)	Include	P,V,S	352511
3	Deal Type (Code)	Include	1,2	263158
4	Deal Status (Code)	Include	C,W	247926
5	Deal Value ($ Mil)	Between	1 to HI	120811
6	Acquirer Market Value 4 weeks prior to Announcement ($ Mil)	Between	LO to HI	72340
7	Percent of shares owned after Transaction	Between	50 to 100	57562

Note: see below for descriptions of codes

The initial process involved identifying all M&A bids that were announced and duly recorded in the Security Data Corporation's M&A database. As explained, the time period 1977-2012 was the most feasible and appropriate that could be entertained at the time of the initial screening process, which yielded 362,396 deals. As Table 4.1 shows, the sample size was sequentially reduced by applying the stipulated criteria. The first criterion for the deals to be included in the list is that the acquirers should be publicly listed and the targets should be public, private or subsidiary firms. The next criterion is that the bidder should acquire an interest of 50% or more in the target, where the interest had risen from below 50% to above 50. Moreover, the deal value to be included should be at least $1 million to avoid outliers[8] (Fuller, Netter, and Stegemoller 2002; Jaffe, *et al.* 2015). The reason for restricting to the larger transactions is that they have a stronger effect on the share prices, and they also have

[8] We follow Fuller, Netter, and Stegemoller (2002) and Moeller, Schlingemann, and Stulz (2004) and employ a one million dollars cut-off point to avoid results being generated by very small deals, which amount to outliers.

unthinly traded stocks (Miles and Rosenfeld 1983; Healy *et al.* 1992). For an M&A bid to be further included in the sample, the market value of the acquirer should be available from Datastream. Finally, only bidders who acquired a controlling stake in the target (set to be greater than 50% of the equity) were considered. These restrictions further reduced the sample size to 57, 562 deals.

The next process included carrying out a manual review of the deals in terms of verifying the criteria used, by checking in the Thomson Datastream database the availability of data for the daily historical stock price data and the market index. In cases where these were not fulfilled the deals were eliminated from the sample.

Care was also taken to avoid the confounding effects of multiple bids, for example there were cases where more than one bid was announced by the bidder over a window of 21 days, and such cases were excluded. In addition, the M&A announcements made by the same bidder within less than 110 days were also removed from the sample.

Campell and Wansley (1993) argue that for those firms whose stocks are thinly traded there can be high frequency of zeros which could result in non-normal distributions. Such a problem of non-normal return distribution has to be tackled in the methods suggested by Maynes and Rumsey (1993), Cowan and Sergeant (1996), and Campell and Wansley (1993), whereby a stock needs to be traded for at least 40 days of the 100-days estimation period in order to be included in the sample. Again the trading period is as suggested by Bartholdy *et al.* (2007) who classify thinly traded stocks as stocks trading less than 40% of all trading days.

In summary, therefore, the criteria for inclusion in the sample after the initial screening process of identifying all M&A transactions in the SDC database, are:

1. The acquirer is a public firm.
2. The target is a public, private, or subsidiary firm.
3. The acquirer is acquiring an interest of 50% or more in a target, raising its interest from below 50% to above 50%, or acquiring the remaining interest it does not already own.

4. Status of Transaction: C, W, where C = Completed (the transaction has closed), and W = Withdrawn (the target or acquirer in the transaction has terminated its agreement, letter of intent, or plans for the acquisition or merger).
5. Value of Transaction: $1 million or more, i.e. the total value of consideration paid by the acquirer, excluding fees and expenses.
6. The market value of the acquirer approximately 4 weeks prior to announcement is available in Datastream.
7. The percentage of shares owned by bidder in the target company after transaction should be between 50% and 100%. This represents the number of common shares acquired in the transaction plus any shares previously owned by the acquirer divided by the total number of shares outstanding.
8. The acquirer's share prices and the local index prices are available in DataStream.
9. No more than one bid was announced by the bidder within 21 days.

After all the aforementioned criteria were applied, 46,758 deals remained in the sample. The total sample therefore comprises 46,758 initial bids from a total of 180 countries covering 88 sub-industries over the period 1977-2012. Of these, 36,489 deals were completed transactions, implying successful deals, while 10,269 deals were unsuccessful (i.e. cancelled/terminated deals).

4.3.3. Descriptive Analysis: M&A Trends and Waves

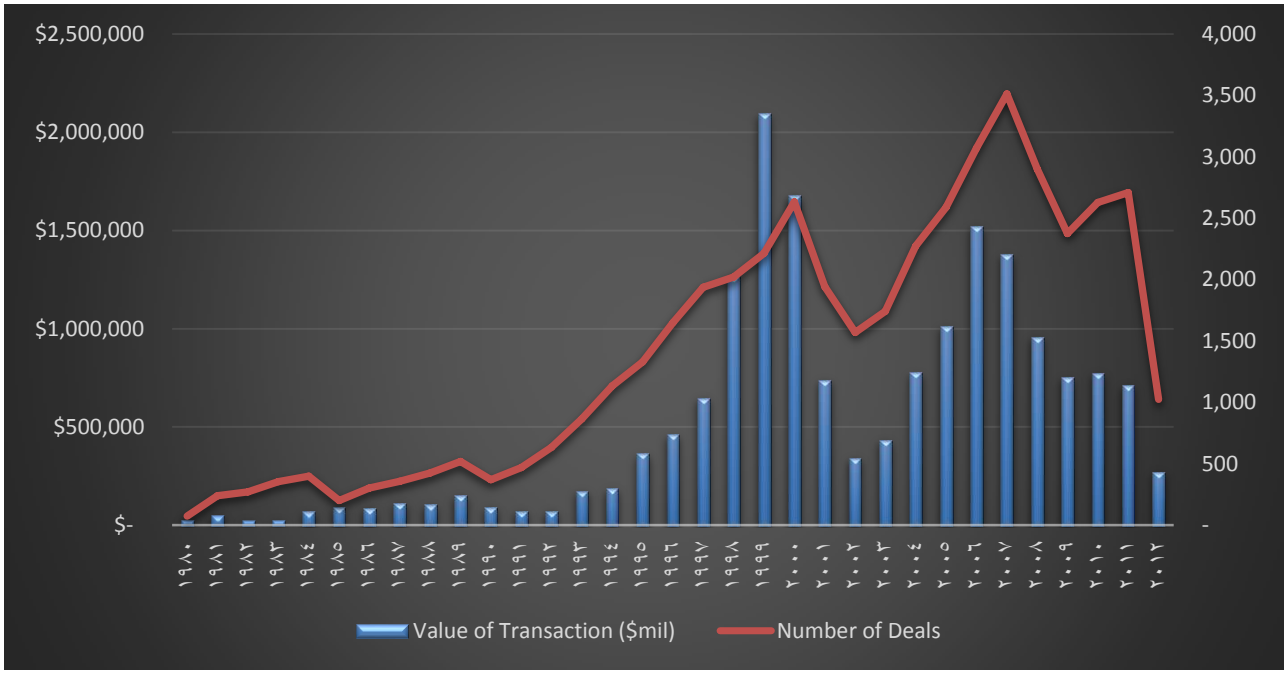


Figure 4.2: M&A Trends and Waves.

Figure 4.2 above shows the number of deals in the sample per year by value of transaction, and it is clear that there was a significant increase in both the number of deals and their value between 1993-2001 and 2003-2008. These are referred to as 'merger waves'. In fact, there was also an earlier merger wave that occurred between 1981-1989, and it is possible to isolate the causes of these three waves according to Martynova and Renneboog (2005, 2011) and Matthews (2011).

The Wave of the 1980s (1981-1989)

This wave began because of the regrowth of the stock markets after the 1973-74 oil crisis, following the relaxation of the legislation on antitrust laws, the deregulation of the financial services sector, and the creation of new financial instruments and markets. This period encompassed numerous hostile takeovers, disinvestments, and private transactions in the form of leveraged and management buyouts (LBOs and MBOs).

The Wave of the 1990s (1993-2001)

This was the largest wave in terms of volume and the value of transactions. According to the Thomson Financial Securities data, 119,035 M&A deals took place in the USA, and 116,925

occurred in Europe during this period (compared to 34,494 and 12,729 deals in the U.S. and Europe, respectively, during the 1980s wave). This wave corresponds to a period of sustained economic growth and stability as well as further deregulation and consolidation of the financial markets, including the creation of the single currency in the Eurozone.

A New Wave (2003-2008)

The period of 2003-2008 is referred to as the new merger wave. It began in the middle of 2003 after the decline of the previous merger wave and following a period of gradual market recovery after the downturn that began in 2000 due to the technological bubble. This wave included a large number of cross-border M&As between companies located in Europe, the USA, and Asia. According to the Thomson Financial Database, the volume of deals increased by 71% between 2002 and 2004, prompted by the availability of greater liquidity in the markets.

As discussed in Chapter 2, several studies (e.g. Shleifer and Vishny 2003, Rhodes-Kropf and Viswanathan 2004, Mitchell and Mulherin 1996, Harford 2005) have characterised merger waves as resulting from industry-level economic, technological, or regulatory shocks (in the neoclassical view) or from managerial timing of firms' market overvaluation (in the behavioural view).

Finally, it is a notable that M&A activity declined during the period 2009-2012 following the recent global financial crisis, which led to a credit crunch and decline in liquidity in the markets, thus contributing to the reduction in M&As.

4.3.4. Trends in Payment Methods

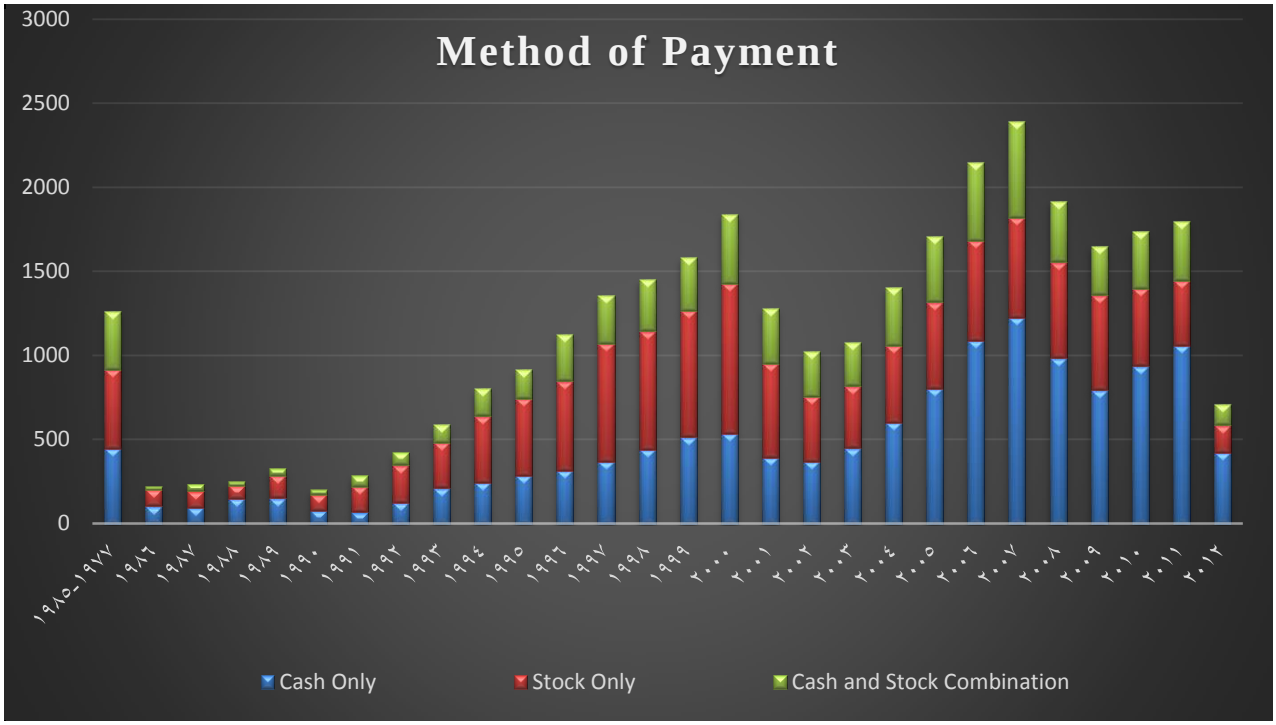


Figure 4.3: Trends in Payment Methods.

Figure 4.3 presents the number of M&A deals according to method of payment announced for the transaction (i.e. cash-only, stock-only, and cash/stock combination). The chart shows that during the period 1977-1989, cash was the most common method used to finance transactions, while from 1990-1999, stock was the most common method of payment. After the year 2000, cash again became increasingly more important. Hence, as other studies (Heron and Lie 2002, Faccio and Masulis 2005) have suggested (see Chapter 2) the use of the stock to finance M&As became increasingly common during the 1990s, although its use has again declined since 2000. It should be noted that the use of a cash/stock combination also increased noticeably after 1996, although the cash or stock only methods of financing have been more common, and there is not a single year in which the cash/stock method has dominated over cash or stock only financing.

One reason for the shifts in the methods of payment over time could be a change in the nature of determinants influencing the management's decision to finance the transactions. As noted in Chapter 2, several explanations exist to explain the choice of the payment method in merger transactions, including asymmetric information problems and cash flow considerations. While asymmetric information could explain the supremacy of stock payment

methods during the 1990s, cash flow considerations may reflect the relative prominence of cash payment methods in the 2000s. It could also be that potential investment opportunities and the possibility of greater risk sharing saw the rise in the mixed methods of payment after 2000s. The change in the financing pattern may have also been the result of lower interest rates and the record high corporate cash balances after 2000, leading to more debt and free cash flow. For instance, Alexandridis *et al.* (2012) highlights the yearly average of the Wall Street Journal's prime rate for the 2003-2007 (2005-2006) periods as 6.14% (7.07%) compared to 7.84% (8.18%) for 1993-1999 (1998-1999).

4.3.5. Public vs. Non-Public Targets

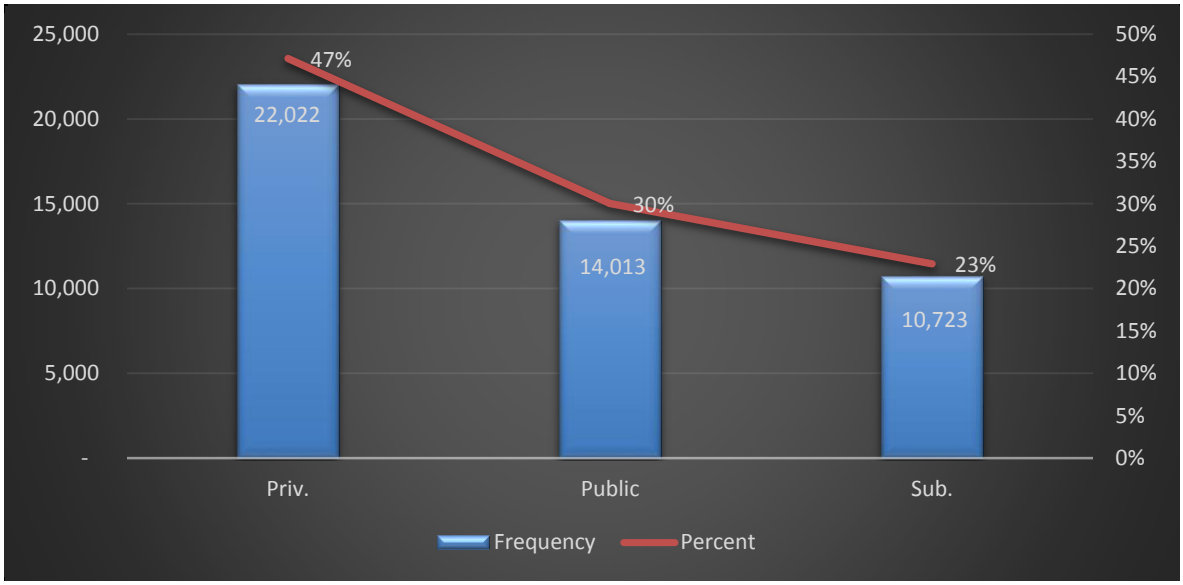


Figure 4.4: Public vs. Non-Public Targets.

As noted earlier, in M&A research, deals involving non-public targets have received little attention, even though such deals represent in excess of 70% of the total transactions (Capron and Shen 2007). Figure 4.4 confirms that in our analysis, exactly 70% of the deals involved private or subsidiary targets, while only 30% involved public targets.

4.4. Empirical Strategy for Hypothesis Testing

This study aims to analyse the impact of payment methods, target status, acquirer bidding experience, and diversification on acquirers' cumulative abnormal returns and market risk. Additionally, the study aims to analyse the factors affecting the probability of deals being failure after announcement. In other words, the main objective of the empirical analysis is to

examine these three sets of hypotheses associated with (1) acquirer returns, (2) acquirer market risk, and (3) the probability of deal failure. For each of these hypotheses, four sub-hypotheses will be tested relating to the four main dimensions associated with M&As: (a) method of payment, (b) target status, (c) diversification, and (d) acquirer bidding experience. Within each of these four sub-sets of hypotheses, several additional hypotheses can potentially be proposed using appropriate combinations of the dimensions in question, such as the method of payment used in focussed vs. diversified M&As and whether the impact on acquirer returns or risk is statistically significant or not. Within the context of diversification, a distinction is also drawn between (i) activity (focussed vs. diversified M&As) and (ii) geographic scope (domestic vs. cross-border M&As). Furthermore, between these two dimensions of diversification, cross-combinations are also possible, for example, in cases of M&A deals where the acquirer and the target are located in different countries and operate in different industries (cross-industry and cross-border deals). Thus, it is clear that numerous hypotheses can be investigated using a global sample of M&A data, and in the foregoing analysis, the specific hypotheses to be investigated will be explicitly stated and explained. Table 4.2 summarises these main sets of hypotheses relating to acquirers' shareholder returns, acquirers' risk and the probability of deal completion/failure.

Table 4.2: Hypotheses of Study.

H_0	1) CAR	2) Market risk (Beta)	3) Probability of deal failure
(a) Method of payment	There are no significant differences in acquirers' cumulative abnormal returns based on whether a deal involves a cash or stock payment.	There are no significant differences in acquirers' market risk based on whether a deal involves a cash or stock payment.	There are no significant differences in the probability of deal failure based on whether a deal involves a cash or stock payment.
(b) Target status	There are no significant differences in acquirers' cumulative abnormal returns based on whether a deal involves a public or non-public target (private and subsidiary).	There are no significant differences in acquirers' market risk based on whether a deal involves a public or non-public target (private and subsidiary).	There are no significant differences in the probability of deal failure based on whether a deal involves a public or non-public target (private and subsidiary).
(c) Diversification	There are no significant differences in acquirers' cumulative abnormal returns based on domestic or cross-border and focussed or diversified M&A deals.	There are no significant differences in acquirers' market risk based on domestic or cross-border and focussed or diversified M&A deals.	There are no significant differences in the probability of deal failure based on domestic or cross-border and focussed or diversified M&A deals.
(d) Acquirer bidding experience	There is no association between acquirers' cumulative abnormal returns and acquirer bidding experience.	There is no association between acquirers' market risk and acquirer bidding experience.	There are no significant differences in the probability of deal failure based on the involvement of multiple acquirers and single acquirers.

The foregoing discussion provides a number of rationales for the hypotheses stated but relates mainly to the impact of M&A deal characteristics on shareholder wealth (acquirers' CAR) since there are no prior studies of deal characteristics (other than diversification) focussing on risk and hardly any studies on the probability of deal completion/failure. In what follows, referring to Table 4.2, null hypotheses (a1), (a2), (a3) refer to the impact of the method of payment on acquirers CAR, risk and probability of deal failure respectively; (b1), (b2), (b3) correspondingly refer to the impact of target status; and so on for diversification (c1, c2, c3) and acquirers' bidding experience (d1, d2, d3).

With regard to the method of payment, Fullers, Netters and Stegemoller (2002) among others have proposed that stock is a less preferable payment mechanism than cash, keeping in mind the information asymmetry that characterising bidder and target valuations as well as uncertainty about the expected synergy. Since each party in the transaction is in a better position to judge whether their own stocks are overvalued or undervalued, from the perspective of the bidder the stock payment mechanism accounts for the valuation uncertainties. This is the implication of the overvaluation hypothesis, originally developed by Myers and Majluf (1984), which suggests that if the bidder offers stock the market perceives that its stock is overvalued, and there would be negative response to its stock upon announcement. However, from the perspective of the target firm, since it's difficult to gauge the valuation of the bidder's stocks it would prefer cash payments in general cases. Correspondingly, if the bidder offers cash instead of stock, it conveys a stronger signal to the market about its valuation and expected synergy, which therefore yields a positive response from the market upon announcement. Stated simply, therefore, the alternative to the null hypothesis (a1) is that stock payments will generate negative CARs and cash payments will yield positive CARs for bidders upon announcement in general. The implications for acquirers' risk (a2) and the probability of deal completion (a3) can be inferred from the risk-return trade-off theory, implying that cash payment will incur lower risk than stock payment deals for acquirers and the likelihood of deal completion is correspondingly higher with cash than with stock payments. However, such inferences are based on the assumption of targets being public and therefore not capable of explaining the anomalies in the positive bidder returns associated with stock payments for acquisitions of private or subsidiary targets.

Fuller, Netter and Stegemoller (2002), Moeller, Schlingemann and Stulz (2004), and Jaffe *et al*. (2015) have argued that the mergers with private targets are to be treated differently than

the mergers with public targets. When a target is private, information about it is generally limited. Public firms, on the other hand, are exposed to the scrutiny of the entire stock market, as it is subject to regulations regarding transparency and the issuance of certain types of information, which implies less uncertainty regarding their value (Feito-Ruiz and Requejo 2014). However, private firms have more control over the kind and amount of information they disclose to markets (Reuer and Ragozzino 2008). This information asymmetry increases the risk of inaccurately valuing the target's assets and so the acquiring company may be able to obtain shareholder gains by forcing the target to accept a substantial discount in the purchase price (Makadok and Barney 2001). The comparative lack of public information on non-public target corresponds to a lack of effective competition among private acquirers. Added to this is the claim that non-public targets are typically less liquid than public firms, which heightens the negotiating power of potential acquirers in seeking lower payment for the target, thus creating shareholder wealth and explaining the abnormal returns (Capron and Shen 2007). These explanations indicate, as alternative to the null hypothesis (b1), that non-public target M&A will yield positive abnormal return while public target will generate negative abnormal return for the bidder firms. Correspondingly, deals with non-public targets incur higher market risk for acquirers than deals with public targets (b2). However, the probability of deal failure (b3) is higher with public targets, as their shareholders are more likely to 'free-ride' on bidder offers and raises the premium paid, while private targets, which tend to have concentrated shareholders, have better negotiating power to ensure deal success.

The alternative hypotheses relating to diversification concerns different motives which may be economic, finance or strategy based. In cross-industry mergers, besides growth there may be other opportunities to exploit such as imperfections in the capital markets (Chan et al. 1992), differences in taxation (Weston *et al.* 2001), capturing rents resulting from market inefficiencies (Servaes and Zenner 1994), and synergies based on different knowledge and skills which gets diffused through such mergers. In cross-industry cases, the market power theory holds that such mergers actually help the merged entity influence the price in the market and hence beat the rivals (Pindyck and Rubinfeld 2005). These considerations suggest that the bidder abnormal returns in cross-border or diversified M&A announcements are likely to be significantly higher than for domestic or focused ones. Similarly, the implications for acquirers' risk (c2) can be inferred from the standard international diversification theory, which suggests that diversification or integration of markets may reduce acquirers' systematic risk. However, the greater degree of information asymmetry and

uncertainty associated with diversified deals may be riskier and, therefore, their probability of deal failure (c3) is lower than for domestic and focussed (DAF) deals.

With regard to acquirers' bidding experience, although experience in acquisitions is not always a criterion for success, the acceptable view is that unsuccessful acquirers have little bidding experience in this context. Previous experience of acquisition aids companies insofar as they are able to learn from previous errors, which therefore helps them to be successful in subsequent attempts. Serial acquirers, who tend to have the experience and skills necessary to achieve success in acquisitions, are recognised as being more likely to achieve positive outcomes in this regard. Nevertheless, as noted in chapters 2 and 3, the hubris or over-optimism motives of M&As, which stands in contrast to the rational, synergy-based theories of mergers, suggest that with increased experience, acquirers destroy rather than improve their shareholders' wealth. In line with the hubris theory, the alternative to the null hypothesis (d1) is that the bidder abnormal returns for serial acquirers are significantly lower than for single acquirers. Correspondingly, serial acquirers will incur higher systematic risk for shareholders (d2). Also, acquirers with prior experience of successful acquisitions ought to have greater expertise in ensuring deal completion, implying lower likelihood of deal failure (d3), although this does not imply that they make efficient decisions.

Prior to that, however, it is important to explain the basis for the construction of the global sample as well for the univariate and multivariate analyses involved in the pre-hypothesis testing.

4.4.1. Univariate analysis: Testing the mean differences of two groups

Univariate analysis explores the association between two variables, in particular the dependent variable and an explanatory variable that is included in subsequent regressions. As such, it involves pre-regression testing to determine the underlying distribution of the data relating the two variables, which may be continuous or discrete. The choice of the appropriate statistical analysis for pre-regression testing depends on these two factors: the type of variable (whether continuous or discrete) and the underlying distribution of the data (whether parametric or non-parametric).

Table 4.3 below characterises the nature and type of the main dependent and explanatory variables that are used in the subsequent analysis.

Table 4.3: Type of Dependent and Explanatory Variables.

Variable	Nature	Type
Cumulative Abnormal Returns	Dependent Variable	Continuous
Risk (Market or Systematic)	Dependent Variable	Continuous
Probability of Deal Failure	Dependent Variable	Categorical
Method of Payment	Independent Variable	Categorical
Target Status	Independent Variable	Categorical
Diversification	Independent Variable	Categorical
Acquirer Bidding Experience	Independent Variable	Continuous

Of the three dependent variables characterising the three sets of hypotheses to be considered, the acquirers' CAR and market/systematic risk are regarded as continuous variables, while the probability of deal failure is a dummy variable equal to '1' if the deal was failure (a unsuccessful deal) or '0' if the deal was completed (a successful deal), and this dependent variable is thus considered to be discrete (i.e. categorical or dichotomous).

The next important step is to determine whether the data for each variable are normally distributed or not. This determines the appropriate parametric or non-parametric test for evaluating the significance of the mean difference between the dependent and independent variables. According to Field (2013), the main assumption underlying the use of parametric tests is that the data must be normally distributed. A number of approaches can be utilised to assess the normality of a data distribution, including plotting histograms, using skewness and kurtosis, or using the Shapiro-Wilk (SW) and Kolmogorov-Smirnov (KS) tests. These last two tests compare the scores from the sample to a normally distributed set of scores with the same mean and standard deviation. They are typically used to determine how well a sample of data fits a normal distribution using the following hypothesis:

H_0: The data are assumed to be normally distributed.

against the alternative:

H_1: The data are assumed not to be normally distributed.

Table 4.4 below tests for the normality of the underlying distribution relating to the sets of dependent and independent variables employed in the regression. The definitions of the specific variables are also given in the Table. Using KS test, the results indicate that none of the variables are normally distributed. This suggests that a non-parametric test of mean

differences should be employed. However, in the foregoing analysis, both parametric and non-parametric tests are used to check for consistency.

Table 4.4: Tests of Normality.

The Kolmogorov-Smirnov test is used to test the normality of the underlying distribution relating to the following variables: (1) CARs(-5,+5) is the cumulative abnormal return five days before and after the announcement date. (2) CARs(-3,+3) is the cumulative abnormal return three days before and after the announcement date. (3) CARs(-2,+2) is the cumulative abnormal return two days before and after the announcement date. (4) CARs(-1,+1) is the cumulative abnormal return one day before and after the announcement date. (5) Cash-only is a dummy variable equal to '1' if the acquirer used cash-only as the method of payment and '0' otherwise. (6) Stock-only is a dummy variable equal to '1' if the acquirer used stock-only as the method of payment and '0' otherwise. (7) Public status (Public) is a dummy variable equal to '1' if the bidder acquired a public target and '0' otherwise. (8) Private status (Private) is a dummy variable equal to '1' if the bidder acquired a private target and '0' otherwise. (9) Subsidiary status (Sub.) is a dummy variable equal to '1' if the bidder acquired a subsidiary target and '0' otherwise. (10) Domestic and focussed deal (DAF) is a dummy variable equal to '1' if the bidder and target firms operate in the same country and industry, and '0' otherwise. (11) Domestic and cross-industry deal (DCI) is a dummy variable equal to '1' if the bidder and target are located in the same country but operate in different industries according to the initial two digits of their four-digit Standard Industrial Classification (SIC) codes, and '0' otherwise. (12) Cross-border and focussed deal (CBF) is a dummy variable equal to '1' if the bidder and target operate in the same industry but are located in different countries, and '0' otherwise. (13) Cross-border and cross-industry deal (CBCI) is a dummy variable equal to '1' if the bidder and target are located in different countries and operate in different industries according to the initial two digits of their four-digit SIC codes, and '0' otherwise. (14) Exp. 3-Y is the cumulative number of takeovers by the same acquirer during a three-year period. (15) Exp. 5-Y is the cumulative number of takeovers by the same acquirer during a five-year period. (16) Failure is a dummy variable equal to '1' if the announced deal was failure and '0' if the announced deal was success.

	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
CARs(-5,+5)	0.169	46758	0.000***
CARs(-3,+3)	0.177	46758	0.000***
CARs(-2,+2)	0.183	46758	0.000***
CARs(-1,+1)	0.196	46758	0.000***
Cash-Only	0.452	46758	0.000***
Stock-Only	0.468	46758	0.000***
Public	0.444	46758	0.000***
Private	0.356	46758	0.000***
Sub.	0.478	46758	0.000***
DAF	0.395	46758	0.000***
DCI	0.411	46758	0.000***
CBF	0.519	46758	0.000***
CBCI	0.528	46758	0.000***
Exp. 3-Y	0.316	46758	0.000***
Exp. 5-Y	0.304	46758	0.000***
Failure	0.482	46758	0.000***

a. Lilliefors Significance Correction

4.4.1.1. T-test vs Mann-Whitney U Test for Categorical Variables

When testing for differences between two groups, the independent samples t-test is commonly used, but it may be inappropriate if the assumption of parametric tests is not met, as noted above. Therefore, it is necessary to consider a non-parametric, distribution-free version of the t-test (such as the Mann-Whitney U test) to deal with two samples which are

independent and may be of different sizes (Pallant 2001, Field 2013). The Mann-Whitney U test is used to compare differences between two independent groups when the dependent variable is continuous but the independent variable is categorical.

Despite the rejection of the normality assumption above, both a Mann-Whitney U test and an independent samples t-test will be employed to test for significant differences between the dependent variables (acquirers' cumulative abnormal return, market risk) and the appropriate dichotomous independent variable. More specifically, referring to Table 4.2, this test is appropriate for testing the following null hypotheses:

- There are no significant differences in acquirers' cumulative abnormal returns (or market risk) based on whether a deal involves a cash or stock payment.
- There are no significant differences in acquirers' cumulative abnormal returns (or market risk) based on whether a deal involves a public or non-public target (private and subsidiary).
- There are no significant differences in acquirers' cumulative abnormal returns (or market risk) based on domestic or cross-border M&A deals.
- There are no significant differences in acquirers' cumulative abnormal returns (or market risk) based on focused or diversified M&A deals.
- There are no significant differences in acquirers' cumulative abnormal returns between M&A deals that are ultimately success or failure.

4.4.1.2. Pearson and Spearman's Correlations Tests for Continuous Variables

Correlation analyses are employed to assess the strength of association between two continuous variables. Since acquirer bidding experience can be a continuous variable (represented by the cumulative number of prior completed deals), a correlation analysis is appropriate in this case to investigate the strength of association between acquirer bidding experience and acquirer CAR or risk. The statistical significance of the correlation between the two variables can be tested using the non-parametric Spearman's rho test or the parametric Pearson test (Brown *et al*. 1989). Sheskin (2003) suggest that the Spearman rank-order (rho) test is more appropriate under non-normal, non-constant variance and when outliers exist in the data, although both tests may generate similar results if the association between the two variables is strong. Therefore, both tests are employed here to test the following null hypothesis:

- There is no association between acquirers' cumulative abnormal returns (or market risk) and acquirer bidding experience.

4.4.1.3. Chi-square analysis for categorical variables

When both variables are categorical or dichotomous, the appropriate test of statistical association between the two is the chi-square test for independence. Therefore, the chi-square test is employed here to look for potential significant mean differences in the probability of deal failure and the independent variables that are categorical, i.e. diversification, method of payment, target status, and acquirer bidding experience (if treated as a dummy variable). More specifically, the chi-square test will be used to test the following null hypotheses:

- There are no significant differences in the probability of deal failure between domestic and cross-border deals.
- There are no significant differences in the probability of deal failure between focussed and cross-industry deals.
- There are no significant differences in the probability of deal failure between cash and stock-funded M&As.
- There are no significant differences in the probability of deal failure between deals involving public and non-public targets.
- There are no significant differences in the probability of deal failure based on the involvement of multiple acquirers and single acquirers.

4.4.2. Multivariate analysis

Multivariate analysis refers to a group of statistical techniques for handling three or more variables at a time (Kervin 2003). This type of analysis amounts to using multiple regressions in order to test the significance of the impact of the independent variables on the dependent variable. However, the assumptions underlying cross-sectional regression using OLS estimation should be checked beforehand to ensure that valid inferences are made from the estimated results. Five important assumptions must be taken into account in this regard:

1. **Normality of Data:**

This assumption was checked above (see Section 4.4.1, Table 4.4), and the results indicate that the independent and dependent variables are not normally distributed.

2. Multicollinearity

Multicollinearity refers to the correlation among the explanatory variables in a regression model. Field (2013) indicates that the presence of multicollinearity among independent variables represents a threat to the use of multiple regressions. The variance inflation factor (VIF) is commonly used to check if there is any strong correlation between the explanatory variables. If the value of VIF>10, then there is a problem of multicollinearity (Neter, Nachtsheim and Neter 2004). Table 4.5 below presents the results of the multicollinearity test, which confirm that this value is below 10 for all the explanatory variables of interest, suggesting the absence of multicollinearity. In addition, the tolerance value should be more than 0.2 (Field 2013) to indicate the absence of multicollinearity, and Table 4.5 confirms that all tolerance values are above 0.5.

Table 4.5: Multicollinearity Test.

Multicollinearity test is relating to the following variables: (1) Cash-only is a dummy variable equal to '1' if the acquirer used cash-only as the method of payment and '0' otherwise. (2) Stock-only is a dummy variable equal to '1' if the acquirer used stock-only as the method of payment and '0' otherwise. (3) Public status (Public) is a dummy variable equal to '1' if the bidder acquired a public target and '0' otherwise. (4) Private status (Private) is a dummy variable equal to '1' if the bidder acquired a private target and '0' otherwise. (5) Domestic and cross-industry deal (DCI) is a dummy variable equal to '1' if the bidder and target are located in the same country but operate in different industries according to the initial two digits of their four-digit Standard Industrial Classification (SIC) codes, and '0' otherwise. (6) Cross-border and focussed deal (CBF) is a dummy variable equal to '1' if the bidder and target operate in the same industry but are located in different countries, and '0' otherwise. (7) Cross-border and cross-industry deal (CBCI) is a dummy variable equal to '1' if the bidder and target are located in different countries and operate in different industries according to the initial two digits of their four-digit SIC codes, and '0' otherwise. (8) Exp. 3-Y is the cumulative number of takeovers by the same acquirer during a three-year period.

	Collinearity Statistics	
	Tolerance	VIF
Cash-Only	0.860	1.163
Stock-Only	0.826	1.211
Public	0.594	1.683
Private	0.609	1.642
DCI	0.805	1.242
CBF	0.842	1.188
CBCI	0.862	1.160
Exp. 3-Y	0.991	1.009

a. Dependent Variable: CARs(-1,+1)

3. Outliers:

Multiple regressions are very sensitive to outliers, which can potentially cause under or over-estimation of the coefficient, particularly in small samples. Scatter plots are used to check for outliers, and here, the results demonstrate that very few, isolated cases of outliers were found in the data, and this is not particularly serious considering the size of the sample. For instance, Figure 4.5 below shows that there are a few outliers in the CAR (-1,+1) values.

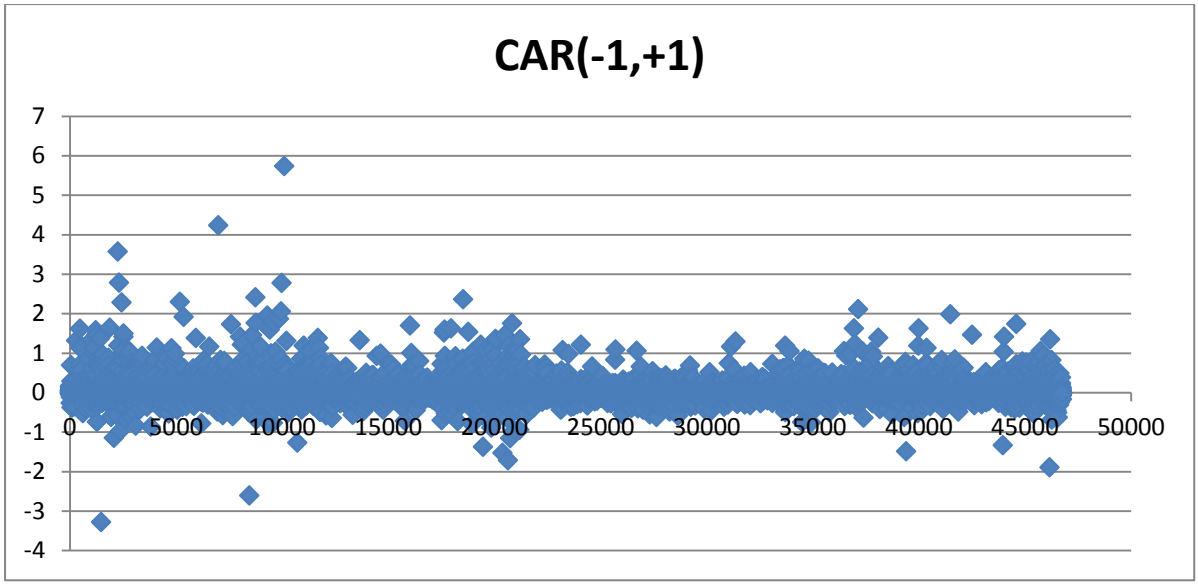


Figure 4.5: CAR (-1,+1) Outliers.

4. Heteroskedasticity

The assumption of homoscedasticity is central to the use of OLS estimation in cross-sectional regressions. It refers to a situation in which the error term is consistent across all values of the independent variables. Heteroskedasticity (the violation of homoscedasticity) is present when the variance of the error term differs across the values of an independent variable, although its impact on the significance of the estimated results is a matter of degree, which increases as heteroskedasticity increases.

The White's test and the Breusch-Pagan test have been used to check for heteroskedasticity, and the results of both tests[9] are significant at 1%. Thus, the null hypothesis of homoscedasticity is rejected, and it is inevitable that heteroskedasticity is present in the data. This was to be expected, however, given the global nature of the sample.

Two steps have been employed to tackle the issues of the violation of normality and heteroskedasticity and the few isolated cases of outliers in the data: (i) transformation of the data and (ii) the use of heteroskedasticity-corrected estimates. The next section outlines these procedures in more detail.

[9] White's test: LM = 286.947 (with p-value = 0.000). Breusch-Pagan test: LM = 17749.2 (p-value = 0.000).

4.4.3. Data Transformation and Heteroskedasticity Corrected Estimates

One of the most common ways to overcome violation of OLS assumptions in multiple regression is to transform the data. Although Cooke (1998) recommends transforming the data when the assumptions of the regression analysis are violated, Field (2013) asserts that transforming the data does not change the relationship between different variables but rather the unit of measurement (the scale on which a variable is measured), and Comrey and Lee (2006) likewise states that transformation changes only the variable's measurement scale. Several statistical transformation methods can be used, including log transformation, square root transformation, and rank transformation (Field, 2013). In addition, Baguley (2012) notes that a recent development in dealing with such problems involves transforming the data and using rank regression rather than conventional OLS. There are, however, both advantages and disadvantages to using rank regression (Baguley 2012).

A simple rank transformation assigns rank one to the smallest observation in the sample and rank N to the largest one. Additionally, the dependent variable (e.g. CAR) is ranked according to the following formula:

$$Rank\ of\ CAR = \frac{N}{n-1}$$

Where:

- N = the ranked score
- n = number of deals

Cheng *et al*. (1992) explains that the ranked variables will have a maximum value of N/(n-1) and a minimum value of 1/(n-1). Hence, according to the above formula, the ranks are standardised by the number of observations minus 1. Thus, the coefficient produced in the rank regression will have the desirable property of being independent of the observations. It should be noted that rank regression is only useful when the relationship between the dependent and independent variables is nonlinear, non-normal, and there are outliers in the data. With rank transformation, however, it is difficult to interpret the significance of the regression coefficients using f and t-tests as well as the normality of the error distribution (Cooke 1998).

In the presence of heteroskedasticity, the use of heteroskedasticity-corrected estimates is applicable where heteroskedasticity is present in the form of an unknown function of the regressors, which can be approximated through a quadratic relationship. In such a context, heteroskedasticity-corrected estimates offer the possibility of obtaining consistent standard errors and more efficient parameter estimates as compared to OLS. The procedure, as suggested by White (1980) and others, involves (i) OLS estimation of the model, (ii) an auxiliary regression to generate an estimate of the error variance, and (iii) the use of weighted least squares (WLS) in which the reciprocal of the estimated variance is used as a weight. In the auxiliary regression (ii), the procedure involves regressing the log of the squared residuals from the first OLS estimation on the original regressors and their squares. The log transformation is usually performed to ensure that the estimated variances are non-negative.

In light of the above considerations, both rank regression and heteroskedasticity-corrected estimation have been applied in addition to OLS estimation. The results are very consistent in terms of having the same sign and similar magnitudes of the estimates. Additionally, log transformation has been applied to CAR values in selected cases, and the results are found to be consistent. Furthermore, as a consistency check, the isolated cases of outliers observed in some CAR values were restricted to a range within appropriate levels, and the results were found to be unaffected. Except for heteroskedasticity-corrected OLS estimates, the other results for rank regressions and outliers are not reported due to lack of space.

4.4.4. CAR Regressions

In order to analyse the effect of the independent variables on acquirers' shareholder wealth as represented by cumulative abnormal returns obtained from the event study, cross-sectional CAR regressions are performed in accordance with the relevant hypotheses tested. To simplify the analysis and following various studies in the literature (Andrade, Mitchell and Stafford 2001, Mulherin and Boone 2000, Beitel, Schiereck, and Wahrenburg 2004, Martinez-Jerez 2008, Jaffe *et al*. 2015), a three-day event window for CAR (-1,+1) is used in the regression, though CARs with varying window lengths are used in the univariate analysis. Taking the four sets of explanatory variables (i.e. method of payment, target status, diversification, and acquirer bidding experience) into account, as well as a set of control variables (to be discussed later), the basic model encompasses the various hypotheses to be tested and is expressed as follows:

$$CAR_i = \alpha + B_1 DAF_i + B_2 DCI_i + B_3 CBF_i + B_4 CBCI_i + B_5 CSH_i + B_6 STC_i + B_7 Pub_i + B_8 Priv_i + B_9 Subs_i + B_{10} Exp_i + B_{11} VT_i + B_{12} GDP_j + B_{13} M/B_i + B_{14} AS_i + B_{15} LIQ_J + B_{16} IP_j + \varepsilon_i \quad (4.21)$$

Where:

- CAR_i is the cumulative abnormal return for deal *i* for a three-day window (-1,+1).
- DAF_i is a dummy variable equal to 1 for deal *i* if the acquirer and target are located in the same country and operate in the same industry, and 0 otherwise.
- DCI_i is a dummy variable equal to 1 for announcement *i* if the acquirer and target are located in the same country but operate in different industries, and 0 otherwise.
- CBF_i is a dummy variable equal to 1 for announcement *i* if the acquirer and target operate in the same industry but are located in different countries, and 0 otherwise.
- $CBCI_i$ is a dummy variable equal to 1 for announcement *i* if the acquirer and target are located in different countries and operate in different industries, and 0 otherwise.
- CSH_i is a dummy variable equal to 1 for announcement *i* if the acquirer paid by cash-only, and 0 otherwise.
- STC_i is a dummy variable equal to 1 for announcement *i* if the acquirer paid by stock-only, and 0 otherwise.
- Pub_i is a dummy variable equal to 1 for announcement *i* if the target is a public company, and 0 otherwise.
- $Priv_i$ is a dummy variable equal to 1 for announcement *i* if the target is a private company, and 0 otherwise.
- $Subs_i$ is a dummy variable equal to 1 for announcement *i* if the target is a subsidiary company, and 0 otherwise.
- Exp_i is the cumulative number of takeovers by the same acquirer during a three-year period.
- VT_i is the logarithm of the value of transactions for deal *i.*
- GDP_j is the logarithm of GDP per capita of country *j*, which includes both target and acquirer countries.
- M/B_i is the acquirer's market-to-book ratio on announcement day.
- AS_i (Acquirers' Size) is the market value of acquirer's four weeks prior to announcement *i*.
- LIQ_j (Legal Ins Quality) is the quality of institutional proxy by the legal institutional quality indicator.

- IP_j is a dummy variable equal to 1 if the bidder (target) is located in a country that applies common law (proxy for investor protection), and 0 otherwise.

Table 4.6 outlines the basic framework for hypothesis testing, which accounts for the subsets of the explanatory variables and their respective effects in terms of sign (positive or negative) on the dependent variable.

Table 4.6: Framework for Hypothesis Testing.

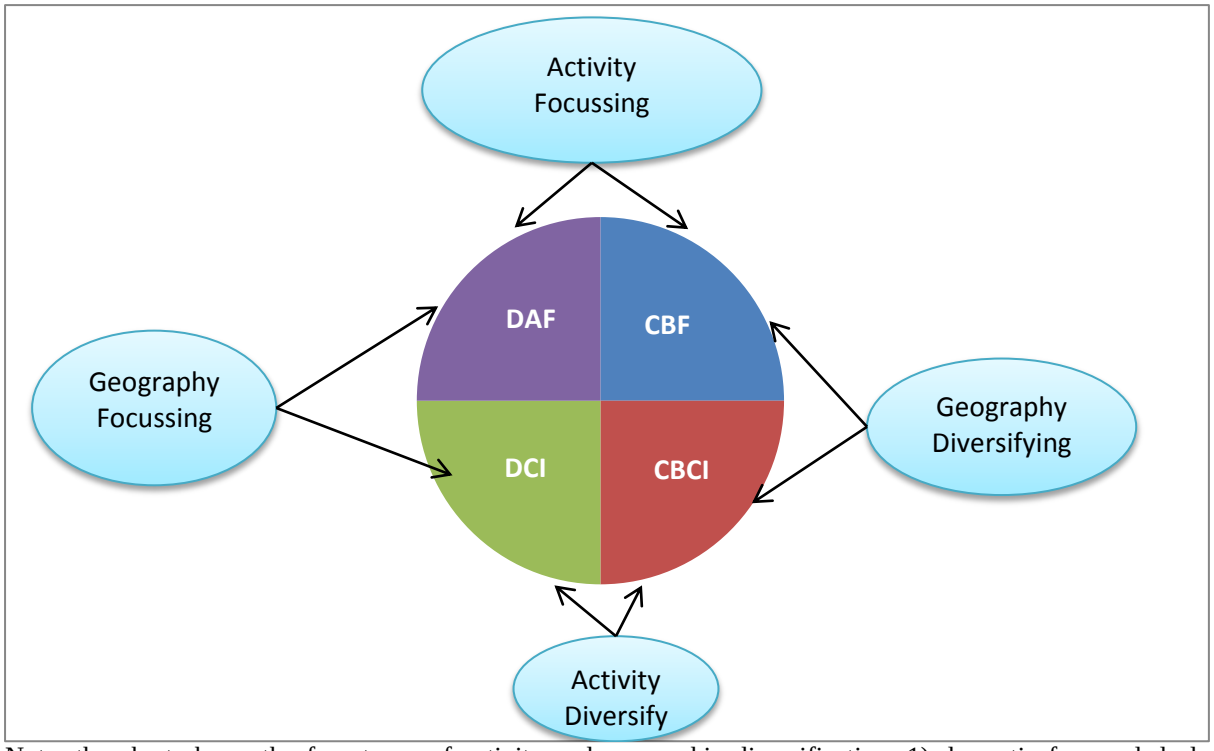
Independent Variables	CBCI	DCI	CBF	DAF	Failure
	+	+	+	–	N/A
Dependent Variable	**Cumulative Abnormal Returns**				
Independent Variables	–	+	+	–	+/–
	Public Target	Non-Public Target	Cash	Stock	Aq. Exp.

The sections that follow explain the basis for considering the choice of explanatory variables characterising the relevant hypotheses postulated earlier. The expected signs of the effects of the explanatory variables on the dependent variable are determined from the discussion of the hypotheses stated in Chapter 4 (section 4.4). The following discussion, therefore, is centred on providing precise definitions of the explanatory variables listed in the model above.

4.4.4.1. Activity and Geography Diversifications

Acquiring a company located in another geographic area or which focusses on a different type of activity can give the acquirer a competitive advantage based on a transfer of skills from the target to the bidder (e.g. marketing, patents, technology, etc.). It can improve the acquirer's performance and its competitive position on the industry (Pindyck and Rubinfeld 2005). On the other hand, an important disadvantage of cross-border M&As from the bidder's perspective is the lack of country/firm-specific knowledge of the target's context, which could potentially lead to an erroneous valuation of the target and poor performance. This can be observed when the target has large amounts of intangible assets and human capital (Reuer, Oded, and Ragozzino 2004, Nnadi and Tanna 2013). In addition, activity diversification can occur within or across countries, and its effect on shareholder wealth can be influenced by various factors.

Figure 4.6: Activity and Geography Diversifications



Note: the chart shows the four types of activity and geographic diversification: 1) domestic focussed deals (DAF): the bidder and target are located in the same country and operate in the same industry, 2) domestic cross-industry deals (DCI): the bidder and target are located in the same country but operate in different industries according to the initial two digits of their four-digit SIC codes, 3) cross-border focussed deals (CBF): the bidder and target operate in the same industry but are located in different countries, and 4) cross-border cross-industry deals (CBCI): the bidder and target are located in different countries and operate in different industries according to the initial two digits of their four-digit SIC codes.

In the view of DeLong (2001) (see Figure 4.6), activity and geographic diversification are classified according to four dummy variables:

- Domestic and focussed deals (DAF) are represented by a dummy variable equal to 1 if the acquirer and target are located in the same country and operate in the same industry, 0 otherwise.
- Domestic and cross-industry deals (DCI) are represented by a dummy variable equal to 1 if the acquirer and target are located in the same country but operate in different industries (based on the initial two digits of their four-digit SIC codes), and 0 otherwise.
- Cross-border and focussed deals (CBF) are represented by a dummy variable equal to 1 if the acquirer and target operate in the same industry but are located in different countries, and 0 otherwise.
- Cross-border and cross-industry deal (CBCI) are represented by a dummy variable equal to 1 if the acquirer and target are located in different countries and operate in

different industries (based on the initial two digits of their four-digit SIC codes), and 0 otherwise.

The standard practice in empirical research using cross-country firm level data is to include the four digit SIC codes to identify industry level diversification (e.g. Montgomery 1994; Flanagan 1996; Sharma and Thistle 1996; Hubbard and Palia 1999; Allen and Jagtiani 2000; Rahim and Ananaba 2000; Graham, *et al.* 2002; Focarelli, Pozzolo, and Salleo 2008; Bozos, Koutmos, and Song 2013; Arikan and Stulz 2016). In the current study, the activity diversifying M&As are represented by using the SIC codes so that the results can also be compared with those of related papers. Activities are considered as focussed when the first two digits of the SIC codes are identical, and as diversifying when the first two digits of the main industry codes are not the same (Selcuk and Kiymaz 2015).

However, some studies claim that the SIC system is suboptimal for industry classification. Bhojraj, Lee and Oler (2003), for example, compare four industry classification systems (i.e., SIC, North American Industry Classification System (NAICS), Global Industry Classification Standard (GICS), and Fama and French (1997) industry groupings (FFIG)) in a variety of applications common in empirical capital market research. Comparison among these measures reveal that the GICS system is significantly better for explaining the cross sectional variations in the samples for the variables like forecast growth rates, and key financial ratios. The performances of the inferior systems differ little from each other (Schreiner, 2009). Eberhart (2004) include five industry classification systems in the analysis of accuracy for valuation of small firms in the US. The author also provides evidence that the Dow Jones industry classification system (renamed as the Industry Classification benchmark, ICB) generates most accurate market value predictions.

Summarily, Eberhart (2004), Bhojraj, Lee and Oler (2003) suggest that the ICB and GICS systems which are propriety data are also frequently used by the analyst and the investment bankers, and these two systems provide superior industry classification for the fundamental analysis and the valuation study which uses industry based control samples. Hence, academics working in these areas should try to gain either GICS or ICB industry codes for the research projects (Schreiner, 2009). However, due to the unavailability of these codes, the current study has utilised SIC codes.

4.4.4.2. Method of Payment

As has been shown in the literature, payment method can have an impact on acquirer value (Fuller, Netter, and Stegemoller 2002, Moeller, Schlingemann, and Stulz 2004). For regression-based hypothesis testing, the impact of acquirers offering cash or stock only as a means of payment is considered and tested using two dummy variables:

- Cash-Only (CHS) is a dummy variable equal to 1 if the acquirer pays by cash-only, and 0 otherwise.
- Stock-Only (STC) is a dummy variable equal to 1 if the acquirer pays by stock-only, and 0 otherwise.

4.4.4.3. Target Status

The literature suggests that target status matters for returns of the acquiring shareholders (Draper and Paudyal 2006, Faccio, McConnell, and Stolin 2006, Faccio, McConnell, and Stolin 2006, Capron and Shen 2007, Cooney, Moeller, and Stegemoller 2009, Rani, Yadav, and Jain 2014). In order to test this hypothesis, a dummy variable is introduced in order to observe the impact of the target status – characterised by whether the target is public, private, or subsidiary - on the acquirers' CAR.

- Public (Pub) is a dummy variable equal to 1 if the target is a public company, and 0 otherwise.
- Private (Priv) is a dummy variable equal to 1 if the target is a private company, and 0 otherwise.
- Subsidiary (Subs) is a dummy variable equal to 1 if the target is a subsidiary company, and 0 otherwise.

4.4.4.4. Acquirer Bidding Experience

The empirical studies relating to the frequency of prior acquisitions have shown that these bidders have generally underperformed their single-acquisition counterparts (Fuller, Netter, and Stegemoller 2002, Ismail 2008). However, the evidence is mixed, and a number of arguments have been suggested to justify both positive or negative impacts on acquirer value. In this study, the effect of acquirer bidding experience (Exp.) on bidding company shareholder wealth is tested according to the following hypotheses:

- Exp. 3-Y is the cumulative number of completed takeovers by the same acquirer during the preceding three-year period.
- Exp. 5-Y is the cumulative number of completed takeovers by the same acquirer during the preceding five-year period.
- Dum. Exp. 3-Y is a dummy variable equal to 1 if the same bidder has two or more completed deals over the preceding three-year period (frequent bidder), and 0 otherwise.
- Dum. Exp. 5-Y is a dummy variable equal to 1 if the same bidder has two or more completed deals over the preceding five-year period (frequent bidder), and 0 otherwise.

4.4.4.5. Control Variables

Several control variables are included in the CAR regressions to control for both firm-level and country-specific heterogeneity. In all regressions, the minimum set of control variables includes the value of the transaction (as a proxy for target size) and the per capita GDP of the bidder and target countries. In a further robustness analysis, additional control variables are added to check for consistency in the results. These include acquirers' market-to-book ratios, acquirers' sizes, investor protection, and institutional quality.

Value of Transaction (VT): Total value of initial offer by the acquirer, excluding fees and expenses (Source: SDC database, data in $m).

GDP per capita (GDP_j): Gross domestic product divided by mid-year population (Source: Datastream).

Market-to-Book ratio (M/B): Market share price divided by the book value of the acquiring firm's shares on announcement day (Source: SDC).

Acquirers' size (AS): the acquirer's market capitalisation four weeks prior to announcement day (Source: SDC).

Legal Institutional Quality (LIQ): (Regarding both bidder and target countries). The quality of institutions (i.e. the quality of contract enforcement, property rights, shareholder protection, etc.) has received a great deal of attention in recent years. According to Kuncic (2014), legal institutions are the most common type of institution, and some form of

legislature or other can be found in practically every kind of social interaction (Source: Kuncic 2014).

Investor Protection (IP): (Regarding both bidder and target countries). La Porta *et al.* (1996) indicate that common law countries generally have the best legal protections for investors compared with French civil law countries and others (e.g. German and Scandinavian civil law countries). Thus, Common Law is used as a dummy variable equal to 1 if the bidder (target) is located in a country that applies common law (a proxy for investor protection), and 0 otherwise.

Finally, additional dummy variables are included in the regressions to control for, year, country, and industry-based fixed effects.

4.4.5. Risk Regressions

In order to analyse the impact of M&A announcements on acquirers' market risk, this study follows the approach of previous studies by comparing the acquirers' market risk one year before and one year after the deal announcement (Amihud, Delong, and Saunders 2002, Focarelli, Pozzolo, and Salleo 2008). As with the analysis of the impact of M&As on shareholder wealth, a two-step approach is followed. In the first step, an estimate of the acquirer's market risk is obtained using the CAPM model. The use of CAPM is necessary in order to obtain an estimate of the change in the acquirer's market risk (beta), which reflects its systematic volatility, brought about by the deal announcement. The second step involves (as with the CAR regressions above) conducting both univariate and multivariate analyses on the change in the acquirer's beta in order to test the aforementioned hypotheses relating to the impact of diversification, payment method, target status, and acquirer bidding experience on risk.

Estimating Beta: Consider a standard CAPM model in the presence of a risk-free asset:

$$R_{ijt} = R_f + Beta_{ijt} \times \left(R_{mjt} - R_f\right) + \varepsilon_{ijt} \qquad (4.22)$$

Where:

- R_f is the risk-free rate.
- R_{ijt} is the return of the stock of firm *i* in country *j* at time *t*.

- R_{mjt} is the return of market *m* index in country *j* at time *t*.
- $Beta_{ijt}$ is the measure of the firm's market risk.
- ε_{ijt} is the firm-specific (idiosyncratic) shock.

Defining σ^2_{ijt} and σ^2_{mjt} as the variances of R_{ijt} and R_{mjt}, respectively, a measure of the firm's risk (volatility) is given in Equation 4.23 by taking the variance of Equation 4.22:

$$\sigma^2_{ijt} = Beta_{ijt} \,.\, \sigma^2_{mjt} + \sigma^2_{ejt} \qquad (4.23)$$

Where:

$$Beta_{i,m} = \frac{Cov(i,m)}{\sigma^2_m} \qquad (4.24)$$

Thus, the firm's total volatility is the sum of its systematic volatility, $Beta_{ijt} \cdot \sigma^2_{mjt}$, and idiosyncratic volatility, σ^2_{ejt}. It is well-known from standard portfolio theory that idiosyncratic risk does not affect prices (e.g. Cochrane 2001, Focarelli, Pozzolo, and Salleo 2008). Therefore, to analyse the effect of a deal announcement on an acquirers' market risk (or cost of capital), we can concentrate on the component reflecting systematic volatility and neglect that of idiosyncratic volatility.

The change in acquirers' market risk following deal announcement is reflected by the change in its beta before and after announcement (i.e. ΔBeta = Beta after deal - Beta before deal). An acquirer's pre-merger risk is calculated during the period –260 to –20 working days before announcement day, and post-merger risk is calculated for the period +20 to +260 working days after announcement day[10]. This measure of the change in beta before and after the event represents an estimate of the systematic volatility brought about by the M&A deal on the price of the acquirer's risk, and therefore on its cost of capital (Focarelli, Pozzolo, and Salleo 2008, Evripidou 2012).

Estimating Risk Regression: As with CAR regressions, taking the four sets of explanatory variables (method of payment, target status, diversification, and acquirer bidding experience) into account, as well as a set of control variables including the initial level of beta, the basic risk model for parametric estimation is stated as follows:

[10] Only trading days are considered; in a year, there are thus 260 working days. The 40 days surrounding the event is kept out from the calculation to avoid any distortion in the results caused by the announcement.

$$\Delta Beta_i = \alpha + B_0 Pre\_Beta_i + B_1 DAF_i + B_2 DCI_i + B_3 CBF_i + B_4 CBCI_i + B_5 CSH_i + B_6 STC_i + B_7 Pub_i + B_8 Priv_i + B_9 Subs_i + B_{10} Exp_i + B_{11} VT_i + B_{12} GDP_j + B_{13} M/B_i + B_{14} AS_i + B_{15} LIQ_J + B_{16} IP_j + \varepsilon_i \quad (4.25)$$

Where:

- $\Delta Beta_i$: is the change in the market risk (ΔBeta is the Beta after announcement - Beta before announcement).
- Pre_Beta_i: is the acquirer's 'beta before deal' calculated from –260 to –20 working days before the announcement day.

The other explanatory variables are the same as in the model for the CAR regressions discussed in Section 4.4.4.

4.4.6. Estimating the Probability of Deal Failure

According to the efficient market hypothesis, the market reaction at the time of deal announcement reflects all available information regarding deal, firm, and country-level characteristics. However, there is always uncertainty about whether a deal will eventually succeed or fail. Given that our sample includes both completed and unsuccessful deals, it seems natural to consider whether specific deal, firm, and country-level characteristics influence the probability of deal failure. Additionally, it is important to investigate whether the market reaction at the time of deal announcement reflects an expectation regarding deal failure, an assumption that is inconsistent with the EMH on which the event study is based. In view of these considerations, it is appropriate to extend the analysis by identifying the aforementioned factors which may influence the probability of deal failure. This is undertaken using probit and logit estimations.

The dependent variable, in this case, is binary: equal to '1' if an M&A deal is terminated and '0' if the deal is completed:

$$Z_i = \begin{cases} 1 \; for \; terminated \; deal \\ 0 \; for \; completed \; deal \end{cases} \quad (4.26)$$

In the probit model, the dependent variable is the probability of deal *i* being failure depending on a set of explanatory variables given by the function:

$$\Pr(Z = 1 \mid x) = 1 - \Pr(Z = 0 \mid x) = \alpha_0 + \beta_d Deal_i + \beta_f Firm_i + \beta_c Country_i + \varepsilon_i \quad (4.27)$$

Where

- α is the intercept term.
- β_d, β_f, and β_d are the coefficients associated with the corresponding set of explanatory variables representing deal, firm, and country level characteristics.

In the logit model, the probability of a deal *i* being failure is given by the function:

$$P_i = \left(\frac{1}{1+e^{-Z_i}}\right) \quad (4.28)$$

Where:

- $Z_i = ln\left(\frac{P_i}{1-P_i}\right) = \alpha_0 + \beta_d Deal_i + \beta_f Firm_i + \beta_c Country_i + \varepsilon_i \quad (4.29)$

The coefficient estimates in both models are obtained using maximum likelihood estimation which, in principle, accounts for the potential endogeneity of the explanatory variables, though this is unlikely to be a critical consideration here.

The difference between logit and probit lies in the assumption about the distribution of the error term ε_i. In logit, the error is assumed to follow a standardised logistic distribution while in probit, it is normally distributed. According to Long and Freese (2006), the estimated coefficients between logit and probit differ only slightly, by a factor of about 1.7.

In the empirical analysis, both probit and logit estimations are undertaken for the illustration and discussion of results in Chapter 6. As with the CAR and risk regressions, the four sets of explanatory variables (method of payment, target status, diversification, and acquirer bidding experience) are taken into account along with a set of control variables, and the basic probit model for parametric estimation can thus be expressed as follows:

$$\Pr(y = 1 \mid x) = \alpha + B_1 DAF_i + B_2 DCI_i + B_3 CBF_i + B_4 CBCI_i + B_5 CSH_i + B_6 STC_i + B_7 Pub_i + B_8 Priv_i + B_9 Subs_i + B_{10} Exp_i + B_{11} VT_i + B_{12} GDP_j + B_{13} M/B_i + B_{14} AS_i + B_{15} LIQ_J + B_{16} IP_j + \varepsilon_i \quad (4.30)$$

The explanatory variables are the same as in the model for the CAR and risk regressions discussed in Section 4.4.4.

4.5. Conclusion

This chapter has presented the methodological framework for the analysis of the impact of M&As on acquiring companies' shareholder wealth and market risk and for assessing the probability of M&A deals being failure. Following an illustration of the event study methodology used to compute acquirers' CARs, the empirical strategy, which draws a distinction between univariate and multivariate analyses, was highlighted in order to follow the appropriate process for estimation and hypothesis testing and to account for the continuous and discrete sets of variables included in the analysis. The empirical strategy involves the use of both parametric and nonparametric tests along with key drivers included in the estimation of cross-sectional models for testing the relevant hypotheses relating to acquirers' shareholder returns, acquirers' risk, and the probability of deal failure. The preliminary empirical analysis following the discussion of the sampling procedure used for data collection reveals the presence of heteroskedasticity in the data, which is tackled satisfactorily by use of log transformations and heteroskedasticity-corrected estimation in CAR and risk regressions.

The next chapter begins with a formal empirical analysis testing the hypotheses relating to the impact of M&As on acquirers' shareholder wealth. This is followed in Chapter 6 by a comparable empirical analysis relating to acquirers' risk and the probability of deal failure.

Chapter 5: The Impact of M&As on Acquirers' Shareholder Returns

5.1. Introduction

This chapter aims to analyse the impact of M&As on acquirers' (or bidders') shareholder returns, using evidence based on both an event study and cross-section regressions to test the four main hypotheses proposed in Chapter 4 relating to target status, method of payment, diversification, and acquirer bidding experience. In testing these hypotheses, the empirical strategy, as explained in Chapter 4, will focus initially on univariate analyses highlighting the results of both parametric (an independent samples t-test and Pearson correlations) and nonparametric tests (Mann-Whitney U tests and Spearman's rho correlations) on CARs of several window lengths. This is followed by a multivariate analysis highlighting the results of multiple regressions obtained with a specific CAR window (-1,+1) as the dependent variable, supplemented by appropriate robustness checks to ensure the consistency of the results. Owing to the presence of heteroskedasicity detected in the cross-section of CARs, the regression results will report heteroskedasticity-corrected estimates and standard errors.

Prior to testing the hypotheses, it is sensible to examine the overall characteristics of CARs for the global sample of M&A deals, which includes both completed and unsuccessful transactions. The evidence for the global sample is compared with sub-samples involving success vs. failure deals, developed vs. developing countries, and the three sub-periods corresponding to the merger waves identified earlier. Further disaggregation of the sample is characterised by the need to investigate the four sets of hypotheses dealing with target status, method of payment, diversification (activity and geographic), and acquirer bidding experience. Finally, the sample is adjusted according to the need to test robustness issues that include taking account of additional factors.

Section 5.2 discusses the event study results in order to analyse overall characteristics of CARs in the global sample as well as the sub-samples mentioned above. Section 5.3 details the univariate analysis, and Section 5.4 analyses the results of the CAR regressions to test the hypotheses. Section 5.5 discusses the results of some robustness tests, and Section 5.6 concludes the chapter.

5.2. Event Study Results

5.2.1. Overall Sample ARs and CARs

Table 5.1: Abnormal Returns (ARs) and Cumulative Abnormal Returns (CARs).

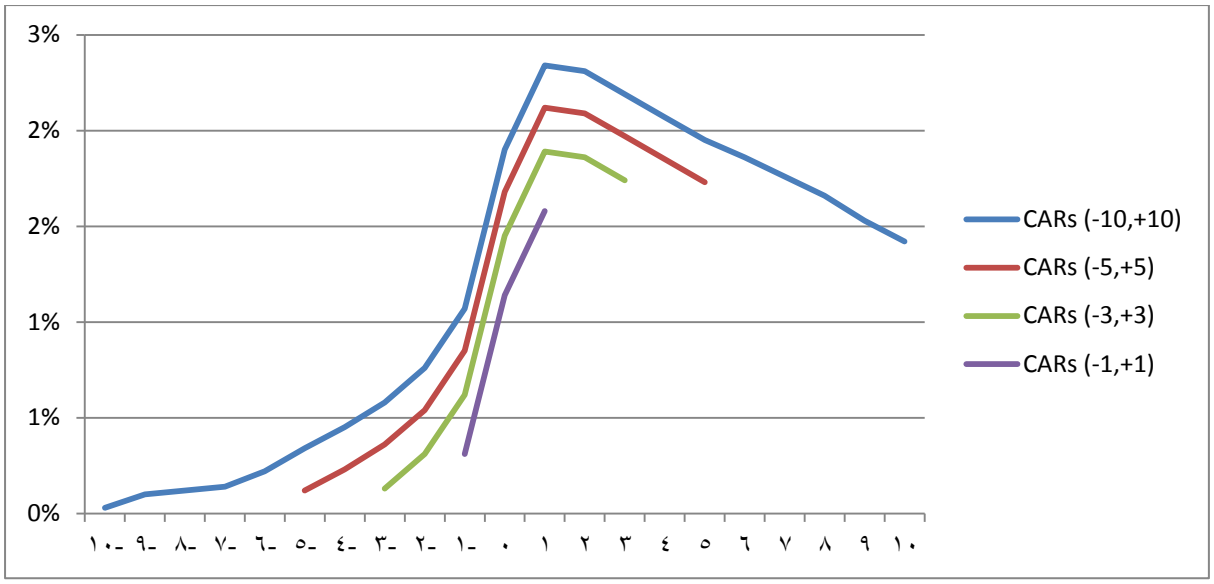
Abnormal returns (ARs) and cumulative abnormal returns (CARs) have been calculated using the market model, i.e. by subtracting the actual returns made during the event window from the expected returns based on the projections of the market model during the event period. The AR results are presented for event windows up to ten days before and after the announcement date (-10,+10). A deal's announcement date is day 0. The sample consists of 46,758 initial bids announced in 180 countries covering 88 sub-industries over the period 1977-2012, where 36,489 deals were completed and 10,269 were terminated.

	All Sample (n= 46,758)						Success, n=36,489			Failure, n=10,269		
Day	ARs %	t	p-value	CARs%	t	p-value	CARs%	t	p-value	CARs%	t	p-value
-10	.030	1.33	.184	.030	1.33	.184	.014	0.59	.558	.086	1.51	.130
-9	.071	2.74	.006	.101	3.08	.002	.073	2.03	.042	.201	2.57	.010
-8	.018	0.63	.529	.119	2.84	.004	.112	2.68	.007	.145	1.21	.226
-7	.020	0.90	.368	.139	3.01	.003	.115	2.51	.012	.225	1.69	.091
-6	.084	3.86	.000	.223	4.50	.000	.175	3.51	.000	.393	2.81	.005
-5	.116	4.90	.000	.338	6.23	.000	.258	4.71	.000	.625	4.09	.000
-4	.112	4.80	.000	.451	7.67	.000	.368	6.09	.000	.746	4.66	.000
-3	.134	6.01	.000	.585	9.26	.000	.490	7.50	.000	.922	5.43	.000
-2	.178	7.50	.000	.763	11.38	.000	.639	9.18	.000	1.200	6.72	.000
-1	.308	12.32	.000	1.071	14.87	.000	.868	11.62	.000	1.790	9.31	.000
0	.827	21.32	.000	1.897	23.16	.000	1.657	19.29	.000	2.751	12.85	.000
1	.438	10.96	.000	2.335	25.72	.000	2.131	22.06	.000	3.061	13.29	.000
2	-.030	-1.13	.259	2.305	24.43	.000	2.161	21.35	.000	2.817	11.99	.000
3	-.121	-4.19	.000	2.184	22.38	.000	2.070	19.95	.000	2.586	10.44	.000
4	-.119	-4.43	.000	2.064	20.63	.000	1.990	18.75	.000	2.328	9.11	.000
5	-.121	-5.42	.000	1.944	19.08	.000	1.917	17.64	.000	2.039	7.93	.000
6	-.091	-3.23	.001	1.853	18.12	.000	1.811	16.35	.000	2.002	8.04	.000
7	-.104	-4.97	.000	1.750	16.80	.000	1.748	15.43	.000	1.754	7.00	.000
8	-.097	-4.48	.000	1.653	15.47	.000	1.687	14.52	.000	1.533	5.95	.000
9	-.134	-6.54	.000	1.519	14.00	.000	1.569	13.31	.000	1.339	5.11	.000
10	-.114	-5.57	.000	1.404	12.72	.000	1.499	12.50	.000	1.066	4.00	.000

Table 5.1 presents the event study results of M&A announcements on the acquirers' abnormal returns (ARs) and cumulative abnormal returns (CARs) for an overall sample of 46,758 initial bids announced over the period 1977-2012, as well as the results for the sub-samples of 36,489 completed and 10,269 unsuccessful deals. The results uniformly indicate that the ARs (presented for the overall sample only) increase dramatically in the days immediately before and up until the announcement day, remain positive for the day after announcement, and thereafter decline steadily. Furthermore, the CARs in all cases (both completed and unsuccessful deals) increase steadily until one day after announcement and then begin to decline gradually. All values are statistically significant (from 0) for at least five days before and after the announcement date. Figure 5.1 presents a typical picture of CARs for different window lengths around the announcement date; these are not unique for the overall sample and also apply to the sub-samples. These results seem to show that M&As

have a uniformly positive and significant impact on acquiring companies' shareholder wealth. This is not entirely consistent with the mixed evidence from the literature, as presented in Chapter 3, although it should be borne in mind that this evidence relates to a global sample.

Figure 5.1: CARs for different window lengths around the announcement date



Note: The chart presents the cumulative abnormal returns (CARs) for four windows: 1) ten days before and after the announcement date (-10,+10), 2) five days before and after the announcement date (-5,+5), 3) three days before and after the announcement date (-3,+3), 4) one day before and after the announcement date (-1,+1).

The results in Tables 5.1 suggest significant leakage of information prior to announcement. In essence, the anticipation of mergers can be inferred from the significant positive abnormal returns in the market before the announcement dates. Halpern (1983) has argued that such leakage is the result of signalling which may be provided by earlier successful bids, or there may be insider trading. Seyhun (1990) has also argued that such leakages may be due to hubris bias which leads to overconfidence, and which further leads to overestimations, in a systematic manner, of the merger synergies.

In order to check the robustness of the results relating to leakage of information prior to merger announcements, the average abnormal returns (AARs) have been calculated in Table 5.3 after splitting the overall sample according to: (1) bidders and targets both located in developed countries, (2) bidders and targets both located in developing/emerging countries, (3) bidders (targets) located in developed country and targets (bidders) located in developing/emerging country, (4) target status (public, target, subsidiary), (5) method of payment (cash, stock), (6) deals involving U.S. and Non-U.S. acquirers, (7) financial and non-financial bidders, (8) deals over various sub-periods as well as for periods before and

after 2000. The results robustly confirm that there is clear evidence of information leakage before announcement.

Furthermore, there are significant post-announcement returns. This is mainly because any new information relating to takeovers is revealed in few days to weeks after the event, such as information concerning synergy estimates, the terms of the transaction, or the potential success/failure of the bid as the market perceives. The revelation of such information corrects the inaccurate predictions made on the event data (Martynova and Renneboog, 2011). Hence, when the conditions of the bid become clear, the market makes corrections and reassesses the quality of the takeovers and also make downward corrections to the expected returns.

Evidence about the information leak prior to announcement creates two important problems for the regulatory authorities. First of all, there is price sensitive information in the announcements, and second, such announcements implicate the agents who are involved in insider decision making (Keown and Pinkerton, 1981). For example, to quote William Robinson, who is a principal in Georgeson & Co, which solicits for the shareholders in cases of takeover battles, has the following statement to make, "You start with a handful of people, but when you get close to doing something the circle expands pretty quickly. You have to bring in directors, two or three firms of lawyers, investment bankers, public relations people, and financial printers, and everybody's got a secretary. If the deal is a big one, you might need a syndicate of banks to finance it. Every time you let in another person, the chance of a leak increases geometrically."

Hence there is both greater chance and actual happening of leakage of insider information when the announcement day approaches, and in fact many empirical studies show that this takes place. There is, however, very less regulation on such trading activities, which can either be routed through banks who refuse to disclose the trading activities, or simply through friends and relatives.

There are many studies on the leakage of information around the M&A announcements (Aktas, *et al.* 2001). The main two explanations which have been proposed for such run ups are the market anticipation of takeovers and the corporate private trading activities. Jarrell and Poulsen (1989) have provided empirical evidence for the former, but there is some degree of inconsistency as far as the second type of leakage channel is concerned.

Table 5.2: Abnormal returns and the leakage of information around M&A announcements

Abnormal returns (ARs) have been re-calculated for event windows up to ten days before and after the announcement date (-10,+10) for 16 subsamples. In the first table, the AARs are calculated for sub-samples according to: (1) bidders and targets both located in developed country (36,479 deals), (2) bidders and targets are both located in developing/emerging country (6,998), (3) bidder located in developed (developing) and target located in developing (developed) country (3.281 deals), (4) target is public (14,013), (5) target is private (22,022 deals), (6) target is subsidiary (10,723 deals), (7) bidder used cash only as the method of payment (13,259 deals), (8) bidder used stock only as the method of payment (11,681 deals), (9) deals involving U.S. acquirers only (17,434 deals), (10) deals involving non-U.S. acquirers only (29,324 deals). In the second table, the AARs are calculated for sub-samples comprising: (1) deals involving financial acquirers only (7,826 deals), (2) deals involving non-financial acquirers only (38,932 deals), (3) deals announced between 1977-1986 (1,854 deals), (4) deals announced between 1987-1996 (7,761 deals), (5) deals announced between 1997-2006 (21,995 deals), (6) deals announced between 2007-2012 (15,418 deals), (7) deals announced before 2000 (15,787 deals), (8) deals announced after 2000 (30,971 deals).

ARs %	BD&TR DVL	BD&TR EMR	DVD&EMR	Public	Private	Sub.	Cash Only	Stock Only	US Bidder	Non-US Bidder
-10	0.014	0.125***	-0.001	0.051*	0	0.063	-0.043	0.165***	0.033	0.028
-9	0.064**	0.103**	0.082	-0.001	0.133***	0.039	0.001	0.126	0.04	0.090***
-8	0.005	0.054	0.079	0.027	0.004	0.034	-0.008	-0.008	-0.057	0.062**
-7	-0.004	0.012	0.308***	-0.051	0.062*	0.027	-0.01	0.101*	0.012	0.025
-6	0.074***	0.117**	0.12	0.067**	0.083**	0.106***	0.013	0.200***	0.062	0.097***
-5	0.106***	0.189***	0.067	0.043	0.170***	0.098*	0.021	0.207***	0.136***	0.104***
-4	0.128***	0.066	0.036	0.100***	0.121***	0.110**	0.048*	0.243***	0.111**	0.113***
-3	0.148***	0.08	0.1	0.053*	0.176***	0.155***	0.003	0.280***	0.170***	0.112***
-2	0.171***	0.183***	0.240***	0.057**	0.246***	0.196***	0.055*	0.273***	0.166***	0.184***
-1	0.284***	0.305***	0.586***	0.104***	0.380***	0.428***	0.103***	0.550***	0.239***	0.349***
0	0.794***	0.658***	1.543***	-0.332***	1.485***	0.988***	0.474***	1.185***	0.757***	0.868***
1	0.436***	0.361***	0.622***	-0.111**	0.650***	0.718***	0.367***	0.596***	0.426***	0.444***
2	-0.04	0.047	-0.074	-0.147***	0.013	0.035	-0.003	-0.104	-0.035	-0.027
3	-0.126***	-0.159***	0.013	-0.132***	-0.123**	-0.104*	-0.029	-0.157**	-0.09	-0.140***
4	-0.105***	-0.174***	-0.165	-0.113***	-0.088*	-0.192***	-0.076**	-0.196**	-0.05	-0.161***
5	-0.128***	-0.140***	-0.003	-0.034	-0.116***	-0.244***	-0.075***	-0.114*	-0.144***	-0.107***
6	-0.073**	-0.242***	0.033	-0.136***	-0.081	-0.052	-0.126***	-0.054	-0.011	-0.138***
7	-0.078***	-0.139***	-0.316***	-0.112***	-0.108***	-0.084**	-0.048*	-0.166***	-0.086**	-0.114***
8	-0.103***	-0.154***	0.099	-0.059**	-0.122***	-0.094**	-0.102***	-0.120*	-0.125***	-0.080***
9	-0.119***	-0.131***	-0.311***	-0.066**	-0.200***	-0.088**	-0.067**	-0.167***	-0.118***	-0.144***
10	-0.121***	-0.053	-0.172*	-0.165***	-0.101***	-0.076*	-0.02	-0.226***	-0.102***	-0.122***

AARs %	Financials	Non-Financials	1977-86	1987-96	1997-06	2007-12	Before 2000	After 2000
-10	0.056	0.025	-0.008	0.004	0.051	0.017	0.01	0.04
-9	0.016	0.083***	-0.044	0.022	0.101**	0.069	0.077	0.068**
-8	0.067	0.008	-0.034	0.001	-0.019	0.086*	0.053*	0
-7	0.015	0.021	0.032	0.005	-0.025	0.092**	-0.015	0.038
-6	0.064	0.088***	0.126**	0.009	0.102***	0.090**	0.042	0.105***
-5	0.088*	0.121***	-0.008	0.109***	0.150***	0.085*	0.104***	0.122***
-4	0.063	0.122***	0.022	0.043	0.092***	0.189***	0.088***	0.125***
-3	0.045	0.152***	0.06	0.079**	0.150***	0.148***	0.134***	0.134***
-2	0.116*	0.190***	0.069	0.118***	0.187***	0.208***	0.096***	0.219***
-1	0.144***	0.341***	0.084	0.203***	0.325***	0.365***	0.239***	0.344***
0	0.566***	0.879***	-0.197***	0.397***	0.822***	1.179***	0.414***	1.037***
1	0.297***	0.466***	-0.043	0.313***	0.406***	0.606***	0.193***	0.562***
2	0.044	-0.045	-0.022	-0.001	-0.075*	0.019	-0.049	-0.02
3	-0.082	-0.129***	-0.055	-0.087**	-0.196***	-0.039	-0.163***	-0.100**
4	-0.084*	-0.126***	-0.096*	-0.098**	-0.101**	-0.160***	-0.131***	-0.113***
5	-0.044	-0.136***	-0.008	-0.065*	-0.106***	-0.185***	-0.090***	-0.136***
6	-0.092*	-0.090***	-0.083*	-0.137***	-0.051	-0.125***	-0.129***	-0.071*
7	0.006	-0.125***	-0.028	-0.012	-0.133***	-0.116***	-0.062**	-0.125***
8	-0.043	-0.107***	-0.112**	-0.069*	-0.123***	-0.071*	-0.075***	-0.108***
9	-0.072	-0.147***	-0.019	-0.123***	-0.155***	-0.124***	-0.118***	-0.143***
10	-0.055	-0.126***	0.078	-0.069*	-0.106***	-0.174***	-0.067**	-0.139***

Legend: BD: bidder; TR: target; DVD: Developed country; EMR: developing/emerging country. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

Several empirical studies have found evidence of significant market reaction before announcement day. For example, Aktas *et al.* (2001) have observed that the CARs start exhibiting variations from 30 days before the announcements in the French market, even for cases where there is no financial press news. Nicolau (2010) has also investigated the implications of volatility of the abnormal returns prior to the announcements and find evidence of information leakage. Keown and Pinkerton (1981) also confirmed such leakages before the announcements via different types of insider trading. Firth (1980) has found significant positive monthly residual since the last month before the announcement. Keown and Pinkerton (1981) found such deviation was significant 11 days before the announcement (at 10% significance level) and five days before the announcement (at 5% level). These results suggest substantive leakage of information before merger announcements.

5.2.2. Completed vs. Unsuccessful Deals

The standard theory for an efficient market holds that if a target is initially overvalued and the deal is ultimately terminated, a severe downward correction in acquirer share prices will follow in the form of steep negative abnormal returns for acquirers in the case of unsuccessful deals. This theory is based on the informational efficiency of markets (EMH), which means that completed and unsuccessful deal announcements have different informational contents, hinting at the overvaluation of targets, which may then culminate in the failure of a deal to reach completion. However, abnormal returns at the time of initial announcement are not influenced by uncertainty about whether an announced deal will complete or terminate. Thus, both completed and unsuccessful deals are included in the above data set to avoid any sample selection bias.

As the results of Table 5.1 above illustrate, the CARs for all samples are very consistent. To confirm this finding, Table 5.3 below presents the results of a t-test and a Mann-Whitney U test of the mean differences between the two groups (completed and unsuccessful deals), using different event windows. Both sets of results are insignificant, this provides strong evidence that the market reaction is neutral to both subgroups and reacts on the basis of available information only. In another sense, this also supports the semi-strong form of market efficiency, which holds that market reactions reflect all public information as revealed in the form of announcements and corporate disclosures before the completion or termination of a deal.

Table 5.3: Mean Differences in M&As: Completed vs. Unsuccessful Deals.

An independent samples t-test and a Mann-Whitney U Test have been employed to compare the differences in the CARs of completed and unsuccessful deals. Although the CARs are not normally distributed, both the t-test and the U test have been applied for consistency checks. Four event windows have been used, including five days before and after the announcement date (-5,+5), three days before and after the announcement date (-3,+3), two days before and after the announcement date (-2,+2), and one day before and after the announcement date (-1,+1). Of the overall sample of 46,789 deals, 36,489 were completed, and 10,269 were terminated. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

			Independent Samples t-Test				Mann-Whitney U		
	Deal	N	Mean %	Mean Dif.	t	p-value	Mean Rank	Z	p-value
CARs (-5,+5)	Complete	36489	1.712	.148	.641	.522	23465	-2.573	.170
	Incomplete	10269	1.564				23077		
CARs (-3,+3)	Complete	36489	1.672	-.092	-.461	.645	23423	-1.311	.190
	Incomplete	10269	1.764				23225		
CARs (-2,+2)	Complete	36489	1.642	-.175	-.994	.320	23391	-.357	.721
	Incomplete	10269	1.817				23337		
CARs (-1,+1)	Complete	36489	1.473	-.330	-1.504	.133	23359	-.629	.529
	Incomplete	10269	1.803				23453		

To summarise, these findings suggest that there are no significant differences in CARs based on whether a deal was completed or terminated. Importantly, since most of the previous empirical literature has considered samples involving completed deals only (e.g. Rani, Yadav, and Jain 2014, Jaffe *et al*. 2015), and our results show that the market reaction to deal announcements is indifferent to this factor, ignoring unsuccessful deals in empirical work could potentially lead to sample selection biases.

5.2.3. Developed and Developing Countries

In general, the empirical evidence relating to the impact of M&As in developing economies remains fragmented with very few studies synthesising evidence which contributes to a broad understanding of cross-border M&As. Recently, however, there has been some interest in cross-border M&As between firms located in developed and developing countries (Burns and Liebenberg 2011, Chari, Ouimet, and Tesar 2010), which has provided evidence that acquiring company shareholder gains from these cross-border M&As tend to be greater than those of cross-border and domestic M&As in developed economies alone.

Table 5.4: Mean Differences in M&A Groups for Developed and Developing Countries.

Independent samples t-tests and Mann-Whitney U tests are employed in order to test the mean differences in CARs. The overall sample comprises 46,758 deals. In the first two rows of the table, 'Yes' indicates that both bidder and target are located in the same region (developed and developing making up 36,479 and 6,998 deals, respectively), and 'No' otherwise. In the third row, 'Yes' indicates that bidders and targets are located in different regions (making up a total of 3,281 deals), and 'No' otherwise. These distinctions between 'Yes' and 'No' are necessary for testing mean differences among the groups concerned. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

					Independent Samples Test		Mann-Whitney U		
		Dummy	N	Mean %	Mean Difference	p-value	Mean Rank	Z	p-value
Developed & Developed	CARs(-3,+3)	Yes	36479	1.630	-.284	.098*	23243	-4.127	.000***
		No	10279	1.913			23865		
	CARs(-2,+2)	Yes	36479	1.609	-.322	.032**	23179	-6.049	.000***
		No	10279	1.932			24091		
	CARs(-1,+1)	Yes	36479	1.491	-.249	.058*	23187	-5.804	.000***
		No	10279	1.739			24062		
Developing & Developing	CAR (-3,+3)	Yes	6998	1.416	-.325	.070*	23735	-2.387	.017**
		No	39760	1.741			23317		
	CARs(-2,+2)	Yes	6998	1.488	-.226	.156	23974	-3.993	.000***
		No	39760	1.714			23275		
	CARs(-1,+1)	Yes	6998	1.280	-.312	.022**	23870	-3.296	.001***
		No	39760	1.592			23293		
Developed & Developing or Developing & Developed	CARs(-3,+3)	Yes	3281	2.975	1.380	.000***	24142	-3.356	.001***
		No	43477	1.595			23322		
	CARs(-2,+2)	Yes	3281	2.878	1.288	.000***	24341	-4.230	.000***
		No	43477	1.590			23307		
	CARs(-1,+1)	Yes	3281	2.719	1.263	.000***	24472	-4.807	.000***
		No	43477	1.457			23297		

Table 5.4 provides the results of the t-tests and Mann-Whitney U tests for the mean differences relating to the geographical diversification of M&As between developed and developing countries. Three categories of diversification are considered. The first row presents the data for bidders and targets which are both located in developed countries with no distinction made between domestic and cross-border M&As (a total of 36,479 deals). The second row presents the data for bidders and targets located in developing countries with no distinction drawn between domestic and cross-border M&As (a total of 6,998 deals). In the third row, data are presented for cross-border deals involving bidders located in developed countries and targets located in developing countries, or vice versa (a total of 3,281 deals[11]).

Despite the fact that the CARs for all of these types of M&A deals are positive, it can be seen that cross-border deals involving both developed and developing countries (third row)

[11] Here, cross-border deals are distinguished from the overall sample using a dummy variable, Developed & Developing or Developing & Developed, that equals 1 if the acquirer is located in developed (developing) and the target is located in a developing (developed), 0 otherwise. Furthermore, a Yes/No dummy distinguishes between the two groups of samples in order to test for mean differences. The distinction between developed and developing countries is based on MSCI classification of countries.

achieve the highest returns for acquiring firms. For example, the seven-day CAR (-3,+3) for cross-border deals involving both groups of countries is 2.975%, compared to 1.63% and 1.416%, respectively, for deals involving developed or developing countries alone. The mean differences are all significant according to the Mann-Whitney U tests.

Importantly, these results on cross-border M&As between developed and developing countries are consistent with recent empirical studies. For example, Chari, Ouimet, and Tesar (2010) demonstrated that when a firm in developed country acquires majority control of a firm in a developing market, the acquiring company's stock prices increase significantly. Furthermore, Du and Boateng (2012) argue that cross-border M&As in countries with developing economies have led to economic reforms in these countries and facilitated their integration into the world economy.

5.2.4. Merger Waves

Given that the overall sample covers 35 years of M&A deals, it could be argued that deals are influenced by the particular business cycles and economic conditions of specific time periods. For example, Duchina and Schmidt (2013) provide evidence that financial performance related to M&As which began during a merger wave was significantly worse than acquisitions out with a wave due to the higher levels of uncertainty, poorer quality of analysis forecasts, weaker CEO turnover-performance sensitivity, and weaker corporate governance of in-wave acquirers, suggesting that agency problems may be present in merger wave acquisitions.

To investigate this assertion with respect to this study's global sample, Table 5.5 below presents the results for mean differences in acquirers' returns characterising the periods of the three different merger waves identified earlier, i.e. Wave 1, which occurred over the period 1981 to 1989, Wave 2, covering the period 1993 to 2001, and Wave 3, over the period 2003 to 2008. For each wave, the mean difference between two groups is tested by splitting the overall sample according to whether the deals were announced during that wave period (in-wave) or not (out-wave).

Table 5.5: Mean Differences in Acquirers' Returns over Different Periods: M&A Waves.

An independent samples t-test and a Mann-Whitney U test have been employed to compare the differences in CARs between the M&A waves. The overall sample covers the period between 1977 and 2012. This period is distinguished by three waves, with Wave 1 covering the period 1981-1989 (3,082 deals), Wave 2 covering the period 1993-2001 (15,729 deals), and Wave 3 covering the period 2003-2008 (16,087 deals). In each row of the table, 'Yes' indicates that the deals were announced during the wave, 'No' indicates otherwise. This distinction between 'Yes' and 'No' is necessary for testing mean differences among the groups concerned. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

			Independent Samples Test				Mann-Whitney U		
			N	Mean %	Mean Difference	p-value	Mean Rank	Z	p-value
Wave 1 1981-1989	CARs(-3,+3)	Yes	3082	-.073	-1.890	.000***	21571	-7.698	.000***
		No	43676	1.817			23507		
	CARs(-2,+2)	Yes	3082	-.050	-1.852	.000***	21378	-8.518	.000***
		No	43676	1.802			23521		
	CARs(-1,+1)	Yes	3082	-.068	-1.727	.000***	21121	-9.612	.000***
		No	43676	1.659			23539		
Wave 2 1993-2001	CARs(-3,+3)	Yes	15729	1.067	-.943	.000***	22826	-6.318	.000***
		No	31029	2.009			23660		
	CARs(-2,+2)	Yes	15729	1.194	-.733	.000***	22796	-6.655	.000***
		No	31029	1.927			23675		
	CARs(-1,+1)	Yes	15729	1.134	-.619	.000***	22921	-5.234	.000***
		No	31029	1.753			23612		
Wave 3 2003-2008	CARs(-3,+3)	Yes	16087	2.104	.629	.000***	23977	-6.930	.000***
		No	30671	1.476			23066		
	CARs(-2,+2)	Yes	16087	2.039	.547	.000***	24024	-7.483	.000***
		No	30671	1.492			23041		
	CARs(-1,+1)	Yes	16087	1.851	.466	.000***	23948	-6.600	.000***
		No	30671	1.385			23081		

The results indicate that acquirers' abnormal returns were lower in deals announced during Waves 1 and 2 (in-wave). For instance, the acquirers' seven-day CARs were -0.073% and 1.067% respectively, compared to the values of 1.817% and 2.009% for deals announced outside of merger waves (out-wave). However, during Wave 3, the in-wave acquirer returns were higher than out-wave, yielding seven-day CARs of 2.104% and 1.476%, respectively.

Overall, the evidence is mixed. The results for the first two waves are consistent with previous studies supporting agency and hubris motives (Moeller, Schlingemann and Stulz 2005). One of the main reasons for this may be that acquirers go for high-value acquisitions which are ultimately value-destroying, with such takeovers creating negative average returns. On the other hand, the positive acquirer returns in the third wave could be related to the characteristics of the new wave associated with globalisation, as corporate companies emphasised the need to create an international reach. This period witnessed a boom in private equity as shareholders looked to spread ownership amongst themselves, day-to-day management, and institutional investors.

5.3. Hypotheses Testing (Univariate Analysis)

This section and the following one present evidence on acquiring company shareholder returns relating to the four main sub-hypotheses characterising the main dimensions of M&As: (a) target status, (b) method of payment, (c) diversification, and (d) acquirer bidding experience. Within each of these four sub-sets of hypotheses, as noted earlier, more specific hypotheses are investigated by associating one or more dimension with another, such as the impact of target status and method of payment, or the impact of method of payment and target status along with acquirer bidding experience, on shareholder returns. In proceeding, each dimension is taken in turn before introducing added complexity, and the results of the univariate analysis testing mean group differences are presented and discussed before the multivariate results based on CAR regressions (which follow in Section 5.4).

For ease of analysis, the impact of target status is considered first, drawing the distinction between public and non-public targets, the latter comprising private and subsidiary targets.

5.3.1. Target Status

The main hypothesis to be tested here is that there are no significant differences in acquirers' CARs based on M&A deals with public or non-public (private and subsidiary) targets. Table 5.6 below presents the results of the t-test and Mann-Whitney U test of mean differences in the acquirers' CARs between public/non-public, private/non-private, and subsidiary/non-subsidiary targets. The results clearly show that the mean differences in CARs are statistically significant at a level of 1% for all event windows. Additionally, unlike the results for the overall sample, dividing the sample according to target status reveals that acquirer returns are significantly negative for deals with public targets and significantly positive for deals with private/subsidiary targets. Thus, the results clearly show that M&A deals destroy acquiring companies' shareholder wealth when the target is a public firm but improve it when the target is a private or subsidiary company.

Table 5.6: Independent Samples t-test and Mann-Whitney U Test for Public vs. Non-Public Targets.

An independent samples t-test and a Mann-Whitney U test have been used to compare the differences in the CARs of public, private, and subsidiary targets. From the overall sample of 46,758 deals, 14,013 involved public targets, 22,022 involved private targets, and 10,723 involved subsidiary targets. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

			Independent Samples t-Test				Mann-Whitney U		
			N	Mean %	Mean Difference %	p-value	Mean Rank	Z	p-value
Public vs. Private	CARs(-3,+3)	Public	14013	-0.538	-3.316	.000***	16395	-23.627	.000***
		Private	22022	2.778			19051		
	CARs (-2,+2)	Public	14013	-0.455	-3.184	.000***	16317	-24.761	.000***
		Private	22022	2.729			19100		
	CARs (-1,+1)	Public	14013	-0.353	-2.836	.000***	16228	-26.059	.000***
		Private	22022	2.483			19157		
Public vs. Sub.	CARs (-3,+3)	Public	14013	-0.538	-2.915	.000***	11564	-20.263	.000***
		Sub	10723	2.377			13420		
	CARs (-2,+2)	Public	14013	-0.455	-2.772	.000***	11540	-20.865	.000***
		Sub	10723	2.317			13451		
	CARs (-1,+1)	Public	14013	-0.353	-2.452	.000***	11507	-21.694	.000***
		Sub	10723	2.099			13494		
Private vs. Sub.	CARs (-3,+3)	Private	22022	2.778	0.401	.038**	16381	-0.231	0.817
		Sub	10723	2.377			16356		
	CARs (-2,+2)	Private	22022	2.729	0.412	.018**	16395	-0.613	0.540
		Sub	10723	2.317			16327		
	CARs (-1,+1)	Private	22022	2.483	0.384	.012**	16403	-0.824	0.410
		Sub	10723	2.099			16311		

As noted in Chapter 2, there are several explanations for positive acquirer gains from the acquisition of non-public targets. For example, there is less competition in the market for the acquisition of private companies than for public ones. This corresponds to the hypothesis that the large amount of information available regarding public companies increases the competition between potential acquirers while the lack of information about non-publicly-held firms can lead to less interest by potential acquirers. Moreover, in the case of publicly-held companies, there are agency costs associated with the fact that managers of acquiring firms may wish to increase their prestige and power through M&As (Jensen 1986). The evidence here is consistent with the literature (Fuller, Netter, and Stegemoller 2002, Moeller, Schlingemann, and Stulz 2004, Faccio, McConnell, and Stolin 2006, Jaffe *et al*. 2015).

In this regard, the method used to finance the acquisition can also have an impact on acquirer returns. For instance, if an acquirer pays for the target with stock, the impact on the acquirer's stock price may depend on the target type. For example, takeovers of private firms through stock payments can create blockholders in the acquirer firm since the owners of private firms are concentrated, and this may influence the monitoring of the acquirer's management, which could lead to an improvement in financial performance. On the other hand, the concentration of ownership and the creation of blockholders are much less likely in the takeover of public

targets. The next section further analyses the impact of the method of payment on acquirer returns.

5.3.2. Method of Payment

The main hypothesis tested here is that there are no significant differences in acquirers' CARs in M&A deals based on cash, stock, and mixed (cash and stock) modes of payments. According to the literature, however, it is generally the case that acquirers' shareholders benefit more from deals that involve cash payments rather than stock, although this is likely to depend on the status of the target. Therefore, it is appropriate to consider the influence of target status when examining the impact of payment mode in M&A deals.

Table 5.7 below presents the results of the t-tests and Mann-Whitney U tests of mean differences in acquirers' CARs between deals that were pledged using the three alternative payment modes (cash vs. non-cash, stock vs. non-stock, and a cash-stock combination vs. otherwise). The results show that the t-test mean differences are statistically significant at a level of 1% in each case, though the Mann-Whitney U test (which is more reliable in the case of non-normally distributed CARs—see Chapter 4) does not confirm a statistically significant difference, even at a 10% level for cash deals. Furthermore, the results show that the acquirer receives the highest return for stock-only deals and the lowest return for cash-only deals. For example, the results for the three-day CARs (-1,+1) event window are 2.275%, 1.198%, and 0.937% for stock-only, cash-only, and cash-stock deals, respectively. These results contradict the conventional view that cash deals are more beneficial for acquiring company shareholders (Travlos 1987, Wansley, Lane, and Yang 1987, Amihud, Lev, and Travlos 1990, Servaes 1991, Brown and Ryngaert 1991). However, the results in Table 5.7 do not take in account the relevance of target status.

Table 5.7: Independent Samples t-test and Mann-Whitney U Test for Method of Payment.

An independent samples t-test and a Mann-Whitney U test have been employed to compare differences in CARs between deals involving cash vs. stock payments, cash vs. cash-stock combination payments, stock vs. cash-stock combination payments. Of the overall sample of 46,758 deals, 13,259 were pledged using cash-only, 11,681 were pledged using stock-only, and 6,806 involved a cash-stock combination. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

			Independent Samples t-Test				Mann-Whitney U		
			N	Mean	Mean Diff.	p-value	Mean Rank	Z	p-value
Cash vs. Stock	CARs(-3,+3)	Cash	13259	0.961	-1.573	.000***	12582	-2.609	.009***
		Stock	11681	2.534			12344		
	CARs(-2,+2)	Cash	13259	0.987	-1.429	.000***	12638	-3.916	.000***
		Stock	11681	2.416			12280		
	CARs(-1,+1)	Cash	13259	0.937	-1.338	.000***	12610	-3.259	.001***
		Stock	11681	2.275			12312		
Cash vs. Cash & Stock	CARs(-3,+3)	Cash	13259	0.961	-0.300	.098*	10124	-3.092	.002***
		C&S	6806	1.261			9857		
	CARs(-2,+2)	Cash	13259	0.987	-0.285	.077*	10159	-4.316	.000***
		C&S	6806	1.272			9787		
	CARs(-1,+1)	Cash	13259	0.937	-0.261	.066*	10173	-4.771	.000***
		C&S	6806	1.198			9761		
Stock vs. Cash & Stock	CARs(-3,+3)	Stock	11681	2.534	1.273	.000***	9265	-0.693	0.488
		C&S	6806	1.261			9208		
	CARs(-2,+2)	Stock	11681	2.416	1.144	.000***	9269	-0.820	0.412
		C&S	6806	1.272			9202		
	CARs(-1,+1)	Stock	11681	2.275	1.077	.000***	9294	-1.670	.095*
		C&S	6806	1.198			9158		

There are, however, several possible explanations for why acquirers may enjoy a higher return for stock payment deals irrespective of target status. For example, one of the benefits of the stock swap is the new share capital which is issued during the takeover process and which does not affect the liquidity of acquiring firms. Moreover, considering that the target is exposed to the same risk as the acquirer after the takeover, the risk of a high premium is limited. In contrast, cash deals can be relatively costly since target shareholders have to pay capital gains tax once a cash deal is completed. Since the tax base is larger and the premium may be higher for cash deals, the market perception may be that this is more detrimental than beneficial to shareholder wealth, and for this reason, a negative market response to cash payment deals may occur.

However, the empirical literature usually distinguishes target status when considering the impact of payment modes on acquirer returns (Jaffe *et al.* 2015), and it is therefore appropriate to differentiate the results by taking into account the relevance of target status.

Table 5.8: Independent Samples t-test and Mann-Whitney U Test for Method of Payment and Target Status.

An independent samples t-test and a Mann-Whitney U test have been employed to compare the mean differences in CARs according to payment method and target status, distinguished by introducing an interaction variable to filter the sample. For example, CSH×PUB equal to '1' for public targets paid for with cash-only, STC×PUB is an interaction variable equal to '1' for public targets paid for with stock-only, CSH×PRV is equal to '1' for private targets paid for with cash-only, STC×PRV is an interaction variable equal to '1' for private targets paid for with stock-only, CSH×SUB is equal to '1' for subsidiary targets paid for with cash-only, and STC×SUB is equal to '1' for subsidiary targets paid for with stock-only. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

			Independent Samples Test			**Mann-Whitney U**		
			Mean %	Mean Difference	p-value	Mean Rank	Z	p-value
CSH×PUB vs. STC×PUB	CARs(-3,+3)	CSH×PUB	0.276	1.472	.000***	4734	-10.668	.000***
		STC×PUB	-1.196			4154		
	CARs(-2,+2)	CSH×PUB	0.343	1.425	.000***	4741	-10.904	.000***
		STC×PUB	-1.082			4148		
	CARs(-1,+1)	CSH×PUB	0.45	1.446	.000***	4775	-12.082	.000***
		STC×PUB	-0.996			4117		
CSH×PRV vs. STC×PRV	CARs(-3,+3)	CSH×PRV	1.164	-3.904	.000***	5404	-5.442	.000***
		STC×PRV	5.068			5736		
	CARs(-2,+2)	CSH×PRV	1.2	-3.623	.000***	5446	-4.051	.000***
		STC×PRV	4.823			5693		
	CARs(-1,+1)	CSH×PRV	1.11	-3.35	.000***	5420	-4.925	.000***
		STC×PRV	4.46			5720		
CSH×SUB vs. STC×SUB	CARs(-3,+3)	CSH×SUB	1.477	-3.301	.000***	2262	-3.622	.000***
		STC×SUB	4.778			2417		
	CARs(-2,+2)	CSH×SUB	1.437	-2.991	.000***	2267	-3.195	.001***
		STC×SUB	4.429			2404		
	CARs(-1,+1)	CSH×SUB	1.240	-3.160	.000***	2242	-5.173	.000***
		STC×SUB	4.400			2464		

Accordingly, Table 5.8 presents the mean differences in acquirer returns for groups of deals based on method of payment combined with target status. Six groups have been identified based on the six possible interactions between variables: Cash × Public, Stock × Public, Cash × Private, Stock × Private, Cash × Subsidiary, Stock × Subsidiary[12]. In each case, the t-test and Mann-Whitney U test compare the mean differences within each group based on whether or not the relevant criterion is met. The results show that the CARs for all groups mean differences are statistically significant at a level of 5% according to the Mann-Whitney U test. In addition, most are significant even at the 1% level using the t-test (except for Cash × Subsidiary deals). The results also clearly indicate that acquirers receive the highest returns on stock deals involving non-public (private or subsidiary) targets and the lowest returns on

[12] To avoid complications, the results of this table compare cash and stock only deals while taking into account target status in an overall sample that includes both completed and unsuccessful deals. In almost all cases, no significant differences were observed in the results for samples including only completed deals, and these findings have thus not been reported for reasons of space.

stock deals involving public targets. These findings thus imply that acquirers should use cash to acquire public targets and stock to acquire non-public targets. These results are consistent with the findings of previous empirical studies (e.g. Fuller, Netter, and Stegemoller 2002).

There are several possible explanations for a positive market reaction to deal announcements which pledge stock to acquire non-public targets. For instance, the takeover of a private firm through stock can create blockholders in the acquiring firm, which improves the monitoring of the acquiring company's management. This concentration of ownership is much less likely in the case of public target acquisitions. Additionally, if stock is pledged for the takeover of a public firm, it can signal to the market that the acquiring firm is overvalued, leading to a decrease in its share price (Myers and Majluf 1984). Officer, Poulsen, and Stegemoller (2009) have shown that acquirer returns will be significantly higher in stock swap acquisitions if the valuation of the target is difficult to determine, which is often the case for non-public targets.

5.3.3. Diversification

Following DeLong (2001), activity and geographic diversification is classified into four categories: 1) domestic focussed deals (DAF), in which both acquirers and targets are located in the same country and operate within the same industry (i.e. share the same 4-digit SIC codes), 2) domestic cross-industry deals (DCI), in which acquirers and targets are located in the same country but operate in different industries (different first two digits of their SIC codes), 3) cross-border focussed deals (CBF), in which acquirers and targets are located in different countries but operate in the same industry, and 4) cross-border cross-industry deals (CBCI), in which acquirers and targets are located in different countries and operate in different industries.

In view of the above distinction, the main hypotheses to be tested are:

- There are no significant differences in acquirers' CARs between domestic or cross-border M&A deals.
- There are no significant differences in acquirers' CARs between focussed or diversified M&A deals.

Table 5.9 below presents the results for the mean differences in acquirers' CARs relating to each of the four categories (DAF, DCI, CBF, CBCI). In each case, the statistical significance of the mean difference is determined by comparing two groups of deals, one that belongs to one of the four categories and one that does not. The results show that the mean differences are not statistically significant in all cases, most notably for CBCI deals, where the sample is relatively heterogeneous compared to the other categories. According to both tests, the mean differences are more significant for domestic than cross border deals, whether focussed (DAF) or diversified (DCI). Additionally, according to the Mann-Whitney U test, the mean differences are significant for CBF deals and for the shorter, three-day window CAR (-1,+1) of CBCI deals. Importantly, the results show that the mean differences are positive in diversified deals (DCI, CBF, CBCI) but negative in domestic focussed deals (DAF). This result implies that diversification improves acquirers' shareholder wealth, which will also be confirmed in the regression analysis below (Section 5.4.2).

Table 5.9: Independent Samples t-test and Mann-Whitney U Test for Activity and Geography Diversification.

An independent samples t-test and a Mann-Whitney U test have been employed to compare the differences in CARs between 1) domestic focussed deals (DAF) (i.e. the bidder and target are located in the same country and operate in the same industry) (18,470 deals), 2) domestic cross-industry deals (DCI) (i.e. the bidder and target are located in the same country but operate in different industries according to the initial two digits of their four-digit SIC codes) (17,065 deals), 3) cross-border focussed deals (CBF) (i.e. the bidder and target operate in the same industry but are located in different countries) (6,221 deals), and 4) cross-border cross-industry deals (CBCI) (i.e. the bidder and target are located in different countries and operate in different industries according to the initial two digits of their four-digit SIC codes) (5,002 deals). The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

			Independent Samples t-test				Mann-Whitney U		
			N	Mean %	Mean Diff.	p-value	Mean Rank	Z	p-value
DAF vs. DCI	CARs(-3,+3)	DAF	18470	0.982	-1.277	.000***	17512	-4.891	.000***
		DCI	17065	2.259			18045		
	CARs (-2,+2)	DAF	18470	1.083	-1.092	.000***	17508	-4.975	.000***
		DCI	17065	2.175			18050		
	CARs (-1,+1)	DAF	18470	1.071	-0.797	.000***	17575	-3.684	.000***
		DCI	17065	1.868			17977		
DAF vs. CBF	CARs(-3,+3)	DAF	18470	0.982	-0.863	.000***	12225	-4.581	.000***
		CBF	6221	1.845			12704		
	CARs (-2,+2)	DAF	18470	1.083	-0.801	.000***	12224	-4.643	.000***
		CBF	6221	1.884			12709		
	CARs (-1,+1)	DAF	18470	1.071	-0.663	.000***	12219	-4.836	.000***
		CBF	6221	1.734			12724		
DAF vs. CBCI	CARs(-3,+3)	DAF	18470	0.982	-1.209	.000***	11655	-3.523	.000***
		CBCI	5002	2.191			12036		
	CARs (-2,+2)	DAF	18470	1.083	-0.86	.000***	11660	-3.311	.000***
		CBCI	5002	1.943			12018		
	CARs (-1,+1)	DAF	18470	1.071	-0.89	.000***	11624	-4.877	.000***
		CBCI	5002	1.961			12151		
DCI vs. CBF	CARs (-3,+3)	DCI	17065	2.259	0.414	0.113	11620	-0.889	0.374
		CBF	6221	1.845			11708		
	CARs (-2,+2)	DCI	17065	2.175	0.291	0.233	11620	-0.897	0.370
		CBF	6221	1.884			11709		
	CARs (-1,+1)	DCI	17065	1.868	0.134	0.465	11587	-2.133	.033**
		CBF	6221	1.734			11799		

Although previous empirical studies have found that diversification does not guarantee either an increase or decrease in shareholder wealth (Berger and Ofek 1995), the advantages of diversification can stem from various factors. For example, portfolio diversification theory suggests that the cross-border diversification of a portfolio will drive down the cost of capital and increase asset price. Cross-border mergers can generate gains if certain macroeconomic factors, like bilateral trade and regulation, are favourable.

However, it is important to account for additional heterogeneity in diversified deals in order to check the consistency of the results. Therefore, the next analysis relates diversification to target status and method of payment in testing for significance in acquirers' mean returns. Table 5.10 below compares acquirers' three-day CARs (-1,+1) for deals that distinguish

between diversification and target status. Table 5.11 allows for further distinction relating to method of payment in these deals, distinguishing between cash-only, stock-only, and cash/stock combination deals. A simple t-test is employed to test for the statistical significance of the mean returns in each sub-group, where the null hypothesis is that the mean three-day CAR (-1,+1) is zero. The results in Table 5.10 show that, irrespective of diversification, deals involving non-public targets improve acquiring companies' shareholder wealth. This contrasts with deals involving public targets, which reduce shareholder wealth. Furthermore, the results in Table 5.11 show that diversification reduces acquirer returns in deals involving public targets and a payment method of stock only or a cash/stock combination. In the latter, for example, the highest CARs (5.53%) were obtained for CBCI deals with non-public targets using stock only as the method of payment.

Table 5.10: Activity and Geography Diversification for Public vs. Non-Public Targets.

A simple t-test has been used to test the statistical significance of means for each group of CARs associated with diversification and the distinction between public and non-public targets. The null hypothesis is that the mean for three-day CARs (-1,+1) in each sub-group is zero. *N* refers to the number of deals in each sub-group. The figures under the %+ column show the percentage of deals with positive returns.

		Mean	p-value	N	% +
DAF	Non-Pub	2.113%	0.000	8447	57%
	Pub	-0.251%	0.054	4197	45%
DCI	Non-Pub	2.259%	0.000	9931	56%
	Pub	-0.004%	0.983	2717	47%
CBF	Non-Pub	2.204%	0.000	7697	57%
	Pub	-0.734%	0.000	4350	45%
CBCI	Non-Pub	**2.991%**	0.000	6670	57%
	Pub	-0.252%	0.160	2749	46%

Table 5.11: Activity and Geography Diversification, Public vs. Non-Public Targets, and Method of Payment.

A simple t-test has been used to test the statistical significance of means for each group of CARs associated with diversification and the distinction between public and non-public targets and the cash vs. stock methods of payment. The null hypothesis is that the mean for three-day CARs (-1,+1) in each sub-group is zero. *N* refers to the number of deals in each sub-group. The figures under the %+ column show the percentage of deals with positive returns.

			Mean	p-val	N	%+				Mean	p-val	N	%+
DAF	Non-Pub	Cash &Stock	2.57%	0.000	1212	57%	**DCI**	Non-Pub	Cash &Stock	2.39%	0.000	1118	60%
		Cash-Only	1.13%	0.000	2243	55%			Cash-Only	1.01%	0.000	2973	55%
		Stock-Only	4.00%	0.000	1870	58%			Stock-Only	5.03%	0.000	2061	58%
	Pub	Cash &Stock	-0.95%	0.000	876	39%		Pub	Cash &Stock	-1.21%	0.002	412	36%
		Cash-Only	0.21%	0.320	756	49%			Cash-Only	0.34%	0.139	801	52%
		Stock-Only	-0.40%	0.055	1849	44%			Stock-Only	0.07%	0.855	838	47%
CBF	Non-Pub	Cash &Stock	3.41%	0.000	1179	60%	**CBCI**	Non-Pub	Cash &Stock	2.01%	0.000	861	54%
		Cash-Only	1.19%	0.000	2028	57%			Cash-Only	1.45%	0.000	1792	56%
		Stock-Only	3.10%	0.000	1589	54%			Stock-Only	**5.53%**	0.000	1524	57%
	Pub	Cash &Stock	-2.04%	0.000	767	35%		Pub	Cash &Stock	-1.28%	0.026	381	36%
		Cash-Only	0.63%	0.000	1485	54%			Cash-Only	0.46%	0.016	1181	51%
		Stock-Only	-2.20%	0.000	1302	38%			Stock-Only	-1.40%	0.005	648	38%

5.3.4. Acquirer Bidding Experience

Table 5.12: Pearson and Spearman's rho Correlations for Acquirer Bidding Experience.

Pearson and Spearman's rho correlations have been employed to analyse the relationship between CARs and acquirer bidding experience. 'Exp. 3-Y' refers to the cumulative number of takeovers by the same acquirer during the preceding three-year period. 'Exp. 5-Y' refers to the cumulative number of takeovers by the same acquirer during the preceding five-year period. The first panel of results shows the correlations between acquirer returns and previous experience of completed takeovers, where *N* refers to the total number of deals (46,758). The second panel shows the means and statistical significance of CARs for groups of deals (totalling up to 75) categorised according to the number of bidders who were involved in previous bids, where *X* is the cumulative number of bids between 1 and 75, and *N* refers to the total number of deals for each group of bidders with a previous number of *X* deals. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

N=46758	**Pearson Correlation**		**Spearman's rho Correlations**	
	Exp. 5-Y	Exp. 3-Y	Exp. 5-Y	Exp. 3-Y
CARs (-10,+10)	-0.035***	-0.029***	-0.034***	-0.033***
CARs (-5,+5)	-0.035***	-0.029***	-0.04***	-0.037***
CARs (-3,+3)	-0.039***	-0.034***	-0.047***	-0.041***
CARs (-2,+2)	-0.033***	-0.026***	-0.046***	-0.038***
CARs (-1,+1)	-0.031***	-0.024***	-0.045***	-0.037***
ARs (-10,+10)	-0.035***	-0.029***	-0.034***	-0.033***
ARs (-5,+5)	-0.035***	-0.029***	-0.04***	-0.037***
ARs (-3,+3)	-0.039***	-0.034***	-0.047***	-0.041***
ARs (-2,+2)	-0.033***	-0.026***	-0.046***	-0.038***
ARs (-1,+1)	-0.031***	-0.024***	-0.045***	-0.037***

	Bidder have X Deals		CARs				Bidder have X Deals		CARs		
X Deals	Number	%	Mean	p-value	N	X Deals	Number	%	Mean	p-value	N
1	11401	24.4	3.12%	0.000	11401	20	12	0.5	-0.86%	0.004	240
2	4445	19	2.04%	0.000	8890	21	2	0.1	-0.12%	0.840	42
3	2098	13.5	1.59%	0.000	6294	22	6	0.3	-1.89%	0.002	132
4	1060	9.1	1.14%	0.000	4240	23	5	0.2	0.61%	0.267	115
5	616	6.6	0.75%	0.000	3080	24	2	0.1	-0.37%	0.287	48
6	386	5	0.22%	0.121	2316	25	3	0.2	-0.17%	0.771	75
7	249	3.7	0.28%	0.191	1743	26	1	0.1	-0.13%	0.838	26
8	178	3	0.33%	0.067	1424	27	4	0.2	-0.95%	0.006	108
9	115	2.2	0.55%	0.006	1035	28	1	0.1	-0.56%	0.218	28
10	102	2.2	0.21%	0.226	1020	30	1	0.1	0.26%	0.576	30
11	61	1.4	-0.22%	0.341	671	31	1	0.1	-1.98%	0.004	31
12	51	1.3	0.13%	0.541	612	32	1	0.1	-0.10%	0.905	32
13	43	1.2	0.06%	0.775	559	34	1	0.1	-1.09%	0.046	34
14	23	0.7	-0.39%	0.220	322	37	3	0.2	4.86%	0.000	111
15	35	1.1	0.11%	0.599	525	39	1	0.1	5.75%	0.039	39
16	29	1	-0.59%	0.009	464	46	1	0.1	-1.55%	0.001	46
17	15	0.5	-0.47%	0.028	255	48	1	0.1	-0.46%	0.240	48
18	18	0.7	-0.75%	0.004	324	57	1	0.1	-0.11%	0.755	57
19	14	0.6	-0.39%	0.172	266	75	1	0.2	-0.06%	0.923	75
Total Number of acquirers							**32388**	**100%**			46758
Total Number of acquirers have 5 or more deals							**1983**				

The main hypothesis tested here is that there is no association between acquirer CARs and previous experience. Acquirer bidding experience, in this context, is represented by the frequency of prior acquisitions as represented by the cumulative number of completed takeovers by the same acquirer during the preceding three or five years (Exp. 3-Y and Exp. 5-Y). Alternatively, bidder experience can be measured by the number of previous (initial) bids

that the acquirer has made in M&A deals, irrespective of whether such deals were ultimately completed or not. The former method is considered a more representative measure of acquirer bidding experience in M&As.

The first panel in Table 5.12 shows the results for the correlations between acquirers' CARs/ARs (for different window lengths) and previous acquisition experience measured by the cumulative number of completed takeovers by the same acquirer during the previous three and five-year periods (Exp. 3-Y and Exp. 5-Y, respectively). The results clearly indicate a statistically significant and negative correlation between acquirer bidding experience and returns for both correlation measures.

The second panel in Table 5.12 shows the means and statistical significance of acquirers' CARs for groups of deals (which total up to 75) categorised according to the number of bidders who were involved in previous bids. In the latter case, for example, 11,401 deals were announced by 'single acquirers' who had made only one previous bid in the overall sample of 46,758 deals. At the other extreme, one acquirer (Cisco Systems[13]) made 75 previous bids. The results clearly show that 'single acquirers' have higher returns, while returns tend to decrease for acquirers with higher numbers of previous bids, confirming that 'multiple acquirers' may destroy their shareholders' wealth as they engage in more and more bids.

These findings are consistent with several hypotheses mentioned in Chapter 2 (e.g. hubris, indigestion, overvaluation, accounting manipulation, merger programme announcement, and managerial empire building) and contrary to the expectation that greater acquisition experience contributes to more knowledgeable actions based on better valuation of targets. Morck, Shleifer, and Vishny (1990) observed a larger contribution of irrational hubris in the valuation the targets. If the market learns that the true synergy value of the acquisition is lower than the premium paid, this may lead to a negative market reaction as reflected by negative acquirer returns. The results appear to be consistent with this view.

As with diversification, it is possible to account for additional heterogeneity in the above analysis regarding acquirer bidding experience in order to check for consistency of results. Table 5.13 below compares acquirers' CARs for deals distinguishing between acquirer bidding experience, method of payment, and target status. The results show that, irrespective

[13] Total Value of transaction for the 75 completed deals is $49,069.472 million

of acquirer bidding experience, deals involving non-public targets improve acquiring company shareholder wealth, while deals involving public targets reduce shareholder wealth. Furthermore, single bidders achieve higher returns than multiple bidders in all cases, which is consistent with the results obtained in Table 5.12. This confirms that acquirer bidding experience reduces returns irrespective of target status or method of payment.

Table 5.13: Activity and Geography Diversification, Public vs. Non-Public Target Status, and Method of Payment.

A simple t-test has been used to test the statistical significance of the means for each group of CARs associated with distinctions based on method of payment (cash, stock, and cash-stock), target status (public vs. non-public), and acquirer bidding experience (single vs. multiple bidders). The null hypothesis is that the mean CAR in each sub-group is zero. *N* refers to the number of deals in each sub-group. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

				CARs(-1,+1)		CARs(-2,+2)	
			N	Mean	p-value	Mean	p-value
Cash and Stock Combination	Private	Single	2400	2.79%	0.000***	3.04%	0.000***
		Multiple	981	0.83%	0.000***	0.98%	0.000***
	Public	Single	1326	-0.63%	0.016**	-0.94%	0.002***
		Multiple	1110	-2.30%	0.000***	-2.49%	0.000***
	Sub.	Single	795	4.74%	0.000***	5.21%	0.000***
		Multiple	194	1.36%	0.004***	1.39%	0.016**
Cash-Only	Private	Single	3814	1.15%	0.000***	1.31%	0.000***
		Multiple	1747	1.03%	0.000***	0.97%	0.000***
	Public	Single	2223	0.89%	0.000***	0.77%	0.000***
		Multiple	2000	-0.04%	0.696	-0.14%	0.298
	Sub.	Single	2307	1.60%	0.000***	1.80%	0.000***
		Multiple	1168	0.56%	0.001***	0.69%	0.003***
Stock-Only	Private	Single	3805	**6.00%**	0.000***	6.44%	0.000***
		Multiple	1773	1.15%	0.000***	1.34%	0.000***
	Public	Single	2685	-0.63%	0.009***	-0.57%	0.038**
		Multiple	1952	-1.50%	0.000***	-1.78%	0.000***
	Sub.	Single	1166	5.08%	0.000***	5.17%	0.000***
		Multiple	300	1.34%	0.028**	1.03%	0.178

5.4. Hypotheses Testing (Regression Results)

The purpose of this section is to supplement the above findings using cross-sectional CAR regressions with heteroskedasticity-corrected estimates in order to allow for further testing of the aforementioned hypotheses through the addition of relevant conditioning variables that may influence acquirers' CARs. Consistent with the univariate analyses, cross-sectional regressions are conducted in a sequential manner to account for the impact of the following factors on acquirers' shareholder returns:

1. Target status and method of payment.
2. Activity and geographical diversification.
3. Acquirer bidding experience.

While the first two hypotheses relating to target status and method of payment were treated as distinct in the univariate analyses, it makes sense to combine these factors in the regressions so that both their individual and joint impacts can be observed. Furthermore, while the impact of diversification and acquirer bidding experience are considered separately from target status and method of payment, their combined impact, where appropriate, will also be considered here. Unlike the univariate analyses (where it was possible to examine CARs with varying window lengths) the regression results reported below take into account only the specific three-day window CARs (-1,+1), which is consistent with the literature.

Several control variables are included in the CAR regressions to account for both firm and country-level heterogeneity. In all regressions, the minimum set of control variables includes the value of the transaction (as a proxy for target size) and the GDP per capita for both bidder and target countries. In a further robustness analysis, additional control variables will be added to check for consistency of the results.

In what follows, the above hypotheses are tested separately but in a progressive manner to (i) ensure that the results are consistent with the Univariate analysis and (ii) to avoid complicating the analysis while investigating issues that are pertinent to the specific hypotheses. In the robustness section, the analyses are extended with additional controls (which reduce the sample size) and, where appropriate, using interaction effects. While it is possible to estimate a "complete" regression, allowing for all the hypotheses to be tested

together, doing so with all the control variables included reduces the sample size considerably.

5.4.1. Target Status and Method of Payment

Table 5.14 presents the results of the regressions analysis in which the dependent variable is acquirers' three-day CARs (-1,+1). Method of payment (cash or stock) and target status (public, private, subsidiary) have been used as explanatory variables while controlling for deal value and the level of economic development in acquirer and target countries. The regressions have been conducted using the maximum available dataset of completed and unsuccessful deals, as well as for the sample of completed deals only, in order to check for consistency of results.

Table 5.14: Regressions Analysis of Target Status and Method of Payment.

The dependent variable is acquirers' 3-day CARs (-1,+1). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (4) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (5) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (6) 'private' as a dummy variable equal to '1' if the deal involves a private target, '0' otherwise, and (7) 'subsidiary' as a dummy variable equal to '1' if the deals involves a subsidiary target, '0' otherwise. Models 1-5 are estimated using the entire sample including unsuccessful deals (45,631 deals), Models 6-10 are estimated using the sample of completed deals only (35,749 deals). Heteroskedasticity-corrected estimates are reported with p-values shown in parentheses. All estimations include year and industry effects as well as country effects.

	All					Completed				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
No. obs	45631	45631	45631	45631	45631	35749	35749	35749	35749	35749
R^2	0.008	0.015	0.012	0.010	0.011	0.008	0.015	0.011	0.010	0.012
Adjusted R^2	0.008	0.015	0.011	0.010	0.011	0.008	0.015	0.011	0.010	0.012
F-test	52.366	114.365	89.348	78.483	66.318	41.310	91.623	68.025	61.085	54.789
P-value(F)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.022	0.017	0.022	0.018	0.015	0.026	0.026	0.031	0.025	0.020
	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Value of Trans.	-0.004	-0.003	-0.004	-0.005	-0.003	-0.004	-0.003	-0.004	-0.005	-0.002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP (Target)	0.003	0.005	0.002	0.005	0.004	0.002	0.003	0.000	0.003	0.003
	(0.004)	(0.000)	(0.048)	(0.000)	(0.000)	(0.082)	(0.056)	(0.819)	(0.037)	(0.028)
Cash-Only	-0.004				-0.002	-0.004				-0.002
	(0.000)				(0.029)	(0.000)				(0.064)
Stock-Only	0.003				0.003	0.003				0.003
	(0.038)				(0.021)	(0.081)				(0.034)
Public		-0.018			-0.013		-0.018			-0.014
		(0.000)			(0.000)		(0.000)			(0.000)
Private			0.010					0.010		
			(0.000)					(0.000)		
Sub.				0.007					0.008	
				(0.000)					(0.000)	
Country Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

All regressions are statistically significant as confirmed by the value of the F-statistic. Although the explanatory power indicated the values of R^2 and adjusted R^2 is generally low, this is consistent with most empirical studies using cross-sectional market data (Conn *et al*. 2005, Faccio, McConnell, and Stolin 2006, Ismail 2008).

In order to assess the impact of target status on acquirers' CARs, three dummy variables are introduced to distinguish the impact of public, private, and subsidiary targets. The results show that the impact of acquiring a public target on CARs is significant and consistently negative across all models. On the other hand, the impact is positive when a private or subsidiary target is involved. These results thus confirm that acquiring company shareholders receive higher returns when the bidder acquires a private or subsidiary firm and lower returns when a public target is acquired.

The results also indicate that the value of transactions, which reflect the impact of target size, have a negative impact on acquirer returns. While there is no strong justification as to why large acquisitions should lead to negative returns for acquirers, one possible explanation is that due to the greater information asymmetry associated with larger-sized targets, there is greater uncertainty regarding the value of the target, and this is reflected in the form of negative returns. This effect is quite significant and robust in all of the regressions considered below (see Tables 5.18, 5.19, and 5.20). Additionally, the level of economic activity (GDP per capita) of the bidder country has a positive and statistically significant impact on acquirer returns while that of the target country is negative but not always statistically significant.

With regard to payment method, two dummy variables are introduced to distinguish between the impact of cash-only and stock-only transactions. The results are consistent with the univariate analysis (see Tables 5.7 and 5.8) in that after controlling for target status, stock payment transactions demonstrate a positive impact on acquirer returns, while the effect of cash payment transactions is negative. However, in order to investigate the relation between method of payment and target status more thoroughly, Table 5.15 presents the results of regressions analysis with the sample split into public, private, and subsidiary targets. These results confirm that acquirers receive lower returns when the bidder pledges cash to acquire a non-public target or stock to acquire a public target. On the other hand, acquirers receive higher returns when the bidder uses cash to acquire a public target or stock to acquire a non-public target.

Table 5.15: Regressions Analysis for Public, Private, and Subsidiary Targets.
The dependent variable is acquirers' three-day CARs (-1,+1). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (4) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise. The estimations in this table are for subsamples of deals distinguished according to target status: Models 1 to 3 represent public targets, Models 4 to 6 represent private targets, and Models 7 to 9 represent subsidiary targets. Heteroskedasticity-corrected estimates are reported with p-values shown in parentheses. All estimations include year and industry effects as well as country effects.

	Public Target			Private Target			Subsidiary Target		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
No. obs	14013	14013	13807	22022	22022	21468	10723	10723	10356
R^2	0.006	0.017	0.019	0.007	0.007	0.008	0.006	0.006	0.007
Adjusted R^2	0.006	0.017	0.018	0.007	0.006	0.007	0.006	0.006	0.006
F-test	17.452	40.413	37.375	29.852	24.666	23.752	13.562	10.985	10.608
P-value(F)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.005	0.016	0.049	0.033	0.035	0.000	0.031	0.031	0.010
	(0.011)	(0.000)	(0.000)	(0.000)	(0.000)	(0.955)	(0.000)	(0.000)	(0.164)
Value of Trans.		-0.004	-0.004		-0.001	-0.001		0.000	0.000
		(0.000)	(0.000)		(0.081)	(0.024)		(0.625)	(0.550)
GDP (Target)			-0.008			0.008			0.006
			(0.001)			(0.000)			(0.001)
Cash-Only	0.008	0.007	0.008	-0.010	-0.010	-0.011	-0.006	-0.006	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.003)
Stock-Only	-0.005	-0.008	-0.008	0.017	0.017	0.014	0.018	0.018	0.018
	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The positive impact of cash transactions in public target acquisitions can be explained by the theory that cash payments help to resolve the overvaluation problem (Myers and Majluf 1984). Overpayment or underpayment issues also explain the negative returns on acquirer stock when public targets are involved (Eckbo 2009). Regarding private firms, the positive impact of using stock as payment could be related to the degree of information asymmetry surrounding private targets, which is generally much greater than that of public targets. In addition, the impact on stock returns is also explained by the overvaluation theory, which holds that when a public bidder announces a stock offer for a public target, this may signal to the market that the acquirer's stock is overvalued, which is then reflected in the form of negative returns.

In general, the finding involving greater positive acquirer returns whenever the target is private and negative returns whenever the target is public is very robust. It is thus not only the mechanism of transfer which is critical but also the status of the target. The results for subsidiary targets demonstrate similar effects as those for private targets. In other words, the main difference within these results seems to reside in the comparison between public and non-public targets. These results are consistent with the univariate analysis and confirm

significant differences in acquirer returns between cash and stock payment transactions, depending on the status of the target.

5.4.2. Diversification

Table 5.16: Regressions Analysis for Diversification (Cross-Border and Cross-Industry):

The dependent variable is acquirers' three-day CAR (-1,+1). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) domestic and focused deals (DAF), (4) domestic and cross-industry deals (DCI), (5) cross-border and focused deals (CBF), and (6) cross-border and cross-industry deals (CBCI), (7) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (8) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (9) Common Law (Target) dummy variable equal to '1' if the target is located in a common law country (proxy for investor protection), and '0'otherwise, (10) Legal Ins Quality (Target) as a proxy for institutional environment (Source: Kuncic 2014). All estimations are for the entire sample (subject to data availability). All estimations include year and industry effects as well as country effects.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No. obs	45631	45631	45631	45631	39393	39393	39393	39393
R^2	0.013	0.013	0.013	0.013	0.012	0.012	0.012	0.012
Adjusted R^2	0.013	0.013	0.013	0.012	0.012	0.011	0.012	0.011
F-test	74.928	73.430	73.364	73.156	47.878	46.694	47.207	46.257
P-value(F)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.016	0.017	0.014	0.015	0.021	0.023	0.019	0.021
	(0.001)	(0.000)	(0.004)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Value of Trans.	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP (Target)	0.004	0.004	0.004	0.004	0.003	0.002	0.003	0.003
	(0.000)	(0.001)	(0.000)	(0.000)	(0.014)	(0.037)	(0.010)	(0.020)
DAF	-0.003				-0.004			
	(0.000)				(0.001)			
DCI		0.001				0.001		
		(0.592)				(0.621)		
CBF			0.003				0.004	
			(0.014)				(0.004)	
CBCI				0.003				0.002
				(0.043)				(0.248)
Stock-Only	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.005
	(0.002)	(0.006)	(0.001)	(0.002)	(0.001)	(0.003)	(0.001)	(0.002)
Public	-0.014	-0.015	-0.015	-0.015	-0.016	-0.016	-0.016	-0.016
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Legal Ins					0.000	0.000	0.000	0.000
Quality (Target)					(0.776)	(0.820)	(0.773)	(0.766)
Common Law					0.001	0.000	0.001	0.000
(Target)					(0.614)	(0.935)	(0.448)	(0.728)
Country Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

There is robust evidence in the literature relating to the positive impact of portfolio diversification on asset price returns, which suggests that if diversification has the expected impact of reducing risk, this should be reflected in lower risk premiums being required by rational investors and higher expected asset prices. Following the univariate analysis on diversification, this section extends the enquiry by conducting regressions to test the impact

of activity and geographical diversification on acquirer returns. As before, diversification is classified into the four categories explained earlier (i.e. DAF, DCI, CBF, and CBCI), which are introduced as dummy variables in the cross-sectional CAR regressions.

Table 5.16 above presents the results of the regressions in which the dependent variable is acquirers' three-day CARs (-1,+1). The control variables include transaction value, GDP per capita of bidder and target countries, and additionally (in later regressions), proxies to account for investor protection and institutional quality. The additional explanatory variables include selective dummies to control for method of payment and target status. Only the results involving the stock payment and public target dummies are reported here, though the findings are consistent when cash and other target dummies are also included (these findings are not shown for reasons of space). As before, the regressions are conducted using the maximum number of observations (deals) available, subject to the availability of data involving the relevant control variables. The results are consistent across all regressions.

As with the univariate analysis, domestic and focussed (DAF) deals have a consistently significant negative impact on acquirers' CARs, while diversified deals (DCI, CBF, CBCI) have a significant positive impact in most cases. These results suggest that diversification improves acquiring companies' shareholder wealth, which is consistent with several previous empirical studies (Focarelli, Pozzolo, and Salleo 2008, Raj and Uddin 2013, Danbolt and Maciver 2012, Selcuk and Kiymaz 2015).

In particular, it can be argued that the positive and consistent impact of cross-border and focussed deals (CBF) is supported by international diversification theory, where the CAPM or arbitrage pricing theory is extended to a multi-country context. In theory, there are always arbitrage gains from cross-border investments, and this extends to cross-border mergers. A similar reasoning can be applied to cross-border and cross-industry (CBCI) M&As by appealing to the international CAPM or arbitrage pricing theory perspective. Additionally, portfolio diversification theory suggests that cross-border diversification will drive down the cost of capital, especially if certain macroeconomic factors, like bilateral trade and regulation, are favourable.

On the other hand, the negative impact of domestic and focussed (DAF) deals could be attributed to a number of possible factors, including agency costs, over-optimism, or hubris. Several hypotheses have been studied previously which attempt to explain the sub-optimal

acquisitions sometimes made by CEOs which actually destroy shareholder value. Irrational exuberance is susceptible to the idea of personal wealth creation by managers at the expense of shareholders. Focussed acquisitions, in this sense, are value-destroying and might be driven by irrational decision-making. Additionally, focussed deals may imply lower efficiency in economies of scale or scope, so the expected marginal benefit might be less than the initial cost of acquisition as a possible overpayment.

To conclude, the empirical results reported here emphasise that activity and geographic diversification (CBCI) will generally improve acquiring companies' shareholder wealth. In contrast, the results show that focussed and domestic (DAF) deals reduce shareholder wealth. Importantly, these empirical results are consistent with several empirical studies. For example, Raj and Uddin (2013) and Focarelli, Pozzolo, and Salleo (2008) argue that focussed deals generally tend to involve underperforming targets. In the same vein, diversification tends to improve bidding companies' shareholder wealth as a result of significant opportunities for economies of scale and cost advantages.

5.4.3. Acquirer Bidding Experience (Frequent Bidders)

Table 5.17: Regressions Analysis for Acquirer Bidding Experience.

The dependent variable is acquirers' three-day CARs (-1,+1). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) cross-border and focused deals (CBF), (4) cross-border and cross-industry deals (CBCI), (5) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (6) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (7) Exp. 3-Y: the cumulative number of completed takeovers by the same acquirer during the preceding three years, (8) Exp. 5-Y: the cumulative number of completed takeovers by the same acquirer during the preceding five years, (9) Dum. Exp. 3-Y: a dummy variable equal to '1' if the same bidder has two or more completed deals over the three preceding years, and '0' otherwise, (10) Dum. Exp. 5-Y: a dummy variable equal to '1' if the same bidder has two or more completed deals over the five preceding years (a frequent bidder), and '0' otherwise. P-values are shown in parentheses. Models 1-6 are estimated using the entire sample (45,631 deals), and Models 7-12 are estimated using the sample of completed deals only (35,749 deals). Heteroskedasticity-corrected estimates are reported with p-values shown in parentheses. All estimations include year and industry effects, as well as country effects where possible.

	All Deals						Completed Deals Only					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
No. obs	45631	45631	45631	45631	45631	45631	35749	35749	35749	35749	35749	35749
R^2	0.013	0.013	0.014	0.014	0.014	0.013	0.014	0.014	0.014	0.015	0.014	0.014
Adjusted R^2	0.013	0.013	0.014	0.014	0.013	0.013	0.014	0.013	0.014	0.014	0.014	0.013
F-test	77.28	74.69	79.51	81.24	63.06	60.73	64.01	61.38	64.31	66.30	51.47	49.21
P-value(F)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.020	0.018	0.020	0.020	0.017	0.015	0.025	0.023	0.024	0.025	0.023	0.021
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Value of Trans.	-0.002	-0.003	-0.002	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP (Target)	0.003	0.004	0.004	0.004	0.004	0.004	0.002	0.002	0.002	0.003	0.002	0.003
	(0.002)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.107)	(0.081)	(0.075)	(0.046)	(0.060)	(0.047)
CBF					0.004	0.004					0.003	0.003
					(0.003)	(0.005)					(0.033)	(0.050)
CBCI					0.004	0.004					0.002	0.001
					(0.006)	(0.010)					(0.313)	(0.433)
Stock-Only	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.005	0.004
	(0.002)	(0.008)	(0.007)	(0.007)	(0.001)	(0.002)	(0.003)	(0.017)	(0.014)	(0.015)	(0.001)	(0.008)
Public	-0.014	-0.014	-0.014	-0.014	-0.014	-0.014	-0.014	-0.014	-0.015	-0.015	-0.014	-0.014
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Exp. 3-Y	-0.001				-0.001		-0.001				-0.001	
	(0.000)				(0.000)		(0.000)				(0.000)	
Exp. 5-Y		-0.001				-0.001		-0.001				-0.001
		(0.000)				(0.000)		(0.000)				(0.000)
Dum. Exp. Y-3			-0.007						-0.007			
			(0.000)						(0.000)			
Dum. Exp. Y-5				-0.008						-0.007		
				(0.000)						(0.000)		
Country Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Another important factor that may affect acquirers' shareholder returns is the bidder's prior experience of engaging in M&As. Some theoretical models highlight the 'learning by doing' hypothesis, which suggests that experience enhances the ability to identify and engage in more synergy-adding M&As, which will, in turn, lead to more significant long-term gains. However, when acquirers have hidden private information about synergy value (asymmetric

information), then the market may react negatively, even to synergy-creating deals (Moeller, Schlingemann, and Stulz 2007, Officer, Poulsen, and Stegemoller 2009).

Following the univariate analyses, this section extends the investigation by conducting regressions to test the impact of acquirer bidding experience on CARs. Table 5.17 above presents the results of these regressions, in which the dependent variable is acquirers' three-day CARs (-1,+1). Experience is represented by prior acquisitions using the cumulative number of completed takeovers by the same acquirer during the preceding three or five years (Exp. 3-Y, Exp. 5-Y) and by the corresponding dummy variables defined earlier (Dum. Exp. 3-Y, Dum. Exp. 5-Y). These are each considered individually in the regressions. The control variables include transaction value and GDP per capita of bidder and target countries. Additional explanatory variables include selective dummies to control for payment method, target status, and diversification—in this case using stock only, CBF, CBCI, and the public target dummy, although the other results involving cash payments and additional target dummies (not included here for reasons of space) are also consistent. As before, the regressions are conducted using the maximum number of observations (deals) available, subject to the availability of data involving the relevant control variables.

The results shown in Table 5.17 above are consistent across all regressions, and these findings reveal a significant negative impact of acquirer bidding experience on CARs, which is consistent with the univariate analyses. In addition, these findings hint at the possibility of irrational decision-making by acquirers, consistent with various hypotheses discussed in Chapter 2, where managers are driven by hubris or over-optimism rather than synergy gains. For example, Roll (1986) indicates that a lack of concern is often given to subsequent acquisitions after the first because over-confident managers, driven by the success of prior takeovers (hubris), tend to pay a higher price for subsequent targets, which can have a counterproductive impact on abnormal returns. Furthermore, the 'merger programme announcement' hypothesis suggests that a series of acquisitions will produce a negative impact on shareholder wealth if such actions are seen as part of the long-term strategy of acquirers.

5.5. Robustness Checks

This section conducts a further robustness analysis to assess the consistency of the above findings by introducing additional firm and deal-specific factors into the regressions. In total, the results of 37 regressions are reported below in three tables (Tables 5.18, 5.19 and 5.20). These are more or less distinguished by adding successively increasing layers of deal-specific factors in an attempt to investigate the combined impact of (i) target status and method of payment, (ii) diversification, and (iii) acquirer bidding experience on acquirers' CARs. At the same time, the regressions are reported to assess the consistency of the subsamples, which include all deals, completed deals only, deals involving acquirers from the U.S. only (as these make up a large part of the sample), and deals involving non-U.S. acquirers only. The latter two cases yield some particularly interesting results. Throughout all regressions, two additional control variables are included: acquirers' market-to-book ratio (M/B ratio) and acquirers' size. In addition, all year/industry/country fixed effects are included where possible. The dependent variable is acquirers' three-day CARs (-1,+1) in all regressions.

Table 5.18 reports the regression results assessing the combined impact of target status (public and private) and payment method (cash and stock only), estimated successively (every three columns), using samples covering (i) all deals, (ii) completed deals only, and (iii) deals involving U.S. acquirers only (however, in the final column, the estimation is conducted for the sample of non-U.S. acquirers only). For ease of analysis, the comparison is restricted to deals involving public vs. private targets[14] and cash vs. stock payment only[15].

Focussing on the first six columns, the results show that the impact of acquiring a public target is consistently negative while that of acquiring a private target is consistently positive, while the effects of cash and stock payments are negative and positive, respectively, in (a) the global sample and (b) the sample of completed deals. However, for deals involving U.S. acquirers only, the impact of cash vs. stock payments is no longer consistent with earlier results, since cash payments in this case confer a positive impact while stock payments have a negative impact on acquirers' returns. However, the latter effect is more consistent with that observed in U.S. studies (Ismail 2008) but does not hold for non-U.S. acquirers, as the results of estimation in Column 13 confirm.

[14] Including the dummy for public targets can also determine (by default) the effect of non-public targets (as being the opposite effect).

[15] Excluding the third category (i.e. subsidiary or mixed payment deals) avoids multicollinearity,

Columns 7-9 in Table 5.18 include all these factors (public, private, cash, and stock dummies), and the results are broadly consistent in terms of signs and magnitude, except that the impact of the private dummy is not statistically significant even though deals with public targets continue to have a negative and statistically significant effect.[16]

The next set of three columns adds the interaction effects associated with cash, stock, and public dummies, along with all the constituent terms included, and the main set of results remains unaffected. Thus, the results are consistent with earlier findings. In particular, the effect of acquiring public targets is negative, though cash payments for these deals (CHS×PUB) has an offsetting positive effect while the factor of stock payments seems to exacerbate the negative impact. Correspondingly, the opposite applies for non-public targets.

Table 5.19 reports a similarly estimated set of regression results assessing the combined effect of public target status, method of payment, and diversification. Again, most of the results confirm earlier findings, in particular, the impact of both activity and geographical (DCI, CBF, CBCI) diversified deals, which is consistently positive, while that of domestic and focussed deals (DAF) is negative. While adding these factors in the regressions, the impacts of cash payments and public target status remain consistent. An additional set of regression results (not reported here) also confirms that private (or non-public) targets and stock payments continue to have a broadly positive impact on acquirers' CARs.

Table 5.20 reports another similar set of results but considers the additional influence of acquirer bidding experience along with all other effects (i.e. diversification, public targets, cash, stock, and interaction terms [CSH×PUB and STC×PUB]). These results confirm that the impact of acquirer bidding experience is negative and, as found earlier, the rest of the results are also broadly consistent.

Importantly, the above results show that deals involving acquisition of public targets, acquirer bidding experience, and non-diversification (i.e. domestic and focussed) have a robustly negative impact, while diversification and the acquisition of non-public targets contribute to a positive impact on acquirer returns. Furthermore, cash payment deals generally have a negative impact while stock deals have a positive impact on acquirer returns, though this does

[16] This implies that non-public targets (both private and subsidiary) have a positive impact, but distinguishing deals with only private targets among these appears to cause an ambiguous effect and makes this case rather uninteresting. Hence, in the analysis that follows, only the public target dummy is included in the robustness regressions, implying a distinction between public and non-public cases.

not necessarily hold for U.S. acquirers. However, the results also confirm that the negative impact of acquiring public targets is offset in cash deals, and correspondingly, the positive impact of acquiring non-public targets is reduced by the factor of cash payment.

Table 5.18: Regressions Analysis for Robustness Checks (1).

The dependent variable is acquirers' three-day CARs (-1,+1). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (4) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (5) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (6) 'private' as a dummy variable equal to '1' if the deal involves a private target, '0' otherwise, (7) STC×PUB is an interaction variable equal to '1' for public targets paid for with stock-only, (8) CSH×PUB equal to '1' for public targets paid for with cash-only, (9) market-to-book ratio for acquiring firms on announcement day (M/B Ratio), and (10) Bidder size, proxied by market value of the acquiring firm four weeks prior to announcement. Models 1, 4, 7 and 10, are estimated using the largest available sample (28,800 deals). Models 2, 5, 8 and 11 are estimated using the sample of completed deals only (22,414 deals). Models 3, 6, 9 and 12 are estimated using the sample of deals involving U.S. acquirers only (11,403 deals). A model 13 is estimated using the sample of deals involving non-U.S. acquirers only (17,397 deals). Heteroskedasticity-corrected estimates are reported with p-values shown in parentheses. All estimations include year, industry, and country fixed effects where possible (subject to avoidance of multicollinearity).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	All	Comp.	US	All	Comp.	US	All	Comp.	US	All	Comp.	US	Non-USA
No. obs	28800	22414	11403	28800	22414	11403	28800	22414	11403	28800	22414	11403	17397
R^2	0.012	0.014	0.024	0.009	0.010	0.024	0.012	0.013	0.024	0.017	0.019	0.029	0.012
Adjusted R^2	0.012	0.014	0.023	0.009	0.009	0.023	0.011	0.013	0.023	0.016	0.019	0.028	0.011
F-test	40.20	35.97	35.16	29.70	24.14	34.88	30.64	27.43	28.38	37.21	33.65	28.76	16.42
P-value(F)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.019	0.028	0.020	0.022	0.030	0.043	0.016	0.024	0.023	0.022	0.031	0.026	0.014
	(0.000)	(0.000)	(0.307)	(0.000)	(0.000)	(0.041)	(0.001)	(0.000)	(0.241)	(0.000)	(0.000)	(0.173)	(0.007)
Value of Trans.	-0.002	-0.002	-0.005	-0.003	-0.003	-0.006	-0.002	-0.002	-0.005	-0.002	-0.002	-0.004	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.055)
GDP (Target)	0.003	0.001	0.004	0.001	-0.001	-0.002	0.003	0.001	0.003	0.002	0.001	0.004	0.002
	(0.020)	(0.577)	(0.414)	(0.361)	(0.635)	(0.660)	(0.008)	(0.364)	(0.464)	(0.042)	(0.619)	(0.352)	(0.037)
Cash-Only	-0.004	-0.003	0.007				-0.003	-0.002	0.005	-0.010	-0.011	-0.014	-0.007
	(0.000)	(0.011)	(0.001)				(0.014)	(0.171)	(0.039)	(0.000)	(0.000)	(0.000)	(0.000)
Stock-Only				0.002	0.001	-0.009	0.001	0.001	-0.007	0.015	0.015	-0.001	0.024
				(0.332)	(0.547)	(0.000)	(0.483)	(0.441)	(0.007)	(0.000)	(0.000)	(0.708)	(0.000)
Public	-0.015	-0.016	-0.018				-0.015	-0.017	-0.018	-0.021	-0.024	-0.032	-0.012
	(0.000)	(0.000)	(0.000)				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Private				0.007	0.008	0.014	-0.002	-0.002	-0.001	-0.003	-0.004	-0.005	-0.001
				(0.000)	(0.000)	(0.000)	(0.323)	(0.205)	(0.742)	(0.061)	(0.023)	(0.174)	(0.491)
STC×PUB										-0.022	-0.021	-0.007	-0.025
										(0.000)	(0.000)	(0.186)	(0.000)
CSH×PUB										0.019	0.021	0.032	0.004
										(0.000)	(0.000)	(0.000)	(0.177)
M/B Ratio	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.029)	(0.030)	(0.025)	(0.057)	(0.064)	(0.019)	(0.050)	(0.055)	(0.025)	(0.055)	(0.046)	(0.038)	(0.000)
Bidder Size	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.000
	(0.095)	(0.899)	(0.000)	(0.080)	(0.997)	(0.000)	(0.091)	(0.900)	(0.000)	(0.088)	(0.865)	(0.000)	(0.115)
Country Dumm.	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5.19: Regressions Analysis for Robustness Checks (2).

The dependent variable is acquirers' three-day CARs (-1,+1). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) domestic and focused deals (DAF), (4) domestic and cross-industry deals (DCI), (5) cross-border and focused deals (CBF), and (6) cross-border and cross-industry deals (CBCI), (7) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (8) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (9) market-to-book ratio for acquiring firms on announcement day (M/B Ratio), and (10) Bidder size, proxied by market value of the acquiring firm four weeks prior to announcement. Models 1, 4, 7, and 10 are estimated using the largest available sample (28,800 deals). Models 2, 5, 8, and 11 are estimated using the sample of completed deals only (22,414 deals). Models 3, 6, 9, and 12 are estimated using the sample of deals involving U.S. acquirers only (11,403 deals). Heteroskedasticity-corrected estimates are reported with p-values shown in parentheses. All estimations include year and industry effects, as well as country effects where possible (subject to avoidance of multicollinearity).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All	Comp.	US	All	Comp.	US	All	Comp.	US	All	Comp.	US
No. obs	28800	22414	11403	28800	22414	11403	28800	22414	11403	28800	22414	11403
R^2	0.013	0.015	0.025	0.013	0.014	0.025	0.013	0.014	0.024	0.013	0.014	0.025
Adjusted R^2	0.013	0.014	0.024	0.012	0.014	0.024	0.012	0.014	0.023	0.012	0.014	0.024
F-test	37.65	33.46	32.36	36.46	32.84	32.36	36.57	32.72	31.49	36.78	32.59	31.79
P-value(F)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.019	0.028	0.007	0.019	0.029	0.026	0.018	0.026	0.031	0.017	0.028	0.014
	(0.000)	(0.000)	(0.700)	(0.000)	(0.000)	(0.197)	(0.001)	(0.000)	(0.173)	(0.001)	(0.000)	(0.472)
Value of Trans.	-0.002	-0.002	-0.005	-0.002	-0.002	-0.005	-0.002	-0.002	-0.005	-0.002	-0.002	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP (Target)	0.003	0.001	0.007	0.003	0.000	0.002	0.003	0.001	0.001	0.003	0.001	0.005
	(0.011)	(0.464)	(0.112)	(0.027)	(0.770)	(0.687)	(0.013)	(0.447)	(0.805)	(0.012)	(0.592)	(0.269)
DAF	-0.004	-0.004	-0.005									
	(0.001)	(0.006)	(0.010)									
DCI				0.000	0.001	0.005						
				(0.952)	(0.410)	(0.025)						
CBF							0.003	0.004	-0.002			
							(0.049)	(0.052)	(0.637)			
CBCI										0.006	0.003	0.005
										(0.004)	(0.222)	(0.197)
Cash-Only	-0.004	-0.004	0.007	-0.004	-0.003	0.007	-0.004	-0.003	0.007	-0.004	-0.003	0.007
	(0.000)	(0.006)	(0.001)	(0.000)	(0.015)	(0.000)	(0.000)	(0.009)	(0.001)	(0.000)	(0.010)	(0.001)
Public	-0.015	-0.016	-0.018	-0.015	-0.016	-0.018	-0.015	-0.016	-0.018	-0.015	-0.016	-0.018
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M/B Ratio	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.031)	(0.030)	(0.008)	(0.029)	(0.030)	(0.007)	(0.028)	(0.029)	(0.023)	(0.032)	(0.029)	(0.020)
Bidder Size	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001
	(0.100)	(0.886)	(0.000)	(0.093)	(0.897)	(0.000)	(0.095)	(0.900)	(0.000)	(0.104)	(0.891)	(0.000)
Country Dumm.	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5.20: Regressions Analysis for Robustness Checks (3).

The dependent variable is acquirers' three-day CARs (-1,+1). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) domestic and focused deals (DAF), (4) domestic and cross-industry deals (DCI), (5) cross-border and focused deals (CBF), and (6) cross-border and cross-industry deals (CBCI), (7) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (8) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (9) Exp. 5-Y is the cumulative number of completed takeovers by the same acquirer during the preceding five years, (10) STC×PUB is an interaction variable equal to '1' for public targets paid for with stock-only, (11) STC×PRV is an interaction variable equal to '1' for private targets paid for with stock-only, (12) market-to-book ratio for acquiring firms on announcement day (M/B Ratio), and (13) Bidder size, proxied by market value of the acquiring firm four weeks prior to announcement. Models 1, 4, 7, and 10 are estimated using the largest available sample (28,800 deals). Models 2, 5, 8, and 11 are estimated using the sample of completed deals only (22,414 deals). Models 3, 6, 9, and 12 are estimated using the sample of deals involving U.S. acquirers only (11,403 deals). Heteroskedasticity-corrected estimates are reported with p-values shown in parentheses. All estimations include year and industry effects, as well as country effects where possible (subject to avoidance of multicollinearity).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All	Comp.	US	All	Comp.	US	All	Comp.	US	All	Comp.	US
No. obs	28800	22414	11403	28800	22414	11403	28800	22414	11403	28800	22414	11403
R^2	0.016	0.018	0.025	0.016	0.018	0.025	0.016	0.018	0.025	0.016	0.018	0.025
Adjusted R^2	0.016	0.018	0.024	0.016	0.018	0.024	0.015	0.018	0.024	0.016	0.018	0.024
F-test	36.57	32.19	24.66	36.07	32.27	24.73	35.82	32.08	24.32	36.02	32.03	24.35
P-value(F)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.023	0.031	0.008	0.023	0.031	0.022	0.022	0.029	0.030	0.021	0.030	0.013
	(0.000)	(0.000)	(0.649)	(0.000)	(0.000)	(0.215)	(0.000)	(0.000)	(0.152)	(0.000)	(0.000)	(0.479)
Value of Trans.	-0.002	-0.002	-0.004	-0.002	-0.002	-0.004	-0.002	-0.002	-0.005	-0.002	-0.002	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP (Target)	0.002	0.000	0.006	0.001	-0.001	0.002	0.002	0.000	0.001	0.002	0.000	0.004
	(0.124)	(0.923)	(0.158)	(0.198)	(0.652)	(0.639)	(0.123)	(0.977)	(0.879)	(0.122)	(0.817)	(0.329)
DAF	-0.003	-0.003	-0.004									
	(0.009)	(0.035)	(0.040)									
DCI				0.000	0.000	0.003						
				(0.790)	(0.697)	(0.074)						
CBF							0.003	0.003	-0.003			
							(0.099)	(0.130)	(0.458)			
CBCI										0.005	0.002	0.005
										(0.006)	(0.279)	(0.182)
Cash-Only	-0.005	-0.004	0.004	-0.005	-0.003	0.004	-0.005	-0.004	0.004	-0.005	-0.004	0.004
	(0.000)	(0.005)	(0.074)	(0.000)	(0.008)	(0.064)	(0.000)	(0.005)	(0.061)	(0.000)	(0.007)	(0.070)
Public	-0.009	-0.010	-0.010	-0.009	-0.010	-0.010	-0.009	-0.010	-0.010	-0.009	-0.010	-0.010
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Exp. 5-Y	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
STC×PUB	-0.013	-0.012	-0.011	-0.013	-0.012	-0.011	-0.013	-0.012	-0.011	-0.013	-0.012	-0.011
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
STC×PRV	0.014	0.015	0.005	0.014	0.015	0.005	0.014	0.015	0.006	0.014	0.016	0.006
	(0.000)	(0.000)	(0.136)	(0.000)	(0.000)	(0.136)	(0.000)	(0.000)	(0.112)	(0.000)	(0.000)	(0.093)
M/B Ratio	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.075)	(0.057)	(0.014)	(0.075)	(0.063)	(0.012)	(0.068)	(0.049)	(0.033)	(0.077)	(0.057)	(0.029)
Bidder Size	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001
	(0.085)	(0.893)	(0.000)	(0.080)	(0.900)	(0.000)	(0.082)	(0.905)	(0.000)	(0.091)	(0.895)	(0.000)
Country Dumm.	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

5.6. Conclusion

This chapter has considered the impact of M&As on acquirers' returns using evidence based on the event study and CAR regressions methods in order to test four main hypotheses relating to target status, method of payment, diversification, and acquirer bidding experience. In testing these hypotheses, both parametric and non-parametric tests have been employed on a global sample of 46,758 M&As deals that occurred during the period 1977-2012, with robustness analyses carried out on sub-samples of data to assess the consistency of results.

In line with the hypotheses investigated, the empirical results have consistently shown that:

- Acquiring company shareholder returns are negatively correlated to acquisitions of public target firms but positively related to acquisitions of non-public target firms, which include private and subsidiary targets.
- Cash payments for acquisitions confer a negative impact on acquirer returns while stock payments have a positive impact. This effect is not robust across all samples and does not specifically hold for U.S. acquirers. However, cash payments for acquisitions serve to reduce the negative impact of acquiring public targets while stock payments enhance the positive impact of acquiring non-public targets in all cases.
- Diversification benefits acquiring company shareholder wealth in that deals involving both cross-industry (activity) and cross-border acquisitions are associated with improved acquirer returns. On the other hand, domestic and focussed deals appear to destroy shareholder value.
- Acquirer bidding experience has a robustly negative impact on shareholder wealth in that frequent acquisition (or bidding) contributes to the destruction of shareholder wealth more than single acquisitions, which is consistent with the hubris hypothesis.

The next chapter investigates the impact of the above factors on acquirers' market risk and the probability of deal failure.

Chapter 6: Further Empirical Analysis: Acquirers' Market Risk and the Probability of Deal Failure

6.1. Introduction

This chapter extends the empirical analysis to evaluate the impact of M&As on acquirers' market risk and, additionally, on the probability of deal failure after announcement. In both cases, the analysis focusses on testing the four main hypotheses relating to (i) target status, (ii) method of payment, (iii) diversification, and (iv) acquirer bidding experience. However, differences in methodological approaches and the need to account for prior empirical work require that additional considerations be introduced in each part of the analysis in order to assess the importance and consistency of the results.

The first part of this chapter (Section 6.2) evaluates the influence of M&A factors on acquirers' market risk, which is estimated by the change in the systematic risk (beta) component of an acquirer's total (portfolio) risk. In testing the aforementioned hypotheses, the empirical strategy, as outlined in Chapter 4, will focus initially on univariate analyses highlighting the results of both parametric (independent samples t-tests) and nonparametric (Mann-Whitney U tests) tests. This is followed by a multivariable analysis highlighting the results of risk regressions which assess the relative importance of various factors that can influence the change in acquirers' risk at the time of deal announcement.

The second part of this chapter (Section 6.3) investigates whether the probability of deal failure is influenced by the range of factors that affect acquirers' characteristics as well as by the relevant deal categories that relate to the aforementioned four hypotheses. Here, the analysis follows a similar methodological approach using univariate analysis (Pearson's chi-square tests for categorical variables) followed by probit/logit regressions to identify the specific factors which can influence the probability of deal failure.

6.2. Acquirers' Market Risk

To analyse the impact of M&As on acquirers' market risk (and cost of capital), this section follows the approach of Amihud, Delong, and Saunders (2002), Focarelli, Pozzolo, and Salleo (2008), and Casu *et al*. (2015), among others, to measure acquirers' systematic risk as defined by the market risk (beta) of assets. As explained in Chapter 4, a two-step approach to testing the relevant hypotheses is followed. In the first step, an estimate of an acquirer's

market risk is obtained using the CAPM model. The use of CAPM is necessary in order to obtain an estimate of the change in acquirers' market risk (beta), which reflects its systematic volatility, brought about by the deal announcement. The second step involves conducting both univariate and multivariate analyses in order to test the main hypotheses relating to the impact of method of payment, target status, diversification, and acquirer bidding experience on acquirers' market risk.

As illustrated in Chapter 4, systematic or market risk, as represented by beta, is the covariance between an acquirer's return on asset *i* and the market (index) return divided by the variance in the market return:

$$Beta_{i,m} = \frac{Cov(i,m)}{\sigma_m^2} \qquad (6.1)$$

To calculate the above measure of beta, daily data on acquirer share price and the home market index were obtained for 260 working days before and after the announcement of each M&A deal in the sample. Daily market returns were calculated using the benchmark local price index (available in Datastream, code LI). Using these daily returns, an average beta value before and after the announcement date of the deal was then calculated based on the formula above (using a MATLAB program)

A measure of the change in market risk (ΔBeta) is thus the difference between an acquirer's average beta in the post- and pre-merger periods (i.e. ΔBeta = beta after deal – beta before deal). Pre-merger beta was calculated for the period –260 to –20 days before the announcement date, and post-merger beta was calculated for the period +20 to +260 days after the announcement date. These windows allow the change in acquirers' market risk to be captured for the period surrounding an M&A deal. The change in beta before and after the event represents an estimate of the systematic volatility brought about by deal announcements on the share prices of acquirers' stock, and therefore on their cost of capital (Focarelli, Pozzolo, and Salleo 2008, Evripidou 2012).

The period of study for this analysis is 1977-2012, which allows for a sample of 34,221 completed deals covering 180 countries and 88 industries. For the analysis of market risk, only completed deals are considered in order to avoid distortions caused by deals that were terminated in the post-event period over which the change in beta is calculated. For example, according to the sample, 3,064 deals were terminated during the 364 days after the

announcement date, and therefore it is not appropriate to include such deals in the evaluation of acquirers' market risk.

6.2.1. Univariate Analysis

The main hypothesis tested here is that there is no significant difference in acquirers' market risk before and after the announcement of an M&A deal. This requires testing the statistical significance of the change in acquirers' market risk (ΔBeta) for the overall sample of completed deals. However, the analysis in this section is extended to test acquirers' market risk for the relevant categories of deals, distinguishing between (i) cash and stock payments, (ii) public and non-public targets, (iii) focussed vs. diversified deals, and (iv) single vs. multiple acquirers. In principle, these are similar to the four main sub-hypotheses investigated in the case of acquirers' returns, but here the analysis requires that a distinction be drawn between the pre- and post-event market risk of the acquirer in addition to the criteria that distinguish the relevant sub-samples. More precisely, apart from testing the statistical significance of the change in acquirers' beta for each category pertaining to the four criteria above, the analysis requires that the mean differences in the change in beta be tested in accordance with the following hypotheses:

- There are no significant differences in the change in acquirers' market risk between M&A deals based on the use of cash and stock payments.
- There are no significant differences in the change in acquirers' market risk between M&A deals based on the involvement of public and non-public (private and subsidiary) targets.
- There are no significant differences in the change in acquirers' market risk between focussed and diversified deals.
- There are no significant differences in the change in acquirers' market risk between single and multiple acquirers.

Table 6.1 below presents the main results on acquirers' beta statistics for the entire sample of 34,221 completed deals as well as for the relevant sub-samples identified in accordance with the need to test the above sub-hypotheses. As before, both parametric (independent samples t-test) and non-parametric (Mann-Whitney U test) tests are employed to test for mean differences in ΔBeta between the relevant categories, while the statistical significance of the change in average beta pre- and post-deals is determined using a simple t-test. Only the main results for the sub-categories of the sample are presented in the table. However, more detailed

test results were also performed for further evaluation of the above hypotheses, and these are presented in the Appendix to this chapter.

Table 6.1: Acquirers' Market Risk.

'Beta before deal' and 'Beta after deal' refer to acquirers' pre-merger and post-merger market risk, respectively, calculated for the periods –260 to –20 before and +20 to +260 after announcement day, using a standard CAPM model. ΔBeta = Beta after deal – Beta before deal. Beta is the covariance between an acquirer's returns and the benchmark local price index returns (DataStream Code: LI) divided by the variance in the benchmark local price index returns. The relevant sub-categories are determined using the dummy variables including: (1) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (2) 'private' as a dummy variable equal to '1' if the deal involves a private target, '0' otherwise, and (3) 'subsidiary' as a dummy variable equal to '1' if the deals involves a subsidiary target, '0' otherwise, (4) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (5) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (6) domestic and focused deals (DAF), (7) domestic and cross-industry deals (DCI), (8) cross-border and focused deals (CBF), and (9) cross-border and cross-industry deals (CBCI), (10) Dum. Exp. 3-Y: a dummy variable equal to '1' if the same bidder has two or more completed deals over the three preceding years, and '0' otherwise, (11) Dum. Exp. 5-Y: a dummy variable equal to '1' if the same bidder has two or more completed deals over the five preceding years (a frequent bidder), and '0' otherwise. The univariate tests of mean differences in ΔBeta test the null hypothesis that the deals belong to that category (e.g. Public) or not. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

One-Sample Statistics						
	N	Mean	Median	Std. Dev.	Std. Error	Sig.
Beta before deal	34221	0.730	0.691	0.595	0.0032	0.000***
Beta after deal	34221	0.751	0.715	0.596	0.0032	0.000***
Δ Beta	34221	0.021	0.015	0.56	0.003	0.000***

Subsample Statistics for deals with		**Independent Samples t-Test**			**Mann-Whitney U-test**		
	N	Δ Beta	Mean Diff.	p-value	Mean Rank	Z	p-value
Public	10869	0.0179***	-0.005	0.406	17098	-0.169	0.865
Private	16145	0.0218***	0.001	0.872	17124	-0.169	0.865
Subsidiary	7207	0.0252***	0.005	0.478	17102	-0.092	0.927
Cash-Only	10167	0.0092**	-0.0173	.003***	16843	-3.267	.001***
Stock-Only	8594	0.0329***	0.0155	.049**	17274	-1.765	.078*
DAF	13791	0.0281***	0.0113	.063*	17220	-1.671	.095*
DCI	12208	0.0152***	-0.0095	0.134	17039	-0.999	0.318
CBF	4669	0.016**	-0.0061	0.485	17004	-0.798	0.425
CBCI	3553	0.023***	0.0019	0.847	17076	-0.22	0.825
Dum Exp. 3-Y	16382	0.0297***	0.008	.0161**	17324	-3.829	.000***
Dum Exp. 5-Y	19181	0.0301***	0.001	.0200**	17327	-4.573	.000***

The overall results indicate that acquirers' market risk increases after M&As for the overall sample as well as for all the sub-categories considered. For the overall sample, the average 'Beta before deal' is 0.730, and the average 'Beta after deal' is 0.751. Thus, the increase in beta is 0.021, which is statistically significant. This result is consistent with other empirical studies. For example, Amihud, Delong, and Saunders (2002) and Focarelli, Pozzolo, and

Salleo (2008) report slight increases in average betas of 0.0234 and 0.023 respectively. In the above results, as in Focarelli, Pozzolo, and Salleo (2008), ΔBeta is statistically significant, suggesting that acquirers' cost of capital increases after M&As. Furthermore, the results confirm that acquirers' market risk increases with deal announcements irrespective of the nature of the deal, given that all categories of deals have a positive and statistically significant ΔBeta. However, the mean differences in ΔBeta within each category are not always statistically significant. More specifically, in line with the above hypotheses, the findings indicate that:

- Cash payment deals incur lower risk for acquirers than stock payment deals, and the mean differences between cash vs. non-cash and stock vs. non-stock deals are statistically significant. Thus, method of payment affects acquirers' market risk.
- Deals with non-public (i.e. private and subsidiary) targets incur higher market risk for acquirers than deals with public targets, although the mean differences between public vs. non-public targets are not statistically significant.
- Focussed deals yield slightly higher market risk for acquirers than diversified deals, although the mean differences are not statistically significant (except in the case of focussed vs. non-focussed deals, which are significant at the 10% level).
- Acquirers' market risk increases with multiple prior M&As, and the mean difference in risk between multiple acquirers and single acquirers is statistically significant.

An explanation for the increase in post-merger market risk is that an acquirer's beta may be lower than the beta of the target, so that during the takeover process, there is likely to be an increase in the acquirer's beta in light of the expectation that the beta value of the combined entity will reflect the betas of both the acquirer and the target. This is a basic theoretical argument drawn from a portfolio investment viewpoint, and such an increase is more likely in the case of greater information asymmetry between managers and investors. Furthermore, as noted in Chapter 2, there are specific market risks associated with M&As, particularly in the case of cross-border or cross-industry expansion, which may offset any risk reduction associated with diversification. For instance, increased risk could be associated with greater monitoring costs in diversified deals if the target firm's customer base is high.

The above findings on domestic and focussed deals contrast with those of some prior studies investigating vertical vs. horizontal mergers. Chatterjee *et al.* (1992) observe that for mergers which are related, greater synergy may be generated, since it is assumed that there is a market

expectation that if the merger is related, then the streams of cash flow will be significantly influenced, which will further impact the beta values of both firms. There is, however, conflicting evidence regarding the impact of activity and geographic diversification on acquirers' market risk, as reviewed in Chapter 3. Amihud, Delong, and Saunders (2002) found that, on average, there is neither an increase nor a decrease in acquirer systematic risk via cross-border takeovers in banking.

With regard to the impact of acquirer bidding experience, the results support the hubris hypothesis, which is consistent with the results obtained for acquirers' returns in that higher market risk for multiple acquirers could be associated with lower acquirer returns. However, M&As are shown to increase market risk for both single and multiple acquirers.

6.2.2. Acquirers' Market Risk According to Pre-Beta

The above analysis does not explicitly take into account the impact of M&As on acquirers' market risk while controlling for their *ex-ante* risk. Based on insights drawn from studies which control for acquirers' 'pre-beta' values in risk regressions (e.g. Focarelli, Pozzolo, and Salleo, 2008), this section attempts to re-analyse the results by examining whether M&As reduce the market risk of acquirers with high *ex-ante* market risk, and correspondingly increase the risk of acquirers with lower *ex-ante* market risk (relative to the beta of the home market portfolio). Specifically, the main hypothesis relating to the overall impact of M&As can be broken down into the following sub-hypotheses:

- M&As increase acquirers' market risk if their *ex-ante* market risk is lower than the risk of the market portfolio (i.e. beta before deal <1).
- M&As decrease acquirers' market risk if their *ex-ante* market risk is higher than the risk of the market portfolio (i.e. beta before deal >1).

The above propositions can be tested by splitting the overall sample of M&A deals into two groups according to whether acquirers' 'pre-beta' values (i.e. beta before the deal) are less than or greater than the beta of the market portfolio. Table 6.2 below presents the results for acquirers' beta statistics for the two sub-samples, comprising 24,058 successful deals with acquirers' pre-beta <1 and 10,163 successful deals with pre-beta >1. The table also shows the statistics for the relevant sub-categories, as in Table 6.1, but in this case, it is not essential to test for mean differences.

Table 6.2: Acquirers' Market Risk According to Pre-Beta Values.

The sample of deals is divided according to whether acquirers' *ex-ante* beta values are less than or greater than 1. The relevant sub-categories are determined using the dummy variables including: (1) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (2) 'private' as a dummy variable equal to '1' if the deal involves a private target, '0' otherwise, and (3) 'subsidiary' as a dummy variable equal to '1' if the deals involves a subsidiary target, '0' otherwise, (4) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (5) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (6) domestic and focused deals (DAF), (7) domestic and cross-industry deals (DCI), (8) cross-border and focused deals (CBF), and (9) cross-border and cross-industry deals (CBCI), (10) Dum. Exp. 3-Y: a dummy variable equal to '1' if the same bidder has two or more completed deals over the three preceding years, and '0' otherwise, (11) Dum. Exp. 5-Y: a dummy variable equal to '1' if the same bidder has two or more completed deals over the five preceding years (a frequent bidder), and '0' otherwise. The univariate tests of mean differences in ΔBeta test the null hypothesis that the deals belong to that category (e.g. Public) or not. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

		N	Mean	Std. Deviation	Std. Error Mean	p-value
Pre-Beta<1	Beta before deal.	24058	.4421	.3861	.0025	.000***
	Beta after deal.		.5664	.4948	.0032	.000***
	Δ Beta		.1243	.4930	.0032	.000***
Pre-Beta>1	Beta Before deal.	10163	1.4106	.4251	.0042	.000***
	Beta After deal.		1.1882	.5858	.0058	.000***
	Δ Beta		-.2224	.6283	.0062	.000***

	Pre-Beta<1				Pre-Beta>1			
Δ Beta	Mean	Median	Std. Deviation	Std. Err.	Mean	Median	Std. Deviation	Std. Err.
All Sample	.1243***	.0721	.4930	.0032	-.2224***	-.1707	.6283	.0062
Public	.1133***	.0728	.4038	.0047	-.1802***	-.1524	.5293	.0089
Private	.1317***	.0720	.5504	.0051	-.2731***	-.2121	.7255	.0110
Sub.	.1229***	.0718	.4680	.0066	-.1899***	-.1430	.5564	.0117
Cash-Only	.0926***	.0569	.3830	.0046	-.1792***	-.1482	.4435	.0079
Stock-Only	.1669***	.0992	.5874	.0077	-.2482***	-.2143	.7149	.0136
Dum Exp. 5-Y	.1317***	.0828	.4487	.0039	-.1831***	-.1551	.5905	.0075
Dum Exp. 3-Y	.1295***	.0814	.4454	.0042	-.1763***	-.1520	.5926	.0081
DAF	.1287***	.0741	.4792	.0048	-.2199***	-.1773	.5905	.0094
DCI	.1238***	.0738	.5267	.0057	-.2488***	-.1820	.7022	.0118
CBF	.1203***	.0695	.4420	.0079	-.1979***	-.1525	.5659	.0145
CBCI	.1131***	.0649	.4864	.0098	-.1798***	-.1295	.5852	.0177

Interestingly, the results show that, in the overall sample, ΔBeta is positive (0.1243) for acquirers with pre-beta <1 and negative (–0.2224) for acquirers with pre-beta >1. This result suggests that M&As increased acquirers' market risk in cases involving relatively low *ex-ante* market risk (in relation to the beta of the market portfolio) and reduced their risk in cases involving relatively high *ex-ante* market risk. These results are similar for all sub-categories of the sample, implying that the above finding holds irrespective of the nature of a deal.

There may be several reasons why acquirers benefit from risk-reduction through M&As if their *ex-ante* risk is high compared to that of the home index. Diversification and synergy

motives are obvious examples of risk reduction where efficiency gains are possible. However, this logic does not explain the opposite effect, i.e. where acquirers with lower systematic risk have their risk increased after M&As. In general, the findings indicate that low-risk acquirers increase their systematic risk by engaging in M&As while high-risk acquirers reduce their systematic risk by doing so.

This section has provided a new perspective regarding the impact of M&As on acquirers' market risk in that no previous study has examined this impact by taking into account companies' pre-existing market risk. However, it should be borne in mind that the above results are considered in relation to the relevant categories of the dichotomous independent variables (i.e. cash or stock payment deals, target status, diversification, and prior acquisition experience) as well as for the overall sample and does not account for the influence of other conditioning factors which might affect acquirers' risk. Regression-based studies have confirmed that the impact of acquirers' pre-beta on market risk is generally negative, which in a sense confirms the above finding.

6.2.3. Risk Regressions

The purpose of this section is to supplement the above findings using cross-sectional risk regressions with heteroskedasticity-corrected estimates in order to allow for further investigation of the aforementioned hypotheses through the addition of relevant conditioning variables to assess the impact of M&As on change in acquirers' market risk (as measured by ΔBeta). Consistent with the analysis of acquirers' shareholder returns, the regressions below attempt to account for the impact of the following specific factors:

1. Target Status
2. Method of payment
3. Activity and geographical diversification
4. Acquirer bidding experience

Given the consistency of the results obtained in the case of CAR regressions, it is convenient to include all these factors together in the risk regressions rather than assess them individually. Following previous studies, several control variables are also included in the risk regressions to account for firm- and country-level heterogeneity. In all regressions, the minimum set of control variables includes acquirers' pre-beta (to control for their prior risk),

target size (proxied by deal value), bidder size (proxied by acquirers' market capitalisation), and the GDP per capita of both bidder and target countries. Additionally, in some regressions, acquirers' market-to-book ratio, interaction effects, and proxies are included to control for legal origin and institutional quality in bidder and target countries, noting that the inclusion of these variables reduces the sample size and is therefore used to assess the consistency of the results.

Table 6.3: Acquirers' Market Risk Regressions.

The dependent variable is the change in acquirers' market risk (ΔBeta). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) domestic and focused deals (DAF), (4) domestic and cross-industry deals (DCI), (5) cross-border and focused deals (CBF), and (6) cross-border and cross-industry deals (CBCI), (7) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (8) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (9) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (10) 'private' as a dummy variable equal to '1' if the deal involves a private target, '0' otherwise, (11) Exp. 3-Y: the cumulative number of completed takeovers by the same acquirer during the preceding three years, (12) legal and institutional quality in target countries, (13) STC×PUB is an interaction variable equal to '1' for public targets paid for with stock-only, (14) CSH×PUB equal to '1' for public targets paid for with cash-only, (15) market-to-book ratio for acquiring firms on announcement day (M/B Ratio), (16) legal origin (represented by a common law dummy) for target countries, (17) acquirers' pre-beta (beta before deal), measured over the period –260 to –20 before announcement day), (18) bidder size, measured by the logarithm of acquirers' market capitalisation four weeks prior to announcement day. Models 1-9 are estimated using the entire sample (33,488 deals), while Models 10-11 are estimated for U.S. acquirers and non-U.S. acquirers respectively. Heteroskedasticity-corrected estimates are reported with p-values shown in parentheses. All estimations include year and industry effects, as well as country effects where possible (subject to avoidance of multicollinearity).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
No. obs	33488	33488	33488	33488	33488	33488	33488	33488	25468	10225	15243
R^2	0.170	0.172	0.173	0.174	0.174	0.174	0.174	0.175	0.181	0.228	0.258
Adjusted R^2	0.169	0.172	0.173	0.173	0.174	0.174	0.174	0.174	0.180	0.227	0.257
F-test	854.34	867.53	701.58	703.88	544.14	543.88	544.29	544.93	281.04	158.73	265.14
P-value(F)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.227	0.232	0.222	0.229	0.224	0.222	0.227	0.224	0.228	0.014	0.316
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.923)	(0.000)
Value of Trans.	0.009	0.008	0.013	0.011	0.014	0.014	0.014	0.013	0.012	-0.008	0.011
	(0.007)	(0.013)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.280)	(0.012)
GDP (Target)	-0.007	-0.012	-0.010	-0.013	-0.010	-0.012	-0.011	-0.011	-0.006	0.040	-0.025
	(0.194)	(0.030)	(0.096)	(0.022)	(0.077)	(0.043)	(0.047)	(0.053)	(0.335)	(0.194)	(0.000)
DAF					-0.007						
					(0.140)						
DCI						0.010			0.011	0.006	0.016
						(0.028)			(0.063)	(0.540)	(0.028)
CBF							-0.001		0.003	0.074	-0.006
							(0.885)		(0.706)	(0.001)	(0.532)
CBCI								-0.007	0.005	0.049	0.008
								(0.359)	(0.563)	(0.034)	(0.422)
Cash-Only	-0.024		-0.009	-0.010	-0.009	-0.009	-0.009	-0.009	-0.014	-0.014	-0.012
	(0.000)		(0.064)	(0.058)	(0.069)	(0.074)	(0.087)	(0.089)	(0.054)	(0.328)	(0.126)
Stock-Only		0.043	0.041	0.038	0.039	0.039	0.038	0.038	0.052	0.037	0.031
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.020)	(0.013)
Public			-0.024		-0.018	-0.018	-0.019	-0.019	-0.027	-0.032	-0.026
			(0.000)		(0.005)	(0.004)	(0.003)	(0.003)	(0.005)	(0.087)	(0.021)
Private				0.017	0.008	0.007	0.007	0.007	0.009	0.031	-0.011
				(0.000)	(0.208)	(0.222)	(0.234)	(0.236)	(0.187)	(0.045)	(0.131)
Exp. 3-Y					0.002	0.002	0.002	0.002	0.005	0.004	0.009
					(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Legal Ins Quality (Target)									-0.003	-0.006	-0.005
									(0.381)	(0.443)	(0.269)
STC×PUB									-0.007	0.009	0.018
									(0.630)	(0.676)	(0.325)
CSH×PUB									0.007	-0.014	0.020
									(0.540)	(0.508)	(0.167)
M/B Ratio									0.000	0.002	0.000
									(0.290)	(0.000)	(0.000)
Common Law (Target)									0.023	0.043	-0.003
									(0.000)	(0.081)	(0.692)
Pre-Beta	-0.395	-0.399	-0.400	-0.399	-0.400	-0.401	-0.400	-0.401	-0.397	-0.438	-0.371
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bidder Size	0.067	0.069	0.069	0.069	0.067	0.068	0.067	0.068	0.061	0.084	0.052
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6.3 presents the results of 11 models aiming to analyse the impact of the above M&A factors on acquirers' market risk. The first eight models are estimated using the entire sample of completed deals (reduced to 33,474 deals owing to the need to include additional control variables) by selectively including the relevant explanatory variables associated with method of payment, target status, diversification, and acquirer bidding experience. Model 9 includes all the variables where possible, and Models 10-11 are estimated for deals involving only U.S. and non-U.S. acquirers respectively. All regressions are statistically significant, as confirmed by the value of the F-statistic. The explanatory power indicated the values of R^2 and adjusted R^2 is generally low, but they are consistent with most prior empirical research using cross-sectional market data.

The results show that the impact of acquiring a public target on acquirers' market risk is negative and statistically significant across all models, while that of acquiring non-public (private or subsidiary) targets is consistently positive but not always statistically significant (especially when public and private dummies are included together). However, the results are consistent with the univariate results in that deals with non-public targets incur higher market risk for acquirers than deals with public targets. In fact, the regression results suggest that public targets reduce acquirers' market risk. This observation is consistent with standard portfolio theory, which suggests that lower risk is associated with lower returns for acquirers in such deals, as observed in Chapter 5. Conversely, there is greater information asymmetry associated with the acquisition of private or subsidiary targets (compared to that associated with public targets), which may increase acquirers' market risk but also yield higher returns.

With regard to method of payment (cash vs. stock), the results confirm a negative effect of cash payment deals but a positive effect of stock payment deals, both being statistically significant. Hence, cash payment deals incur lower risk for acquirers while stock payment deals increase their risk. Again, this result is consistent with standard portfolio theory as higher returns were observed for acquirers engaging in stock deals than for those engaging in cash deals in the overall sample. However, as observed in Chapter 5, lower acquirer returns were associated with the acquisition of public targets in stock payment deals due to the market's perception of overvaluation as a result of asymmetric information. It is therefore interesting to consider whether this may have the effect of reducing acquirers' risk. Hence, the interaction terms STC×PUB and CHS×PUB are added in Model 9, and the results seem to confirm a negative effect of STC×PUB, although it is not statistically significant.

Considering the impact of diversification, all the results are statistically insignificant at the 1% level (Columns 5-11) except for the sample of U.S. acquirers, for whom cross-border deals appear to slightly increase risk. On the whole, diversification has little or no impact on acquirers' risk, a result which stands in contrast to the standard international diversification theory (which suggests that diversification or integration of markets may reduce systematic risk). However, as observed in Chapter 2, there can be several factors which may also increase risk with international diversification, and the association between the two is thus not clear cut. The univariate results showed that focussed deals yielded slightly higher market risk for acquirers than diversified deals, although the mean differences were not statistically significant. Controlling for other factors in the risk regressions, the results confirm no significant impact of diversification on acquirers' risk.

In contrast, acquirers' prior experience has a positive and statistically significant impact on acquirers' market risk. As observed in the univariate results, acquirers' market risk is higher for multiple than for single bidders. Lower shareholder returns were also associated with multiple acquirers, as observed in Chapter 5. These results, therefore, cannot be easily explained by standard portfolio theory, which assumes rational decision-making. However, the results seem consistent with the explanations offered by hubris theory, which suggests that multiple acquirers may destroy value as well as incur higher risk for shareholders.

As for the control variables, the results clearly show that acquirers' pre-beta is significantly and negatively associated with change in acquirers' market risk, and this is consistent with the findings of the univariate analysis. Hackberth and Morallec (2008) argue that a pre-merger run-down on the acquirer's stock may occur if the acquirer's core asset beta values are lower than the target's core asset beta values, and the opposite is true when bidder beta values are significantly larger than those of the target. Hence, this market response could explain the change in the systematic risk factors.

In addition, the results show a positive impact of target size (proxied by deal values) and acquirer size on acquirers' market risk. An acquirer's size may also reflect the systematic risk of the firm, since it captures a firm's leverage capacity. The results also show a significant negative impact of target country GDP and an insignificant impact of acquirer country GDP. This is consistent with standard diversification theory, since GDP can be considered a proxy for economic development, suggesting that bidders aiming for larger targets may benefit more from geographical diversification, which is also reflected in the significant negative

impact on the beta values of acquirers. The results also confirm that a strong legal and institutional environment in the bidder country also reduces acquirers' risk.

6.2.4. Robustness Check

As a robustness check, the estimations in Table 6.4 below report the results by splitting the global sample of M&A deals into two groups according to whether acquirers' 'pre-beta' values (i.e. beta before deal) are less than or greater than the beta of market portfolio, as with the univariate analysis above. This sample-split reveals a higher proportion of acquirers with pre-beta <1 in the entire sample of completed deals. In this set of results, the diversification variables are excluded as they are largely insignificant. The main results hold, in particular the negative impact of cash payment and public target deals, and the positive impact of deals involving stock payment, private targets, and multiple acquirers. Additionally, acquirers' pre-beta has a negative impact on risk in both samples, which is consistent with that found in the univariate results, and this confirms that acquirers' *ex-ante* market risk has a negative influence on the change in market risk (ΔBeta).

Table 6.4: Risk Regressions According to Acquirers' Pre-Beta Values.

The dependent variable is the change in acquirers' market risk (ΔBeta). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (4) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (5) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (6) 'private' as a dummy variable equal to '1' if the deal involves a private target, '0' otherwise, (7) Exp. 3-Y: the cumulative number of completed takeovers by the same acquirer during the preceding three years, (8) legal and institutional quality in target countries, (9) market-to-book ratio for acquiring firms on announcement day (M/B Ratio), (10) legal origin (represented by a common law dummy) for target countries, (11) acquirers' pre-beta (beta before deal), measured over the period –260 to –20 before announcement day), (12) bidder size, measured by the logarithm of acquirers' market capitalisation four weeks prior to announcement day. The diversification variables, which are insignificant and have therefore been excluded from the regressions. Models 1-6 are estimated for the sample of deals with acquirers having pre-beta >1, and Models 7-12 are estimated for deals with acquirers having pre-beta <1. Heteroskedasticity-corrected estimates are reported with p-values shown in parentheses. All estimations include year and industry effects, as well as country effects where possible (subject to avoidance of multicollinearity).

	Pre-Beta>1						Pre-Beta<1					
6.4	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
No. obs	9870	9870	9870	9870	8649	7749	23618	23618	23618	23618	19541	17719
R^2	0.132	0.133	0.133	0.135	0.128	0.131	0.083	0.083	0.084	0.084	0.082	0.085
Adjusted R^2	0.131	0.132	0.132	0.134	0.127	0.130	0.082	0.083	0.083	0.084	0.081	0.084
F-test	187.39	189.38	168.25	140.39	97.80	78.03	265.80	267.46	239.21	197.17	134.22	109.43
P-value(F)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.223	0.228	0.231	0.223	0.252	0.256	0.233	0.232	0.234	0.229	0.201	0.214
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Value of Trans.	0.003	0.001	0.000	0.012	0.014	0.005	0.008	0.008	0.007	0.010	0.010	0.009
	(0.661)	(0.835)	(0.969)	(0.056)	(0.032)	(0.483)	(0.021)	(0.034)	(0.041)	(0.010)	(0.011)	(0.033)
GDP (Target)	-0.007	-0.011	-0.011	-0.009	-0.004	-0.007	-0.004	-0.008	-0.007	-0.006	0.000	0.002
	(0.462)	(0.262)	(0.269)	(0.361)	(0.694)	(0.482)	(0.542)	(0.265)	(0.317)	(0.366)	(0.998)	(0.807)
Cash-Only	-0.017		-0.005	-0.001	-0.007	0.002	-0.022		-0.013	-0.012	-0.013	-0.013
	(0.059)		(0.592)	(0.886)	(0.474)	(0.853)	(0.000)		(0.023)	(0.038)	(0.034)	(0.044)
Stock-Only		0.043	0.040	0.044	0.042	0.056		0.035	0.030	0.031	0.029	0.037
		(0.000)	(0.001)	(0.000)	(0.001)	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Public				-0.032	-0.029	-0.031				-0.010	-0.013	-0.019
				(0.009)	(0.019)	(0.023)				(0.188)	(0.090)	(0.027)
Private				0.021	0.021	0.013				0.002	0.006	0.006
				(0.074)	(0.085)	(0.313)				(0.827)	(0.393)	(0.482)
Exp. 3-Y					0.000	0.001					0.005	0.006
					(0.993)	(0.634)					(0.000)	(0.000)
Legal Ins Quality (Target)						-0.010						-0.001
						(0.159)						(0.757)
M/B Ratio					0.008	0.006					0.000	0.000
					(0.044)	(0.130)					(0.259)	(0.466)
Common Law (Target)						0.040						0.014
						(0.000)						(0.043)
Pre-Beta	-0.454	-0.457	-0.457	-0.463	-0.447	-0.465	-0.388	-0.389	-0.389	-0.389	-0.374	-0.379
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bidder Size	0.109	0.111	0.111	0.108	0.090	0.092	0.049	0.051	0.051	0.051	0.048	0.048
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

6.3. Estimating the Probability of Deal Failure

As noted in Chapter 4, given the uncertainty about whether a deal, once announced, will be successful or not, it is useful to investigate whether there are specific deal-, firm-, or country-specific characteristics that can influence the probability of deal failure (or success). As no previous study has undertaken this kind of analysis, the investigation here is exploratory and should be considered supplementary to the main research objectives, which focus on acquirers' shareholder wealth and risk. However, as mentioned earlier, it seems appropriate to examine whether the market reaction at the time of deal announcement reflects an expectation regarding deal completion or failure, which may itself be associated with the specific deal in question or other characteristics which may influence shareholder returns. Hence, it seems sensible to extend the analysis by investigating whether the probability of deal failure is influenced by acquirers' returns (at the time of deal announcement), their pre-merger risk, and the relevant deal categories that distinguish between (i) cash and stock payments, (ii) public and non-public targets, (iii) focussed vs. diversified deals, and (iv) single vs. multiple acquirers. The analysis here follows the same methodological approach as above, using univariate analysis as well as regressions to identify specific factors which may influence the probability of deal failure. As such, the analysis aims to investigate the following hypotheses:

- There are no significant differences in the probability of deal failure between cash and stock-funded M&As.
- There are no significant differences in the probability of deal failure between focussed and diversified deals.
- There are no significant differences in the probability of deal failure between deals involving public and non-public targets.
- There are no significant differences in the probability of deal failure between multiple acquirers and single acquirers.
- Acquirers' shareholder returns or *ex ante* market risk at the time of deal announcement does not influence the probability of deal failure.

6.3.1. Univariate Analysis

The dependent variable is dichotomous, and the appropriate test for independence from a statistical association when the explanatory variable is also dichotomous is Pearson's chi-squared test. Hence, this test is employed to examine the independence of association between the two groups of successful and failed deals, as distinguished by the relevant dichotomous categories (i.e. cash or stock method of payment, public or private targets, focussed or diversified deals, and multiple or single acquirers).

Table 6.5: Pearson's Chi-Squared Test for Category Variables.

This table presents the results of Pearson's chi-squared test and the phi and Cramer's V statistics which have been used to analyse the independence of association between two groups of categorical variables (hence 2x2). The first categorical (dependent) variable distinguishes between failed (unsuccessful) and completed (successful) deals in the overall sample. The second categorical variable is any one of the independent dichotomous variables listed in the table. These variables are (1) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (2) 'private' as a dummy variable equal to '1' if the deal involves a private target, '0' otherwise, (3) 'sub.' as a dummy variable equal to '1' if the deals involves a subsidiary target, '0' otherwise, (4) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (5) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (6) domestic and focused deals (DAF), (7) domestic and cross-industry deals (DCI), (8) cross-border and focused deals (CBF), (9) cross-border and cross-industry deals (CBCI), (10) Dum. Exp. 3-Y: a dummy variable equal to '1' if the same bidder has two or more completed deals over the three preceding years, and '0' otherwise, (11) Dum. Exp. 5-Y: a dummy variable equal to '1' if the same bidder has two or more completed deals over the five preceding years (a frequent bidder), and '0' otherwise. The table lists the actual and expected counts and frequencies under each category. The symbols ***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively.

	Pearson Chi-square frequencies								Chi-Square statistics			
	Actual Count		Expected Count		% within X (Actual)		% within X (Expected)		Value	p-value	Phi & Cramer's V	p-value
Failure Deal	Yes	No	Yes	No	Yes	No	Yes	No				
Public	2698	11315	3078	10935	19.3%	80.7%	22%	78%	85.65	.000***	-.043	.000***
Private	5413	16609	4836	17186	24.6%	75.4%	22%	78%	52.41	.000***	.033	.000***
Sub.	3058	7665	2355	8368	28.5%	71.5%	22%	78%	348.95	.000***	.086	.000***
Cash-Only	2591	10668	2912	10347	19.5%	80.5%	22%	78%	63.27	.000***	-.037	.000***
Stock-Only	2371	9310	2565	9116	20.3%	79.7%	22%	78%	25.16	.000***	-.023	.000***
DAF	3708	14762	4056	14414	20.1%	79.9%	22%	78%	63.38	.000***	-.037	.000***
DCI	4041	13024	3748	13317	23.7%	76.3%	22%	78%	46.28	.000***	.031	.000***
CBF	1297	4924	1366	4855	20.8%	79.2%	22%	78%	5.19	.023**	-.011	.023**
CBCI	1223	3779	1099	3903	24.5%	75.5%	22%	78%	20.23	.000***	.021	.000***
Dum Exp. 5-Y	5058	20005	5504	19559	20.2%	79.8%	22%	78%	99.96	.000***	-.046	.000***
Dum Exp. 3-Y	4398	17111	4724	16785	20.4%	79.6%	22%	78%	53.33	.000***	-.034	.000***

Table 6.5 shows the results of the chi-squared tests, confirming statistically significant differences between observed and expected frequencies when testing for the independence of association between the dichotomous categories of the dependent variables and the relevant independent variables in turn (hence, 2x2). It is important to bear in mind that the chi-squared test is meant to assess the significance of the association between the categories rather than

uncover causal relationships. Pearson's chi-squared test measures how well the observed distribution of data fits with the distribution of data that would be otherwise expected (by chance), as if the variables were independent. The statistical significance of Pearson's chi-squared and the phi and Cramer's V tests determines the association between the two relevant categories of variables, i.e. whether the categories of explanatory variables are associated with the likelihood of a deal being a success or a failure. In particular, the positive values of the phi and Cramer's V tests reveal that the respective categories have a positive association with the likelihood of deal failure while the negative values indicate the opposite.

The results clearly indicate the statistical significance of the association between the 2x2 categories of independent and dependent variables, although in most cases these differences, as revealed by the values of the phi and Cramer's V tests, are small. Most notable are the differences in the outcomes that distinguish between target status and diversification. For instance, from the computed figures in Table 6.5, the overall sample reveals a lower percentage of failed public target deals (19.3%) while the corresponding figures for private or subsidiary targets are slightly higher (24.6% and 28.5% respectively). As the expected percentage of failed deals is 22% under the independence of association assumption, there is greater likelihood (relative to chance) of non-public target deals ultimately failing. In contrast, deals involving public targets are less likely to be terminated, and these differences in the outcomes between the two categories of deals are reflected in the negative and positive values of the phi and Cramer's V tests. Based on similar reasoning and according to the sample, there is a greater likelihood of cross-industry and cross-border deal termination but a relatively low chance of domestic and focussed deal failure. It remains to be seen whether these results are confirmed by the probit/logit regressions presented below.

Interestingly, the results in Table 6.5 also indicate a negative association between method of payment (cash or stock) and unsuccessful deals. Similarly, the association between multiple acquirers and completed deals is also negative; indicating that acquirer bidding experience (as well as method of payment) may be related to the probability of deal completion.

6.3.2. Probit Estimation

As explained in the section on the methodology for probit estimation reviewed in Chapter 4, the dependent variable is dichotomous, characterising the probability of deal failure or success (coded as '0' for successful deals and '1' for unsuccessful deals). The explanatory variables in probit regressions include the set of categorical variables to facilitate the testing of the above hypotheses as well as a set of control variables characterising firm- and country-level differences in cross-sectional data. As with the previous regressions, the minimum set of control variables includes transaction value (target size), GDP per capita of bidder and target countries, and acquirers' *ex-ante* market risk (pre-beta).[17] Additionally, it seems appropriate to include a proxy for an expectation of deal completion at the time of announcement, represented here by acquirers' three-day CARs (–1,+1). Furthermore, in some regressions, additional controls account for acquirers' market-to-book ratio, bidder size, legal origin, and institutional quality in bidder and target countries. It should be noted, however, that the inclusion of these variables reduces the sample size, and it is therefore used mainly to assess the consistency of the results.

Table 6.6 presents the results of 11 models estimating the impact of the above M&A factors on the probability of deal failure. The first eight models are estimated based on the entire sample of successful and unsuccessful deals (45,869 in total) and selectively including the explanatory factors associated with method of payment, target status, diversification, and acquirer bidding experience. Model 8 includes all of these factors together, Model 9 includes additional control factors (thus reducing the sample size), and Models 10 and 11 are estimated for deals involving only U.S. acquirers and only non-U.S. acquirers, respectively. The explanatory power of the estimated model increases as more regressions are added, as confirmed by the values of McFadden's R^2 and adjusted R^2.

[17] As the sample includes both successful and unsuccessful deals, the pre-beta values have been recalculated over the period –110 to –10 days before the event, this being the same as that used for the calculation of abnormal returns in the event study.

Table 6.6: Probit Estimates for Probability of Deal Failure.

The dependent variable is binary, representing the probability of deal failure/success (coded as '0' for successful deals and '1' for unsuccessful deals). The independent variables are: (1) logarithm of transaction values, (2) logarithm of the GDP per capita of the target country, (3) domestic and focused deals (DAF), (4) cross-border and cross-industry deals (CBCI), (5) a cash-only dummy variable equal to '1' if the acquirer used cash-only as the method of payment, and '0' otherwise, (6) a stock-only dummy variable equal to '1' if the acquirer used stock-only as the method of payment, and '0' otherwise, (7) 'public' as a dummy variable equal to '1' if the deal involves a public target, '0' otherwise, (8) 'private' as a dummy variable equal to '1' if the deal involves a private target, '0' otherwise, (9) Exp. 3-Y: the cumulative number of completed takeovers by the same acquirer during the preceding three years, (10) legal institutional quality in target countries, (11) legal origin (represented by a common law dummy) for target countries, (12) acquirers' three-day CARs (–1,+1), (13) acquirers' pre-beta (beta before deal), measured over the period –260 to –20 before announcement day), (14) market-to-book ratio for acquiring firms on announcement day (M/B Ratio), (15) bidder size, measured by the logarithm of acquirers' market capitalisation four weeks prior to announcement day. Models 1-8 are estimated using the entire sample of successful and unsuccessful deals (45,631 deals) while Models 9-11, respectively, are estimated using additional control variables for (i) the entire sample of deals, (ii) a sub-sample including deals with U.S. acquirers only, and (iii) a sub-sample of deals involving non-U.S. acquirers only. Estimation is by maximum likelihood with p-values shown in parentheses. All estimations include year and industry effects, as well as country effects where possible (subject to avoidance of multicollinearity).

Probit	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
No. obs	45631	45631	45631	45631	45631	45631	45631	39393	25938	10816	15122
McFadden R^2	0.062	0.060	0.062	0.065	0.067	0.068	0.074	0.103	0.127	0.078	0.117
Adjusted R^2	0.062	0.060	0.062	0.065	0.067	0.068	0.073	0.102	0.125	0.073	0.115
Constant	2.128	2.106	2.128	2.246	2.247	2.305	2.102	2.037	2.572	1.437	2.073
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Value of Trans.	-0.048	-0.048	-0.047	-0.068	-0.067	-0.071	-0.071	-0.080	-0.025	0.048	-0.040
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP (Target)	-0.559	-0.567	-0.556	-0.576	-0.545	-0.557	-0.559	-0.502	-0.578	-0.362	-0.483
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DAF			-0.031	-0.046	-0.040	-0.044	-0.063	-0.053	-0.051	-0.091	-0.011
			(0.035)	(0.002)	(0.007)	(0.003)	(0.000)	(0.001)	(0.012)	(0.010)	(0.670)
CBCI			0.002	0.011	0.008	0.012	0.026	0.050	0.066	0.038	0.070
			(0.927)	(0.611)	(0.713)	(0.601)	(0.256)	(0.044)	(0.042)	(0.611)	(0.059)
Cash-Only	-0.148		-0.149	-0.166	-0.166	-0.168	-0.158	-0.174	-0.104	-0.031	-0.119
	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.473)	(0.000)
Stock-Only		0.055	0.005	-0.018	0.004	-0.002	-0.006	0.037	-0.072	-0.024	-0.053
		(0.001)	(0.756)	(0.295)	(0.802)	(0.919)	(0.736)	(0.047)	(0.003)	(0.535)	(0.102)
Public				0.219		0.103	0.082	0.218	0.180	0.441	0.038
				(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.302)
Private					-0.224	-0.173	-0.182	-0.098	-0.159	-0.085	-0.102
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.145)	(0.000)
Exp. 3-Y						-0.018	-0.018	-0.016	0.012	0.021	0.003
						(0.000)	(0.000)	(0.000)	(0.009)	(0.001)	(0.715)
Legal Ins Quality (Target)								-0.293	-0.284	-0.257	-0.283
								(0.000)	(0.000)	(0.000)	(0.000)
Common Law (Target)							0.284	0.292	0.268	-0.068	0.366
							(0.000)	(0.000)	(0.000)	(0.416)	(0.000)
CARs(-1,+1)	-0.047	-0.037	-0.050	-0.011	-0.023	-0.017	-0.023	-0.043	-0.303	-0.308	-0.260
	(0.363)	(0.468)	(0.327)	(0.835)	(0.652)	(0.748)	(0.649)	(0.439)	(0.000)	(0.009)	(0.015)
Pre-Beta	-0.032	-0.034	-0.032	-0.030	-0.033	-0.029	-0.028	-0.022	0.012	-0.020	0.063
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.016)	(0.336)	(0.291)	(0.000)
M/B Ratio									0.000	0.001	0.000
									(0.659)	(0.662)	(0.596)
Bidder Size									-0.091	-0.158	-0.063
									(0.000)	(0.000)	(0.000)
Country Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Consistent with the univariate analysis, the probit results confirm that domestic and focussed deals (DAF) negatively influence the likelihood of deal failure, while diversified deals, here

represented by cross-border and cross-industry (CBCI) deals, positively influence this likelihood[18]. This implies that once announced, DAF deals are less likely to fail than CBCI deals, which seems reasonable. However, it raises an interesting question in light of the fact that acquirer shareholder returns were positive for diversified deals (CBCI) and negative for DAF deals[19]. This could, however, be due to the greater degree of information asymmetry and uncertainty associated with diversified deals, which may reflect higher adverse selection premiums demanded by rational investors in such cases. Hence, greater positive acquirer returns are achieved from such deals relative to domestic and focussed transactions, which may also mean that the former deals are riskier and therefore that their probability of failure is high. Furthermore, transaction and monitoring costs are another barrier to integration into markets, and such barriers may impact the probability of success, even though greater synergy gains may be possible through diversification.

The results also indicate that using cash as payment reduces the likelihood of deal failure, while using stock as payment has a mixed or insignificant impact. This observation may be due to information asymmetry surrounding bidder/target valuations. Standard theory suggests that cash payment deals are more favourable for targets as a way of distinguishing high-value bidders from low-value bidders. Thus, as Branch and Yang (2003) argue, cash deals are more likely to be accepted by targets than stock payment deals. However, it should be noted that for U.S. acquirers, neither of these factors (included together) is statistically significant.

With regard to the impact of target status, the results show that the acquisition of public targets increases the probability of deal failure while that of private targets has the opposite effect. This stands in contrast to the findings of the univariate analysis in which the chi-squared tests indicated a relatively high likelihood of deal completion for public targets. However, as noted earlier, the latter reflects the strength of association based on sample proportions and not causal effects. The probit results are more sensible in light of theoretical arguments which suggest that public target shareholders are more likely to 'free-ride' on bidder offers while private targets, which tend to have concentrated shareholders, have better negotiating power to ensure deal completion.

[18] Other diversification variables (e.g. DCI) are not included in the regression, but the results are similar.

[19] For example, the seven-day window CAR for DAF is 0.982% compared with 2.191% for CBCI (see Section 5.3.3 for more detail)

The results also confirm that acquirer bidding experience affects the likelihood of deal completion, although the findings are mixed in that the impact is positive in some cases and negative in others. In general, acquirers with prior experience of bidding ought to have greater expertise in ensuring deal completion, although this does not automatically mean that they make efficient decisions.

The results also suggest that acquiring company shareholder returns at the time of deal announcement have, in most cases, a negative and insignificant impact on the probability of deal failure, though this effect is only significant in the reduced sample with added control variables (i.e. the final three columns). In contrast, the significance of acquirers' pre-beta, whose effect is generally negative, disappears in the reduced sample. On the whole, it is difficult to assess the impact of these two factors, but the significant negative influence of acquirer shareholder returns (albeit in the reduced sample) appears to reflect an expectation of deal completion, though this effect is not generally robust.

With regard to the influence of the control variables, the results suggest that larger target size (or higher deal values) increases the probability of deal completion, this effect being consistent with the higher synergy gains typically expected from larger deals. Similarly, acquirer size also negatively influences the probability of deal failure. Larger deals are likely to incur higher costs and require specialist resources (e.g. financial advisors) to which large acquirers are able to commit, and this may increase the chances of deal completion.

Among the country-level factors, higher GDP per capita for both bidder and target countries decreases the probability of deal failure, as more advanced economies have larger markets for corporate control with greater financial development than less advanced economies. Furthermore, stronger legal and institutional quality in both bidder and target countries has a negative and significant impact on deal failure due to the existence of better provisions for property rights protection. On the other hand, the stronger investor (creditor and shareholder) protection associated with common law countries increases the likelihood of deal failure. Anderson, Marshall and Wales (2009) argue that strong investor protection in a target country affords higher bargaining power to targets, and Hagendorff, Collins and Keasey (2008) argue that investors in relatively unprotected environments may require compensation for these lower governance standards and face a higher risk of expropriation by insiders. These considerations are more likely to adversely affect the chances of deal completion and may be one of the reasons for a similarly positive effect of diversified deals.

6.3.3. Logit Estimation

As a consistency check, Table 6.7 below reports the results of the logit estimations carried out using the same set of independent variables, and the results, as expected, are very similar. The main difference between the logit and probit models, as noted in Chapter 4, lies in the transformation of the categorical dependent variable. According to Long and Freese (2006), logit and probit models generally have similar outcomes.

Table 6.7: Logit Estimates for Probability of Deal Failure.

Logit	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
No. obs	45631	45631	45631	45631	45631	45631	45631	39393	25938	10816	15122
McFadden R^2	0.063	0.061	0.063	0.066	0.067	0.068	0.074	0.103	0.126	0.078	0.118
Adjusted R^2	0.062	0.061	0.062	0.065	0.067	0.068	0.074	0.102	0.125	0.073	0.116
Constant	3.604	3.572	3.606	3.789	3.798	3.894	3.531	3.456	4.375	2.700	3.463
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Value of Trans.	-0.092	-0.093	-0.092	-0.124	-0.124	-0.129	-0.130	-0.148	-0.053	0.093	-0.074
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP (Target)	-0.921	-0.937	-0.918	-0.950	-0.899	-0.918	-0.920	-0.833	-0.964	-0.647	-0.799
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DAF			-0.051	-0.075	-0.066	-0.072	-0.107	-0.094	-0.086	-0.185	-0.012
			(0.049)	(0.004)	(0.011)	(0.005)	(0.000)	(0.001)	(0.017)	(0.005)	(0.775)
CBCI			0.002	0.017	0.013	0.018	0.042	0.081	0.109	0.049	0.122
			(0.950)	(0.657)	(0.731)	(0.636)	(0.282)	(0.060)	(0.054)	(0.723)	(0.053)
Cash-Only	-0.258		-0.255	-0.281	-0.283	-0.284	-0.269	-0.296	-0.178	-0.049	-0.196
	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.554)	(0.000)
Stock-Only		0.106	0.021	-0.018	0.019	0.008	0.001	0.078	-0.118	-0.050	-0.079
		(0.000)	(0.475)	(0.539)	(0.532)	(0.787)	(0.973)	(0.018)	(0.006)	(0.487)	(0.155)
Public				0.352		0.155	0.118	0.352	0.300	0.844	0.042
				(0.000)		(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.510)
Private					-0.373	-0.300	-0.318	-0.176	-0.275	-0.150	-0.174
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.175)	(0.000)
Exp. 3-Y						-0.033	-0.032	-0.031	0.020	0.037	0.005
						(0.000)	(0.000)	(0.000)	(0.020)	(0.002)	(0.682)
Legal Ins Quality (Target)								-0.503	-0.490	-0.470	-0.478
								(0.000)	(0.000)	(0.000)	(0.000)
Common Law (Target)							0.495	0.515	0.470	-0.128	0.625
							(0.000)	(0.000)	(0.000)	(0.403)	(0.000)
CARs(-1,+1)	-0.086	-0.070	-0.093	-0.030	-0.051	-0.042	-0.049	-0.081	-0.527	-0.563	-0.441
	(0.338)	(0.435)	(0.300)	(0.739)	(0.575)	(0.641)	(0.584)	(0.395)	(0.000)	(0.009)	(0.017)
Pre-Beta	-0.052	-0.056	-0.052	-0.050	-0.055	-0.048	-0.046	-0.035	0.021	-0.038	0.110
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.002)	(0.030)	(0.308)	(0.269)	(0.000)
M/B Ratio									0.000	0.001	0.001
									(0.626)	(0.593)	(0.563)
Bidder Size									-0.156	-0.297	-0.108
									(0.000)	(0.000)	(0.000)
Country Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Industry Dumm.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

6.4. Conclusion

This chapter has analysed the impact of M&A deals on acquirers' market risk using evidence based on risk regressions in order to test the four main hypotheses relating to target status, method of payment, diversification, and acquirer bidding experience. Additionally, the chapter has investigated the influence of deal characteristics pertaining to these hypotheses as well as acquirers' risk-return attributes on the probability of deal failure using probit/logit estimations. The latter analysis is unique in that no previous study has explicitly investigated the influence of deal and acquirer characteristics on the probability of deals being terminated following announcement.

Summarising the combined results of both sets of analysis, the main conclusions of this chapter are as follows:

- Acquirers' market risk is negatively correlated to acquisitions of public target firms and positively correlated to acquisitions of non-public target firms, including private and subsidiary targets. On the other hand, there is greater likelihood that M&A deals will be successful with non-public targets than with public targets.

- Cash payment deals reduce acquirers' market risk while stock payment deals increase it. On the other hand, cash payment deals increase the likelihood of deals ultimately being successful, while stock payment deals appear to have a mixed or insignificant impact on the probability of deal completion.

- Diversification has an insignificant impact on acquirers' market risk. On the other hand, diversification turns out to be an important attribute affecting the probability of deal failure. In particular, domestic and focussed deals are generally more likely to be successful than cross-industry and cross-border deals.

- Multiple acquirers tend to experience increased risk compared to single acquirers, which is consistent with the hubris hypothesis. On the other hand, multiple acquirers with prior experience of bidding influences the likelihood of deal completion, although the impact on the probability of deal completion can be either positive or negative.

- Change in an acquirer's market risk is negatively correlated to its *ex ante* risk (pre-beta) in that M&A deals will reduce (increase) the risk of high-risk (low-risk) acquirers. Additionally, the influence of acquirers' pre-beta on the probability of deal failure is negative.

- Acquirers' shareholder returns upon deal announcements influence the probability of deal completion, which suggests that the market reaction reflects an expectation of deal completion following an announcement, although this effect is not generally robust.

Finally, both risk and the probability of deal failure are influenced by firm-level attributes such as target and bidder size as well as country-level attributes such as economic development and the legal and institutional environment of both bidder and target countries.

Chapter 7: Conclusion

7.1. Introduction

This thesis has investigated the impact of M&As on acquiring company shareholder returns and risk using a global sample of 45,758 M&A announcements covering 180 countries and 88 industries between the years 1977 and 2012. Using event study methodology and cross-sectional regressions, the empirical analysis has taken into account factors related to the method of payment, target status, diversification, and acquirer bidding experience. In addition, the study has analysed the impact of these factors on the probability of deal failure using probit and logit estimations. This chapter summarises the empirical results and discusses the limitations and implications of the study as well as some potential areas for further research.

7.2. Summary the Empirical Findings

Acquirers' Shareholder Results

In investigating the impact of M&A transactions on acquirers' shareholder returns, four main hypotheses were tested relating to target status, payment method, diversification, and acquirer experience using evidence based on the event study methods and CAR regressions. The findings revealed no significant differences in market reaction based on the consideration of successful versus unsuccessful deals. This indicates that the reaction of market participants is based solely on deal announcements, a finding which is consistent with the efficient market hypothesis since abnormal returns are not impacted by uncertainty regarding the eventual completion or termination of a deal. Hence, both completed and unsuccessful deals were included in the empirical analysis to avoid any sample selection bias. Additionally, robustness checks were performed in the univariate analysis using parametric and non-parametric tests with different event study windows, as well as in CAR regressions using different samples, variables, and heteroskedasticity-corrected estimates to ensure consistent results.

The results indicated that acquirers experience negative abnormal returns when acquiring public targets and positive abnormal returns when acquiring private or subsidiary targets, which means that M&As tend to be value-adding with private/subsidiary targets and value-

destroying with public targets. This finding is consistent with previous empirical studies and conforms with a growing trend in recent years involving public firms taking over non-public ones (e.g. Fuller, Netter, and Stegemoller 2002, Moeller, Schlingemann, and Stulz 2004, Faccio, McConnell, and Stolin 2006, Jaffe *et al*. 2015).

Furthermore, the results showed that using cash as the method of payment is associated with a negative impact on acquirer returns while stock payments are associated with a positive impact. However, the latter effect is not robust across all sub-samples, and does not hold for U.S. acquirers. The findings also revealed that the highest acquirer returns were associated with stock deals involving non-public targets while the lowest returns were associated with stock deals involving public targets. Furthermore, cash deals for the acquisition of public targets improved shareholder returns. Hence, acquirers benefitted from using cash to fund the acquisition of public targets and stock to fund the acquisition of non-public targets, and this finding is also consistent with previous research (e.g. Fuller, Netter, and Stegemoller 2002).

There is a long-standing debate in the literature regarding whether cross-border M&As add value for the shareholders of bidding firms, and the evidence has been mixed. One relevant argument is for the existence of a 'home country bias', which means that bidding companies may miss out on potentially profitable opportunities due to a preference for investing within their home country. However, this thesis has provided robust evidence indicating that significant gains can be made from cross-border and cross-industry M&As. The results of the univariate and regression analyses indicated that domestic and focussed deals (DAF) are associated with a significant negative impact on acquirer returns, while diversified deals (DCI, CBF, CBCI) tend to be associated with a significant positive impact. This suggests that diversification can have a positive effect on shareholder returns, and this finding is also consistent with a number of previous studies (e.g. Focarelli, Pozzolo, and Salleo 2008, Raj and Uddin 2013, Danbolt and Maciver 2012, Selcuk and Kiymaz 2015).

In the same context, the findings have demonstrated that diversification between developed and emerging countries achieved the highest returns for acquiring firms. In other words, the combination of acquirers in developed (developing) and targets in developing (developed) countries yields more significant gains for acquirers than M&As within developed or developing regions. Again, this finding is consistent with some previous studies (e.g. Chari, Ouimet, and Tesar 2010, Du and Boateng 2012).

Furthermore, the findings revealed a significant negative impact of acquirer bidding experience on shareholder returns. This finding is specific to serial acquirers and supports the hubris or over-optimism motive, which stands in contrast to the rational, synergy-based theories of mergers, which suggest that with increased experience, acquirers ought to improve their shareholder wealth.

Acquirers' Market Risk

The empirical analysis in this study was extended to include the impact of M&A activity on acquiring companies' market risk (and cost of capital). The main hypothesis tested was that acquirers' market risk does not change significantly from before the announcement of a deal to after the announcement. In order to accomplish this, the statistical significance of the change in acquirer market risk (Δ beta) for the overall sample of completed deals was tested. The analysis was then extended using risk regressions to assess the impact on the change in acquirer market risk for each of the relevant deal categories (i.e. cash vs. stock payments, public vs. non-public targets, focussed vs. diversified deals, and single vs. multiple acquirers). These, in principle, are similar to the four hypotheses related to acquirer returns, but in this case, a distinction was drawn between pre- and post-event market risk in addition to the other criteria.

The method for analysing the impact of M&A activity on acquirers' market risk was based on a number of previous studies (e.g. Amihud, Delong, and Saunders 2002, Focarelli, Pozzolo, and Salleo 2008, Casu *et al*. 2015). This involved a two-step process, using the CAPM model to obtain an estimate of an acquirer's market risk and then conducting both univariate and multivariate analyses to test the hypotheses. Only completed deals were included in this analysis to measure post-event changes in beta.

For the overall sample, the results indicated that acquirers' market risk (and hence their cost of capital) tends to increase after M&A activity. This finding is consistent with previous studies (e.g. Amihud, Delong, and Saunders 2002, Focarelli, Pozzolo, and Salleo 2008). In addition, the overall sample was divided into two groups based on whether an acquirer's pre-market risk values were less or greater than the beta of the market portfolio. Here, the findings indicated that M&A activity was associated with increased market risk only in cases where acquirers' *ex ante* market risk was relatively low in relation to the rest of the market, and decreased market risk was associated with cases of relatively high *ex-ante* market risk.

According to the results of the cross-sectional risk regressions, the impact of acquiring a public target on acquiring companies' market risk is negative and statistically significant. The impact of acquiring a non-public (private or subsidiary) target, on the other hand, while not always statistically significant, was shown to be consistently positive. In terms of the payment method, the results confirmed a negative impact of cash deals and a positive effect of stock deals, statistically significant in both cases. The impact of diversification, however, was statistically insignificant, implying that acquirers' market risk was unaffected by cross-border or cross-industry deals. Acquirers' previous experience of bidding, however, had a significantly positive impact on acquirer market risk. The findings also indicated that acquirers' pre-beta is negatively associated with change in market risk, implying that high risk acquirers were able to reduce their risk through M&As.

Probability of Deal Failure

The analysis was extended further using probit regressions to investigate whether the relevant factors which influenced acquirer returns and risk could also influence the probability of deals failure. Earlier, the findings of this study revealed no significant differences in market reaction based on whether or not a deal was ultimately successful. Hence, it was also appropriate to investigate whether the market's expectation regarding deal completion at the time of announcement, as captured by abnormal returns, influenced the probability of deal completion, which could also be associated with the specific deal characteristics affecting acquirer returns or risk. The results, while significant in some cases, were not robust in this regard.

According to the probit results, domestic focussed deals (DAF) were negatively associated with the likelihood of deal failure while the effect of diversified deals was positive. This implies that DAF deals were more likely to succeed than cross-border and cross-industry deals and can be explained by the higher levels of information asymmetry and uncertainty generally associated with diversified deals (since rational investors demand higher premiums from such deals). For this reason, such deals lead to greater positive returns for acquirers compared to domestic focussed deals, which could also mean that diversified deals involve more risk, and their probably of failure is therefore high.

The results of the probit estimations also revealed that financing a deal with cash decreased the likelihood of deal failure. This finding may also be due to information asymmetry

surrounding bidder/target valuation, since cash deals tend to be more favourable for target companies as a way of distinguishing high-value bidders from low-value bidders. The results regarding the impact of target status indicate that deals involving public targets have an increased probability of failure compared to deals involving private targets. These results also make sense in light of the theory suggesting that shareholders of public targets tend to free-ride on offers from bidders, while private targets, which tend to have concentrated shareholders, have more negotiating power to aid in eventual deal completion.

The results also confirmed that acquirer experience affects the likelihood of deal failure. However, the findings here were found to be mixed insofar as the impact was shown to be positive in some cases but negative in others. In general, experienced acquirers should have greater expertise in ensuring deal completion, though this may not necessarily mean that they make efficient decisions.

Table 7.1: Summary of the main findings relating to the four hypotheses.

	1) CAR	2) Market risk (Beta)	3) Probability of deal completion	Explanation
(a) Method of payment	Acquirers receive the highest returns on stock only deals and the lowest returns on cash only deals. More specifically, acquirers receive the highest returns on stock deals involving non-public targets and the lowest returns on stock deals involving public targets.	The results reveal a significant negative effect of cash payment deals but a significant positive effect of stock payment deals on acquirers' market risk.	There is generally less likelihood of cash deal failure and greater likelihood of stock deal failure.	Acquirers' gains are most significant in stock payment deals involving private or subsidiary targets, while stock payment deals involving publicly-listed targets yield lower returns. In general, cash payment for acquisitions serves to reduce the negative impact of acquiring public targets, while stock payment enhances the positive impact of acquiring private or subsidiary targets. Moreover, cash payment deals incur lower risk for acquirers while stock payment deals increase their risk. This result is consistent with standard portfolio theory as higher returns were observed for acquirers engaging in stock deals than for those engaging in cash deals in the overall sample. However, cash as payment reduces the likelihood of deal failure, while using stock as payment has a mixed or insignificant impact. This observation may be due to information asymmetry surrounding bidder/target valuations. Standard theory suggests that cash payment deals are more favourable for targets as a way of distinguishing high-value bidders from low-value bidders, hence cash deals are more likely to be accepted by targets than stock payment deals.
(b) Target status	Acquirers receive the highest (positive) returns on deals involving non-public targets and the lowest (negative) returns on deals involving public targets.	The results show that the impact of acquiring a public target on acquirers' market risk is consistently negative, while that of acquiring non-public targets is consistently positive.	There is generally greater likelihood that deals involving non-public targets will be more successful and that those involving public targets will be less successful.	M&A destroy acquiring shareholder wealth when the target is a public firm but improve it when the target is a private or subsidiary company. In the same line, deals with non-public (i.e. private and subsidiary) targets incur higher market risk for acquirers than deals with public targets. This is consistent with standard portfolio theory, which suggests that lower risk is associated with lower returns for acquirers in such deals. Moreover, there is greater information asymmetry associated with the acquisition of private or subsidiary targets (compared to that associated with public targets), which may increase acquirers' market risk but also yield higher returns. However, the acquisition of public targets increases the probability of deal failure while that of private targets has the opposite effect, which is consistent with the theoretical arguments which suggest that public target shareholders are more likely to 'free-ride' on bidder offers while private targets, which tend to have concentrated shareholders, have better negotiating power to ensure deal completion.

(c) Diversification	Domestic and focussed (DAF) deals consistently have a significant negative impact on acquirer returns, while diversified deals have a significant positive impact in most cases. These results suggest that diversification improves acquiring companies' shareholder wealth.	Diversification has no significant impact on acquirers' market risk	There is generally greater likelihood that domestic and focussed deals will be successful and less likelihood that cross-industry and cross-border deals will be successful.	In line with portfolio diversification theory, diversified deals yield significant announcement gains for acquirers, although in comparison with domestic and focussed deals, such deals carry a greater risk of failure. This could be due to the greater degree of information asymmetry and uncertainty associated with diversified deals, which may reflect higher adverse selection premiums demanded by rational investors in such cases. Diversification, however, has no significant impact on acquirers' market or systematic risk.
(d) Acquirer experience	Acquirers' prior bidding experience has a significant negative impact on acquirer returns.	Acquirers' prior bidding experience has a positive and statistically significant impact on their market risk.	There is generally greater likelihood that deals involving experienced bidders will be completed than deals with single bidders.	Acquirers' prior experience of bidding in M&A deals is associated with significantly lower shareholder returns for acquirers, and this also increases their risk. The results seem consistent with the explanations offered by hubris theory, which suggests that multiple acquirers may destroy value as well as incur higher risk for shareholders. In addition, acquirers with prior experience of bidding ought to have greater expertise in ensuring deal completion.

7.3. Research Contributions

This thesis has contributed to the existing literature in the following ways:

1. The first contribution is that it has provided a robust set of results based on a global data set. The majority of M&A research has involved small or medium-sized samples. This thesis presents new evidence based on a sample of 46,758 M&A deals covering 180 countries and involving 88 industries over the period 1977-2012. This broad sample covering both developed and developing countries has allowed a more systematic cross-country investigation of the postulated hypotheses for different geographical regions while controlling for specific deal-, firm-, and country-level characteristics.

2. Previous empirical studies on M&As have reported mixed findings, with conflicting results regarding the impact of method of payment for public vs. non-public targets and cross-border vs. domestic mergers. Additionally, most prior empirical studies on shareholder wealth have investigated evidence based on publicly-listed targets. This thesis provides a novel contribution from the perspective of a global sample distinguishing between public, private, and subsidiary targets. This has allowed for the generation of evidence based on cross-country differences associated with the characteristics of public and non-public takeovers. For example, in the case of public firms announcing M&A deals with private targets, the stock payment mechanism was commonly observed to provide a positive signal to investors which is rewarded with positive abnormal returns. This contrasts strongly with the negative market reaction to similar bids in the case of public targets. Although some earlier studies have revealed such anomalies, the empirical evidence presents robust findings based on a global sample.
3. A limited number of empirical studies have investigated the impact of bidder experience on acquirers' shareholder wealth. The results, on one hand, are mixed, and on another, are inconsistent with several theoretical hypotheses (i.e. learning by doing, overvaluation, hubris, and merger programme announcement). This study has contributed to the literature by providing comprehensive empirical evidence on the impact of acquirer bidding experience on shareholder wealth and risk, and the results have confirmed that single acquirers tend to experience higher returns, while returns decrease for serial acquirers. On the other hand, this evidence contrasts with the view

that more M&A experience will lead to greater knowledge of target valuation and thus more profitable deals. Instead, evidence suggests that serial acquirers actually destroy shareholder wealth, demonstrating that M&As are not always purely economically motivated (i.e. maximising firm value). Indeed, such observations can only be explained by hubris theory or over-optimism rather than synergy gains. According to hubris theory, managers may believe they have economic motives for an acquisition, but due to excessive confidence or pride, they overvalue target firms and pay too high a price. In other words, an acquirer's *ex post* performance not only relates to returns on its investment but can also point to the true motives behind certain investments.

4. There has been a limited number of studies assessing the implications of M&As on the systematic/market risk (beta) of acquiring firms. Although a few studies have analysed the impact of M&As on acquirers' market risk, they have focussed mostly on the diversification aspect and have come to mixed conclusions. This study has contributed to the existing literature by providing a more comprehensive analysis regarding the implications of diversification, drawing on the debate between focussed and diversified M&As. The findings suggest that diversification does not affect acquirers' market risk. However, other interesting results from this study include a strong and very consistent increase in acquirers' market risk if the *ex-ante* (i.e. prior to the acquisition) beta is lower than the market portfolio beta and exactly the opposite if the *ex-ante* beta is higher. These results confirm that other factors which have not been considered before in assessing the impact of M&As on acquirers' risk, such as method of payment, target status, and acquirer experience, influence acquirers' risk more than diversification.

7.4. Limitations and Implications

As with any empirical research, the results of this study are subject to a number of caveats or limitations:

- While analysing the impact of M&As on acquirer returns, the findings are based on the use of the market model only, and alternative models such as CAPM were not considered. However, given the consistency of the event study results over different event windows, it is unlikely that CAPM or other models would have made much difference.
- Owing to the limited availability of data on private and subsidiary targets, the empirical analysis could not consider the influence of target characteristics other than size (proxied by deal values) in a global sample.
- Another limitation of this study is not using the actual ratios of stock to cash in combination payments instead of a simple cash/stock combination dummy variable. This ratio was excluded from the analysis due to data limitations, although the analysis could be extended to incorporate mixed payment deals (using the precise cash/stock percentages used in deals).
- A further limitation of the current study is not controlling for inflation and currency exchange rate, as the value of merger transactions could be affected by these variables. Historically, according to Black (2000), M&As have thrived in a low inflation environment. Uddin and Boateng (2011) argue that if the inflation rate in the acquirer country is very high, then acquirers would try to bid for acquisition of firms outside their home countries where the inflation rate is low. Other adverse impacts of inflation include value degradation of capital, misallocation of resources, and depression of markets. In cross border mergers, exchange rate fluctuations may also influence the relative strength of the acquirers' home currency with respect to that of the targets' which will impact the premium paid for the merger. Several studies (e.g. Harris and Ravenscraft 1991; Kiymaz and Mukherjee 2000) have shown that, when the acquirer country's currency is strong, the target shareholders benefit by receiving higher returns. Kiymaz (2004) suggests that acquirers will benefit from a strong home currency during the transaction and from a weak home currency at the time of distributing dividends and cash flows. In general, inflation and exchange rates are more likely to influence expected cash flows from cross-border mergers, and bidder shareholder return may also be influenced indirectly though

the impact of inflation and relative strength of currently in the bidder and target countries on the value of transactions.

The results of the thesis may have some practical or strategic implications for managers and regulators. In terms of payment methods, strong implications were found regarding stock-based deals, specifically those involving private target firms. Stock-based deals were shown to systematically generate higher returns for public bidders in cases of private acquisitions, something which could be strategically exploited by managers based on the potential signalling implications (i.e. revealing to market participants the true value of synergies in such mergers). However, for strategic purposes, public bidders may prefer to pay cash for public targets in order to ensure deal completion, since a robust analysis emphasises that cash-based deals are more likely to be successful.

Additionally, some interesting inferences can be drawn from the diversification perspective. Even though domestic and focussed deals were shown to generate consistent negative returns, there is always a higher likelihood of such deals being completed, while the opposite was observed for cross-border and cross-industry deals. This anomaly could be related to the 'home country bias', which may suggest further policy implications for regulators, such as removing barriers to cross-country and cross-industry consolidation which could lead to improved welfare for all stakeholders.

7.5. Further Research

One of the many findings of this study concerns the factors influencing the probability of deal failure. Although the results indicated that cross-border and cross-industry diversification, acquisition of public targets, the stock method of payment, and single acquirers contributed to the likelihood of deal failure, the analysis is rather exploratory and suggests that there are potentially other more important factors that can explain M&A failure or success, as discussed in Chapter 2. Further investigation is certainly needed to understand not only the factors influencing deal completion/failure but also the analysis of returns associated with failed deals. For example, liquidity problems of acquirers or targets may lead to inadequate funding to close the deal.

There are four players in any M&A transaction: the acquirer, the target, the market, and the government, and the results of this study indicate that there tends to be no market expectation

surrounding the event in terms of whether a deal will ultimately succeed or fail, which supports the EMH. Therefore, further research is necessary to analyse the influence of market expectations which may be affected by market participants. For instance, are market participants, including shareholders, blockholders, and investors/institutional investors, able to influence the likelihood of deal failure? These influences could be reflected in earnings or analyst forecasts which might be considered in further research.

Further research could also analyse the impact of regulations and corporate governance on shareholder returns and risk. For example, cross-country differences in regulations might be an important source of influence on acquirers' risk.

This study has focussed primarily on the specific M&A factors affecting acquirers' market risk, but further research could analyse the influence of risk shifting between acquirer and target firms. Risk shifting also has an important influence in the theory of dividend payouts (Kanas 2013, Onali 2014), but risk shifting via mergers and acquisitions has not been previously studied, so future work might consider ways of incorporating the influence of risk shifting by acquirers in M&As.

Moreover, prior studies have utilised a relatively unclear definition of acquirers' bidding experience; it is generally described as the number of completed deals by a single bidder within a specific time period. Further research could use other proxies to reflect acquirer experience from another perspective—for example, managerial board experience could improve the ability of the board of directors regarding accurate target valuation in order to avoid paying high target premiums. Managerial board experience could also be measured from various angles, such as the board of directors' years of experience, interlocks between bidder and target boards, education level of bidder board members, or the presence of investment bankers on the board. Therefore, further research could analyse whether acquirer experience combined with corporate governance influences contribute to the generation of higher abnormal returns for shareholders.

7.6. Conclusion

To conclude, the author would like to emphasise that the current thesis has constituted an attempt to thoroughly analyse various hypotheses which have been discussed in the literature over several decades. Many earlier studies have used relatively small samples focussing on specific countries. As explained earlier, this thesis has aimed to fill an important gap by providing a robust study on a global sample of M&A data which, it is hoped, will provide new insight into various aspects of acquirers' risk and returns. The researcher has drawn on numerous papers covering different aspects of M&As, and the author would like to end by noting that research is an endless process. It is hoped that some of the critical results which have been generated from this thesis can be used to develop better theoretical understanding of models explaining the outcomes of shareholder returns and risk associated with M&As.

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Appendix

Appendix 1: Acquirers' Market Risk and Diversification

Table 0.1: Acquirers' Market Risk and Diversification

			Independent Samples t-Test				Mann-Whitney U		
			N	Mean	Mean Diff.	p-value	Mean Rank	Z	p-value
DAF	Beta Before Ann.	Yes	13791	.7163	-.0224	.001***	16740	-5.712	.000***
		No	20430	.7388			17362		
	Beta After Ann.	Yes	13791	.7444	-.0111	.090*	16806	-4.688	.000***
		No	20430	.7555			17317		
	Δ Beta	Yes	13791	.0281	.0113	.063*	17220	-1.671	.095*
		No	20430	.0168			17038		
DCI	Beta Before Ann.	Yes	12208	.7170	-.0197	.004***	16935	-2.460	.014**
		No	22013	.7368			17209		
	Beta After Ann.	Yes	12208	.7323	-.0292	.000***	16897	-2.980	.003***
		No	22013	.7615			17229		
	Δ Beta (a)	Yes	12208	.0152	-.0095	.134	17039	-.999	.318
		No	22013	.0247			17151		
CBF	Beta Before Ann.	Yes	4669	.7892	.0689	.000***	18244	-8.435	.000***
		No	29552	.7203			16932		
	Beta After Ann.	Yes	4669	.8052	.0627	.000***	18189	-8.023	.000***
		No	29552	.7425			16941		
	Δ Beta (a)	Yes	4669	.0160	-.0061	.485	17004	-.798	.425
		No	29552	.0222			17128		
CBCI	Beta Before Ann. (a)	Yes	3553	.7471	.0194	.066*	17669	-3.557	.000***
		No	30668	.7277			17046		
	Beta After Ann.	Yes	3553	.7702	.0213	.036**	17612	-3.191	.001***
		No	30668	.7488			17053		
	Δ Beta (a)	Yes	3553	.0230	.0019	.847	17076	-.220	.825
		No	30668	.0211			17115		

Appendix 2: Acquirers' Market Risk and Method of Payment

Table 0.2: Acquirers' Market Risk and Method of Payment

			Independent Samples t-Test				Mann-Whitney U		
			N	Mean	Mean Dif.	p-value	Mean Rank	Z	p-value
Cash-Only	Beta Before Ann.	Yes	10167	.7625	.0467	.000***	17812	-8.529	.000***
		No	24054	.7158			16815		
	Beta After Ann.	Yes	10167	.7717	.0294	.000***	17616	-6.146	.000***
		No	24054	.7423			16898		
	Δ Beta	Yes	10167	.0092	-.0173	.003***	16843	-3.267	.001***
		No	24054	.0265			17224		
Stock-Only	Beta Before Ann.	Yes	8594	.7455	.0210	.010***	17254	-1.551	.121
		No	25627	.7244			17063		
	Beta After Ann.	Yes	8594	.7784	.0365	.000***	17302	-2.069	.039**
		No	25627	.7419			17047		
	Δ Beta	Yes	8594	.0329	.0155	.049**	17274	-1.765	.078*
		No	25627	.0174			17056		
Cash & Stock Combination	Beta Before Ann.	Yes	5101	.6870	-.0502	.000***	16069	-8.163	.000***
		No	29120	.7372			17293		
	Beta After Ann.	Yes	5101	.7269	-.0284	.002***	16365	-5.846	.000***
		No	29120	.7553			17242		
	Δ Beta	Yes	5101	.0399	.0218	.013**	17441	-2.584	.010***
		No	29120	.0181			17053		

Appendix 3: Acquirers' Market Risk and Bidder Experience

Table 0.3: Acquirers' Market Risk and Bidder Experience

			Independent Samples t-Test				Mann-Whitney U		
			N	Mean	p-value	Mean Diff.	Mean Rank	Z	p-value
Dum Exp. 3-Y	Beta Before Ann.	Yes	16382	.7824	.000	.1011	18019	-16.293	.000***
		No	17839	.6813			16277		
	Beta After Ann.	Yes	16382	.8121	.000	.1172	18130	-18.279	.000***
		No	17839	.6949			16176		
	Δ Beta	Yes	16382	.0297	.008	.0161**	17324	-3.829	.000***
		No	17839	.0136			16915		
Dum Exp. 5-Y	Beta Before Ann.	Yes	19181	.7765	.000	.1063	17903	-16.748	.000***
		No	15040	.6701			16101		
	Beta After Ann.	Yes	19181	.8065	.000	.1263	18032	-19.482	.000***
		No	15040	.6803			15936		
	Δ Beta	Yes	19181	.0301	.001	.0200**	17327	-4.573	.000***
		No	15040	.0101			16835		

Correlations

		Beta Before Ann.	Beta After Ann.	Δ Beta
Exp. 5-Y	Pearson Correlation	.105***	.117***	.013**
	Sig.	.000	.000	.019
Exp. 3-Y	Pearson Correlation	.085***	.097***	.014**
	Sig.	.000	.000	.012
Exp. 5-Y	Spearman's rho Correlation	.110***	.125***	.029***
	Sig.	.000	.000	.000
Exp. 3-Y	Spearman's rho Correlation	.098***	.112***	.026***
	Sig.	.000	.000	.000

Appendix 4: Acquirers' Market Risk & Public Target Status (Public, Private, Subsidiary)

Table 8.4: Acquirers' Market Risk and Public Target Status (Public, Private, Subsidiary)

			Independent Samples t-Test				Mann-Whitney U		
			N	Mean	Mean Dif.	p-value	Rank	Z	p-value
Public	Beta Before Ann.	Pub.	10869	.7876	.0848	.000***	18196	-13.858	.000***
		Non-Pub.	23352	.7028			16606		
	Beta After Ann.	Pub.	10869	.8056	.0799	.000***	18175	-13.596	.000***
		Non-Pub.	23352	.7257			16616		
	Δ Beta	Pub.	10869	.0179	-.0050	.406	17098	-0.169	.865
		Non-Pub.	23352	.0229			17117		
Private	Beta Before Ann.	Private	16145	.6835	-.0874	.000***	16140	-13.858	.000***
		Non- Private	18076	.7710			17978		
	Beta After Ann.	Private	16145	.7054	-.0864	.000***	16124	-13.596	.000***
		Non- Private	18076	.7918			17992		
	Δ Beta	Private	16145	.0218	.0010	.872	17124	-0.169	.865
		Non- Private	18076	.0208			17099		
Sub.	Beta Before Ann.	Sub.	7207	.7459	.0204	.006***	17650	-5.214	.000***
		Non-Sub.	27014	.7254			16967		
	Beta After Ann.	Sub.	7207	.7711	.0254	.001***	17717	-5.859	.000**
		Non-Sub.	27014	.7457			16949		
	Δ Beta	Sub.	7207	.0252	.0050	.478	17102	-0.092	.927
		Non-Sub.	27014	.0203			17114		

Appendix 5: M&A Deals According to Country of Target

Target Country								
Country	No	%	Country	No	%	Country	No	%
Albania	5	.011	Greenland	1	.002	Panama	18	0.038
Algeria	4	.009	Guam	1	.002	Papua N Guinea	23	0.049
Antigua	5	.011	Guatemala	10	.021	Paraguay	4	0.009
Argentina	137	.293	Guernsey	16	.034	Peru	91	0.195
Armenia	5	.011	Guyana	10	.021	Philippines	179	0.383
Aruba	1	.002	Haiti	1	.002	Poland	261	0.558
Australia	2089	4.468	Honduras	1	.002	Portugal	89	0.190
Austria	65	.139	Hong Kong	914	1.955	Puerto Rico	18	0.038
Bahamas	8	.017	Hungary	33	.071	Qatar	7	0.015
Bahrain	1	.002	Iceland	15	.032	Rep of Congo	7	0.015
Bangladesh	6	.013	India	455	.973	Reunion	1	0.002
Barbados	7	.015	Indonesia	287	.614	Romania	52	0.111
Belarus	5	.011	Iran	1	.002	Russian Fed	239	0.511
Belgium	160	.342	Iraq	7	.015	Rwanda	1	0.002
Belize	4	.009	IrelandRep	154	.329	Saudi Arabia	20	0.043
Bermuda	46	.098	Isle of Man	14	.030	Senegal	1	0.002
Bolivia	10	.021	Israel	192	.411	Serbia	9	0.019
Bosnia	7	.015	Italy	409	.875	Serbia & Mont.	10	0.021
Botswana	3	.006	Jamaica	4	.009	Seychelles	4	0.009
Brazil	547	1.170	Japan	2968	6.348	Sierra Leone	2	0.004
British Virgin	84	.180	Jersey	11	.024	Singapore	489	1.046
Brunei	3	.006	Jordan	12	.026	Slovak Rep	15	0.032
Bulgaria	31	.066	Kazakhstan	24	.051	Slovenia	20	0.043
Burkina Faso	5	.011	Kenya	3	.006	Solomon Is	1	0.002
Burundi	1	.002	Kuwait	27	.058	South Africa	445	0.952
Cambodia	6	.013	Kyrgyzstan	17	.036	South Korea	1222	2.613
Cameroon	2	.004	Laos	6	.013	Spain	383	0.819
Canada	3127	6.688	Latvia	7	.015	Sri Lanka	10	0.021
Cape Verde	1	.002	Lebanon	5	.011	Sudan	3	0.006
Cayman Islands	14	.030	Liberia	2	.004	Surinam	1	0.002
Chile	135	.289	Lithuania	21	.045	Swaziland	2	0.004
China	3087	6.602	Luxembourg	34	.073	Sweden	477	1.020
Colombia	86	.184	Macau	4	.009	Switzerland	194	0.415
Costa Rica	6	.013	Macedonia	6	.013	Syria	1	0.002
Croatia	23	.049	Madagascar	2	.004	Taiwan	269	0.575
Cuba	1	.002	Malaysia	1190	2.545	Tajikistan	3	0.006
Cyprus	40	.086	Mali	6	.013	Tanzania	9	0.019
Czech Republic	73	.156	Malta	7	.015	Thailand	287	0.614

Czechoslovakia	3	.006	Marshall Is	2	.004	Togo	1	0.002
Dem Rep Congo	3	.006	Mauritania	3	.006	Trinidad&Tob	8	0.017
Denmark	166	.355	Mauritius	10	.021	Tunisia	4	0.009
Dominican Rep	9	.019	Mexico	168	.359	Turkey	125	0.267
Ecuador	14	.030	Moldova	3	.006	Turkmenistan	2	0.004
Egypt	42	.090	Monaco	9	.019	Turks/Caicos	1	0.002
El Salvador	3	.006	Mongolia	16	.034	Uganda	3	0.006
Eritrea	1	.002	Montenegro	2	.004	Ukraine	52	0.111
Estonia	13	.028	Morocco	11	.024	United Kingdom	4376	9.359
Ethiopia	3	.006	Mozambique	7	.015	United States	17376	37.162
Falkland Is	2	.004	Namibia	19	.041	Uruguay	12	0.026
Faroe Islands	1	.002	Nepal	1	.002	Utd Arab Em	27	0.058
Fiji	6	.013	Neth Antilles	4	.009	Uzbekistan	3	0.006
Finland	227	.485	Netherlands	327	.699	Vanuatu	1	0.002
Fr Polynesia	1	.002	New Zealand	148	.317	Venezuela	25	0.053
France	737	1.576	Nicaragua	11	.024	Vietnam	39	0.083
Gabon	1	.002	Nigeria	11	.024	Western Somoa	1	0.002
Georgia	5	.011	Niue	2	.004	Yemen	1	0.002
Germany	606	1.296	North Korea	2	.004	Yugoslavia	5	0.011
Ghana	11	.024	Norway	341	.729	Zambia	9	0.019
Gibraltar	2	.004	Oman	6	.013	Zimbabwe	5	0.011
Greece	126	.269	Pakistan	13	.028	Total	46758	100

Appendix 6: M&A Deals According to Country of Acquirer

Acquirer Country								
Country	No	%	Country	No	%	Country	No	%
Argentina	51	.109	Hong Kong	1089	2.329	Papua N Guinea	5	.011
Australia	2168	4.637	Hungary	28	0.060	Peru	32	.068
Austria	73	.156	Iceland	35	0.075	Philippines	159	.340
Bahamas	7	.015	India	504	1.078	Poland	201	.430
Bahrain	3	.006	Indonesia	167	0.357	Portugal	73	.156
Belgium	159	.340	IrelandRep	197	0.421	Puerto Rico	10	.021
Belize	6	.013	Isle of Man	17	0.036	Qatar	12	.026
Bermuda	72	.154	Israel	205	0.438	Romania	4	.009
Brazil	373	.798	Italy	323	0.691	Russian Fed	159	.340
British Virgin	6	.013	Japan	3314	7.088	Saudi Arabia	15	.032
Bulgaria	9	.019	Jersey	11	0.024	Singapore	579	1.238
Cambodia	1	.002	Jordan	6	0.013	Slovak Rep	2	.004
Canada	3813	8.155	Kenya	1	0.002	Slovenia	15	.032
Cayman Islands	9	.019	Kuwait	38	0.081	South Africa	417	.892
Chile	72	.154	Latvia	1	0.002	South Korea	1282	2.742
China	2483	5.310	Lebanon	4	0.009	Spain	395	.845
Colombia	35	.075	Liechtenstein	1	0.002	Sri Lanka	5	.011
Croatia	8	.017	Luxembourg	29	0.062	Sweden	555	1.187
Cyprus	31	.066	Malaysia	1279	2.735	Switzerland	248	.530
Czech Republic	13	.028	Malta	4	0.009	Taiwan	279	.597
Denmark	141	.302	Mexico	94	0.201	Tanzania	1	.002
Egypt	28	.060	Morocco	5	0.011	Thailand	249	.533
Estonia	9	.019	Namibia	1	0.002	Togo	1	.002
Faroe Islands	1	.002	Neth Antilles	5	0.011	Turkey	77	.165
Finland	279	.597	Netherlands	311	0.665	Ukraine	6	.013
France	713	1.525	New Zealand	80	0.171	United Kingdom	5157	11.029
Germany	483	1.033	Nigeria	2	0.004	United States	17434	37.286
Ghana	4	.009	Norway	321	0.687	Uruguay	1	.002
Gibraltar	4	.009	Oman	5	0.011	Utd Arab Em	19	.041
Greece	169	.361	Pakistan	4	0.009	Venezuela	7	.015
Guernsey	33	.071	Panama	2	0.004	Vietnam	20	.043
			Total				46758	100.0

Appendix 7: M&A Deals According to Years of Study

Year	No	%	Year	No	%
1977	1	0.002	1995	1331	2.847
1978	18	0.038	1996	1651	3.531
1979	10	0.021	1997	1937	4.143
1980	46	0.098	1998	2021	4.322
1981	242	0.518	1999	2214	4.735
1982	273	0.584	2000	2633	5.631
1983	356	0.761	2001	1942	4.153
1984	401	0.858	2002	1571	3.360
1985	203	0.434	2003	1743	3.728
1986	304	0.650	2004	2274	4.863
1987	358	0.766	2005	2589	5.537
1988	425	0.909	2006	3071	6.568
1989	520	1.112	2007	3512	7.511
1990	371	0.793	2008	2898	6.198
1991	471	1.007	2009	2376	5.081
1992	634	1.356	2010	2628	5.620
1993	866	1.852	2011	2708	5.792
1994	1134	2.425	2012	1026	2.194
Total				46758	100

Appendix 8: No of M&As based on Acquirer Industry

Acquirer Mid Industry					
Mid Industry	No.	%	Mid Industry	No.	%
Advertising & Marketing	535	1.14	IT Consulting & Services	1469	3.14
Aerospace & Defense	349	0.75	Legal Services	5	0.01
Agriculture & Livestock	262	0.56	Machinery	1118	2.39
Alternative Energy Sources	82	0.18	Metals & Mining	3530	7.55
Alternative Financial Investments	371	0.79	Motion Pictures / Audio Visual	389	0.83
Apparel Retailing	115	0.25	National Agency	1	0.00
Asset Management	578	1.24	Non Residential	106	0.23
Automobiles & Components	778	1.66	Oil & Gas	2362	5.05
Automotive Retailing	150	0.32	Other Consumer Products	910	1.95
Banks	3895	8.33	Other Energy & Power	223	0.48
Biotechnology	382	0.82	Other Financials	1574	3.37
Broadcasting	286	0.61	Other Healthcare	6	0.01
Brokerage	449	0.96	Other High Technology	69	0.15
Building/Construction & Engineering	1371	2.93	Other Industrials	945	2.02
Cable	167	0.36	Other Materials	130	0.28
Casinos & Gaming	145	0.31	Other Media & Entertainment	5	0.01
Chemicals	854	1.83	Other Real Estate	794	1.70
Computers & Electronics Retailing	122	0.26	Other Retailing	341	0.73
Computers & Peripherals	931	1.99	Other Telecom	91	0.19
Construction Materials	597	1.28	Paper & Forest Products	443	0.95
Containers & Packaging	288	0.62	Petrochemicals	152	0.33
Credit Institutions	152	0.33	Pharmaceuticals	1012	2.16
Discount and Department Store Retailing	256	0.55	Pipelines	67	0.14
Diversified Financials	16	0.03	Power	623	1.33
Ecommerce / B2B	135	0.29	Professional Services	1293	2.77
Educational Services	146	0.31	Public Administration	6	0.01
Electronics	1004	2.15	Publishing	583	1.25
Employment Services	249	0.53	Real Estate Management	229	0.49
Food & Beverage Retailing	576	1.23	Recreation & Leisure	154	0.33
Food and Beverage	1360	2.91	REITs	699	1.49
Government Sponsored Enterprises	2	0.00	Residential	27	0.06
Healthcare Equipment & Supplies	1016	2.17	Semiconductors	765	1.64
Healthcare Providers & Services (HMOs)	610	1.30	Software	1810	3.87
Home Furnishings	172	0.37	Space and Satellites	26	0.06
Home Improvement Retailing	40	0.09	Supranational	2	0.00
Hospitals	142	0.30	Telecommunications Equipment	602	1.29
Hotels and Lodging	230	0.49	Telecommunications Services	750	1.60
Household & Personal Products	235	0.50	Textiles & Apparel	666	1.42
Industrial Conglomerates	47	0.10	Tobacco	48	0.10
Insurance	789	1.69	Transportation & Infrastructure	897	1.92
Internet and Catalog Retailing	138	0.30	Travel Services	105	0.22
Internet Infrastructure	1	0.00	Water and Waste Management	349	0.75
Internet Software & Services	1008	2.16	Wireless	351	0.75
			Total	46758	100.00

Appendix 9: Number of M&As based on Target Industry

Target Mid Industry					
Mid Industry	No.	%	Mid Industry	No.	%
Advertising & Marketing	546	1.17	IT Consulting & Services	1474	3.15
Aerospace & Defense	227	0.49	Legal Services	9	0.02
Agriculture & Livestock	302	0.65	Machinery	1091	2.33
Alternative Energy Sources	85	0.18	Metals & Mining	3504	7.49
Alternative Financial Investments	90	0.19	Motion Pictures / Audio Visual	373	0.80
Apparel Retailing	139	0.30	National Agency	1	0.00
Asset Management	552	1.18	Non Residential	352	0.75
Automobiles & Components	691	1.48	Oil & Gas	2372	5.07
Automotive Retailing	158	0.34	Other Consumer Products	986	2.11
Banks	3498	7.48	Other Energy & Power	196	0.42
Biotechnology	366	0.78	Other Financials	1989	4.25
Broadcasting	277	0.59	Other Healthcare	1	0.00
Brokerage	514	1.10	Other High Technology	26	0.06
Building/Construction & Engineering	1381	2.95	Other Industrials	886	1.89
Cable	152	0.33	Other Materials	217	0.46
Casinos & Gaming	91	0.19	Other Media & Entertainment	9	0.02
Chemicals	781	1.67	Other Real Estate	936	2.00
City Agency	1	0.00	Other Retailing	433	0.93
Computers & Electronics Retailing	141	0.30	Other Telecom	73	0.16
Computers & Peripherals	812	1.74	Paper & Forest Products	394	0.84
Construction Materials	521	1.11	Petrochemicals	138	0.30
Containers & Packaging	299	0.64	Pharmaceuticals	856	1.83
Credit Institutions	257	0.55	Pipelines	100	0.21
Discount and Department Store Retailing	134	0.29	Power	567	1.21
Diversified Financials	42	0.09	Professional Services	1893	4.05
Ecommerce / B2B	146	0.31	Public Administration	4	0.01
Educational Services	201	0.43	Publishing	501	1.07
Electronics	845	1.81	Real Estate Management & Development	243	0.52
Employment Services	235	0.50	Recreation & Leisure	263	0.56
Food & Beverage Retailing	604	1.29	REITs	398	0.85
Food and Beverage	1287	2.75	Residential	53	0.11
Government Sponsored Enterprises	8	0.02	Semiconductors	702	1.50
Healthcare Equipment & Supplies	1134	2.43	Software	2207	4.72
Healthcare Providers & Services (HMOs)	575	1.23	Space and Satellites	19	0.04
Home Furnishings	161	0.34	Telecommunications Equipment	533	1.14
Home Improvement Retailing	76	0.16	Telecommunications Services	660	1.41
Hospitals	164	0.35	Textiles & Apparel	577	1.23
Hotels and Lodging	298	0.64	Tobacco	31	0.07
Household & Personal Products	164	0.35	Transportation & Infrastructure	971	2.08
Insurance	831	1.78	Travel Services	133	0.28
Internet and Catalog Retailing	112	0.24	Water and Waste Management	346	0.74
Internet Infrastructure	1	0.00	Wireless	324	0.69
Internet Software & Services	1018	2.18	Total	46758	100.00

Appendix 10: Number of M&As for Acquirer and Target Industries

	Macro Industry														
Target / **Acquirer**	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	**Total**	**%**
(1) Consumer Products & Services	1265	107	69	170	2	163	379	263	130	133	62	106	31	2880	6.16
(2) Consumer Staples	142	1600	43	124	0	75	53	137	163	41	58	125	10	2571	5.50
(3) Energy and Power	95	25	2822	180	0	15	96	301	196	29	27	36	36	3858	8.25
(4) Financials	264	103	139	6047	3	87	268	229	227	136	192	78	53	7826	16.74
(5) Government & Agencies	1	0	0	1	0	2	0	1	3	0	1	0	0	9	0.02
(6) Healthcare	300	38	16	86	0	2339	104	97	67	16	29	62	14	3168	6.78
(7) High Technology	516	38	99	263	0	127	4769	387	149	290	48	111	395	7192	15.38
(8) Industrials	360	106	268	249	1	107	463	3050	446	76	199	88	92	5505	11.77
(9) Materials	147	164	268	199	0	80	152	461	4170	54	90	31	26	5842	12.49
(10) Media & Entertainment	254	26	10	88	0	15	314	58	41	1488	52	80	68	2494	5.33
(11) Real Estate	60	21	24	213	0	40	39	111	54	91	1153	40	9	1855	3.97
(12) Retail	136	124	21	94	0	31	89	66	36	58	61	1012	10	1738	3.72
(13) Telecommunications	78	9	25	67	0	15	505	86	34	98	10	28	865	1820	3.89
Total	3618	2361	3804	7781	6	3096	7231	5247	5716	2510	1982	1797	1609	46758	100
%.	7.74	5.05	8.14	16.64	0.01	6.62	15.46	11.22	12.22	5.37	4.24	3.84	3.44	100	

Matlab Coding

Abnormal Return and Cumulative Abnormal Return

Upload Data and Convert Price to Return

```
yyb = xlsread(filename,BidderP); %reads the specified worksheet (bidder share price).
xbidder = xlsread(filename,MarketP); %reads the specified worksheet (market index price).
a = xlsread(filename,sheet); %reads the specified worksheet.
ryb= price2ret(yyb); %convert price to return for bidder
rmbidder= price2ret(xbidder); %convert price to return (market index)

function [z,CAR_ALL,Beta_all,AAR_ALL,] = CAR;

NMBR= size(yyb);
z=NMBR(:,2);
Yousef = 1:z; % z is the number of deals

l1=100;  % number of days on the estimation period
l2=61;  % number of days on the event period

%for event (-30,+30); 61 days
m1 = rmbidder(1:(l1),:); % return on market for estimation period
y1 = ryb(1:(l1),:); % return on bidder for estimation period
a1 = a(1:(l1),:);
x2 = rmbidder((l1+1):(l1+l2),:);   % return on market for event period
a2 = a((l1+1):(l1+l2),:);
for i=Yousef; % i refers to columns of the matrix (number of deals)
   Beta(:,i) = [a1,m1(:,(i))]\y1(:,(i));
   AR_est(:,i) = (y1(:,i)-([a1,m1(:,(i))]*Beta(:,i)))';
   yhat(:,i) = Beta(:,i)'*[a2,x2(:,(i))]';
end
y2 = ryb((l1+1):(l1+l2),:);   % return on bidder for event period
AR = y2 - yhat;       % abnormal return for event period
CAR30f = sum (AR,1);          % cumulative abnormal return for event period
CAR_30 = sum(AR(1:31,:));
CAR = [CAR30f];


%for event (-20,+20); 41 days
m11 = rmbidder(11:(l1+10),:); % return on market for estimation period
y11 = ryb(11:(l1+10),:); % return on bidder for estimation period
a11 = a(11:(l1+10),:);
x220 = rmbidder((l1+1+10):(l1+10+41),:);   % return on market for event period
a220 = a((l1+1+10):(l1+10+41),:);
for i=Yousef; i refers to columns of the matrix (number of deals)
   Beta20(:,i) = [a11,m11(:,(i))]\y11(:,(i));
   AR_est20(:,i) = (y11(:,i)-([a11,m11(:,(i))]*Beta20(:,i)))';
```

```
    yhat20(:,i) = Beta20(:,i)'*[a220,x220(:,(i))]';
end
y2220 = ryb((l1+1+10):(l1+10+41),:);   % return on bidder for event period
AR20 = y2220 - yhat20;        % abnormal return for event period
CAR20f = sum (AR20,1);
CAR_20 = sum(AR20(1:21,:));
CAR20 = [CAR20f];


%for event (-10,+10); 21 days
m110 = rmbidder(21:(l1+20),:); % return on market for estimation period
y110 = ryb(21:(l1+20),:); % return on bidder for estimation period
a110 = a(21:(l1+20),:);
x220 = rmbidder((l1+1+20):(l1+20+21),:);   % return on market for event period
a220 = a((l1+1+20):(l1+20+21),:);
for i=Yousef; i refers to columns of the matrix (number of deals)
    Beta10(:,i) = [a110,m110(:,(i))]\y110(:,(i));
    AR_est10(:,i) = (y110(:,i)-([a110,m110(:,(i))]*Beta20(:,i)))';
    yhat10(:,i) = Beta10(:,i)'*[a220,x220(:,(i))]';
end
yR2220 = ryb((l1+1+20):(l1+20+21),:);   % return on bidder for event period
AR10 = yR2220 - yhat10;        % abnormal return for event period
CAR10f = sum (AR10,1);
CAR_10 = sum(AR10(1:11,:));
CAR10 = [CAR10f];


%for event (-5,+5); 11 days
m5 = rmbidder(26:(l1+25),:); % return on market for estimation period
y5 = ryb(26:(l1+25),:); % return on bidder for estimation period
a5 = a(26:(l1+25),:);
x25 = rmbidder((l1+1+25):(l1+25+11),:);   % return on market for event period
a25 = a((l1+1+25):(l1+25+11),:);
for i=Yousef; i refers to columns of the matrix (number of deals)
    Beta5(:,i) = [a5,m5(:,(i))]\y5(:,(i));
    AR_est5(:,i) = (y5(:,i)-([a5,m5(:,(i))]*Beta5(:,i)))';
    yhat5(:,i) = Beta5(:,i)'*[a25,x25(:,(i))]';
end
y225 = ryb((l1+1+25):(l1+25+11),:);   % return on bidder for event period
AR5 = y225 - yhat5;        % abnormal return for event period
CAR5f = sum (AR5,1);
CAR_5 = sum(AR5(1:6,:));
CAR5 = [CAR5f];


%for event (-3,+3); 7 days
m3 = rmbidder(28:(l1+27),:); % return on market for estimation period
y3 = ryb(28:(l1+27),:); % return on bidder for estimation period
a3 = a(28:(l1+27),:);
```

```
x32 = rmbidder((l1+1+27):(l1+27+7),:);   % return on market for event period
a32 = a((l1+1+27):(l1+27+7),:);
for i=Yousef; i refers to columns of the matrix (number of deals)
   Beta3(:,i) = [a3,m3(:,(i))]\y3(:,(i));
   AR_est3(:,i) = (y3(:,i)-([a3,m3(:,(i))]*Beta3(:,i)))';
   yhat3(:,i) = Beta3(:,i)'*[a32,x32(:,(i))]';
end
y32 = ryb((l1+1+27):(l1+27+7),:);   % return on bidder for event period
AR3 = y32 - yhat3;        % abnormal return for event period
CAR3f = sum (AR3,1);
CAR_3 = sum(AR3(1:4,:));
CAR3 = [CAR3f];

%for event (-2,+2); 5 days
mS2 = rmbidder(29:(l1+28),:); % return on market for estimation period
yS2 = ryb(29:(l1+28),:); % return on bidder for estimation period
aS2 = a(29:(l1+28),:);
xS2 = rmbidder((l1+1+28):(l1+28+5),:);   % return on market for event period
aS22 = a((l1+1+28):(l1+28+5),:);
for i=Yousef; i refers to columns of the matrix (number of deals)
   BetaS2(:,i) = [aS2,mS2(:,(i))]\yS2(:,(i));
   AR_estS2(:,i) = (yS2(:,i)-([aS2,mS2(:,(i))]*BetaS2(:,i)))';
   yhatS2(:,i) = BetaS2(:,i)'*[aS22,xS2(:,(i))]';
end
yS22 = ryb((l1+1+28):(l1+28+5),:);   % return on bidder for event period
ARS2 = yS22 - yhatS2;        % abnormal return for event period
CARS2 = sum (ARS2,1);


%for event (-1,+1); 3 days
mS1 = rmbidder(30:(l1+29),:); % return on market for estimation period
yS1 = ryb(30:(l1+29),:); % return on bidder for estimation period
aS1 = a(30:(l1+29),:);
xS1 = rmbidder((l1+1+29):(l1+29+3),:);   % return on market for event period
aS11 = a((l1+1+29):(l1+29+3),:);
for i=Yousef; i refers to columns of the matrix (number of deals)
   BetaS1(:,i) = [aS1,mS1(:,(i))]\yS1(:,(i));
   AR_estS1(:,i) = (yS1(:,i)-([aS1,mS1(:,(i))]*BetaS1(:,i)))';
   yhatS1(:,i) = BetaS1(:,i)'*[aS11,xS1(:,(i))]';
end
yS11 = ryb((l1+1+29):(l1+29+3),:);   % return on bidder for event period
ARS1 = yS11 - yhatS1;        % abnormal return for event period
CARS1 = sum (ARS1,1);


AAR=mean(AR);
AAR20=mean(AR20);
AAR10=mean(AR10);
AAR5=mean(AR5);
AAR3=mean(AR3);
```

```
AARS2=mean(ARS2);
AARS1=mean(ARS1);

CAR_ALL= [CAR;CAR20;CAR10;CAR5;CAR3;CARS2;CARS1]';
AAR_ALL=[AAR;AAR20;AAR10;AAR5;AAR3;AARS2;AARS1]';
BEAL= [Beta;Beta20;Beta10;Beta5;Beta3;BetaS2;BetaS1];
B2= BEAL(2,:);
B4= BEAL(4,:);
B6= BEAL(6,:);
B8= BEAL(8,:);
B10= BEAL(10,:);
B12= BEAL(12,:);
B14= BEAL(14,:);
Beta_all= [B2;B4;B6;B8;B10;B12;B14]';

AR_ALL= [AR;AR20;AR10;AR5;AR3;ARS2;ARS1];
```

% Write Microsoft Excel spreadsheet file

```
xlswrite(filename,A,sheet,xlRange) % writes to the specified worksheet and range.

xlswrite('C:\Users\*****',z,'IBRAHIM','B10');
xlswrite('C:\Users\*****',CAR_ALL, 'IBRAHIM','B12');
xlswrite('C:\Users\*****',Beta_all, 'IBRAHIM','L12');
xlswrite('C:\Users\*****',AAR_ALL, 'IBRAHIM','G12');
```

Market Risk (Beta)

Upload Data and Convert Price to Return

```
yyb = xlsread(filename,BidderP); %reads the specified worksheet (bidder share price).
xbidder = xlsread(filename,MarketP); %reads the specified worksheet (market index price).
a = xlsread(filename,sheet); %reads the specified worksheet.
ryb= price2ret(yyb); %convert price to return for bidder
rmbidder= price2ret(xbidder); %convert price to return (market index)


function [Beta_all] = DSBeta2;

NMBR= size(yyb);
z=NMBR(:,2);
Yousef = 1:z; % z is the number of deals

prd_0=260; % the number of days before announcement
prd_1=520; % the number of days before and after announcement

yb100= ryb(1:prd_0,:);
```

```
a100= a(1:prd_0,:);
mb100= rmbidder(1:prd_0,:);


yb200= ryb(prd_0+1:prd_1,:);
a200= a(prd_0+1:prd_1,:);
mb200= rmbidder(prd_0+1:prd_1,:);


for i=Yousef;
   Betab100(:,i) = [a100,mb100(:,(i))]\yb100(:,(i)); % beta before
   Betab200(:,i) = [a200,mb200(:,(i))]\yb200(:,(i)); % beta after

end

Beta_all =[Betab100 Betab200];
```