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What Drives European Spinoff Value Effects?

Impact of Corporate Governance, Information Asymmetry, and Investor Irrationality on Firm Values

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Abstract

The thesis explores the magnitude and determinants of spinoff value effects using robust methodologies and different theoretical perspectives. From a sample of 170 European spinoffs in the period 1987-2005, I find that spinoff announcement returns are significantly positive while the long-run shareholder value performance of post-spinoff firms is insignificant when the cross-sectional return dependence problem is controlled. This is consistent with market efficiency overall in relation to spinoffs. However, this overall efficiency may conceal irrational investor behaviour towards certain types of spinoffs.

Assuming investor irrationality, I examine whether investor sentiment affects spinoff wealth effects and spinoff decisions. I use four different proxies to measure investor demand for corporate focus and glamour stocks, and observe a positive association between these proxies and spinoff announcement returns. In addition, I find that offspring, born of spinoffs to cater to investor demand for glamour stocks, significantly underperform various benchmarks including the performance of less glamourous offspring.

An improvement in operating efficiency of post-spinoff firms may not be realised if post-spinoff firms have weak corporate governance and agency conflicts are not mitigated. I investigate this issue by examining changes of corporate governance mechanisms around spinoffs. I observe that spinoff firms with a controlling family shareholder have higher announcement stock returns but lower post-spinoff performance than others. Moreover, controlling family shareholders generally reduce their stock ownership in post-spinoff firms, indicating that they may undertake spinoffs to reshuffle their wealth portfolios. I also find that board monitoring and takeover threats for post-spinoff firms positively affect the long-run performance of post-spinoff firms.

This thesis further inspects the relationship between information asymmetry between the pre-spinoff parent and the stock market, and spinoff value effects. By employing four different information asymmetry proxies, I find no evidence that a spinoff resolves information asymmetry problems. In contrast, I document some evidence that the information asymmetry problem may be exacerbated following spinoffs when the liquidity of post-spinoff firms is decreased.

Taken together, my findings suggest that managers and shareholders should assess the desirability of a spinoff more carefully and take investor irrationality into account.

This is the first study that focuses on European spinoffs over a long period and tests various theories concerning the sources of value. It also provides the first time empirical evidence on the validity of the catering theory in the context of spinoffs.

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Chapter 1 Introduction

Corporate spinoff is a special type of corporate restructuring. Through a spinoff, a publicly traded firm offers shares of a subsidiary to its shareholders on a pro rata distribution basis. Following this spinoff transaction, the newly floated company has an independent existence and is separately valued in the stock market. The divestor continues to exist, albeit downsized. Although there is no cash flow generated from a spinoff transaction, spinoff announcements are often associated with positive market reaction. On average, the abnormal returns to firms undertaking spinoffs are in the range of 2.4–4.3% as shown in different time periods and in different countries (Daley, Mehrotra and Sivakumar, 1997; Hite and Owers, 1983; Krishnaswami and Subramaniam, 1999; Slovin, Sushka and Ferraro, 1995; Veld and Veld-Merkoulova, 2004). Furthermore, some US studies document evidence that post-spinoff firms earn significant and positive long-run stock returns. For example, Desai and Jain (1999) find that, for a sample of 155 US spinoffs between the years 1975 and 1991, the abnormal returns for pro-forma combined firms (both post-spinoff parent and offspring) are significant at 19.82% over 36 months. While the motivation often given for spinoffs is corporate focusing, the precise source of such significant value gains is still a subject of significant debate.

On the one hand, academic researchers have proposed several hypotheses based on an efficiency view to explain the spinoff value gains. Corporate focus hypothesis argues that a spin-off of non-core assets can reserve managerial resources for the core business and improves the operating efficiency of remaining assets of the parent (Daley et al., 1997; Desai and Jain, 1999). A spinoff can also create shareholder value by reducing agency costs associated with diversification (Allen, Lummer, McConnell and Reed, 1995; Berger and Ofek, 1995, 1999; Comment and Jarrell, 1995; Denis, Denis and Sarin, 1997). Information asymmetry hypothesis contends that a spin-off enhances firm value because it mitigates the information asymmetry between managers and external investors about the profitability and operating efficiency of different divisions of parent firm (Krishnaswami and Subramaniam, 1999).

Prior studies also propose that spin-off value gains may stem from the wealth transfer from debtholders to shareholders (Parrino, 1997; Maxwell and Rao, 2003) and the relaxation of regulatory constraints on post-spinoff firms (Schipper and Smith, 1983). These hypotheses are based on rational managers seeking to maximise shareholder values without a presumption of irrationality in the stock market.

On the other hand, some researchers and practitioners regard spinoffs as a mechanism for managers to exploit irrational demand of investors. Behavioural finance literature has shown that investors often make systematic mistakes in decision making due to common cognitive biases, such as conservatism, representative heuristic, and overconfidence (for related literature reviews see Barberis and Thaler, 2003; Hirshleifer, 2001; and Shleifer, 2000). The behavioural approach suggests that, if investors are irrational in valuing stocks, managers may be able to boost short-run share prices by separating elements of firms that investors value more highly. There is evidence that some spunoff subsidiaries, such as high-tech or internet subsidiaries, are highly overpriced relative to their parents in the late 1990s and eventually earn significant negative long-run returns (Lamont and Thaler, 2003; Mitchell, Pulvino and Stafford, 2002). This evidence suggests that, when irrational investors assess the desirability of a spinoff, they may over-extrapolate the recent performance of similar stocks in the subsidiary's industry.

The extant empirical evidence for these above explanations of spinoff value effects is mixed or scanty. First, it is not clear whether spinoffs create superior long-run returns. Earlier empirical studies have documented evidence of market underraction to spinoff announcements, which means the slow assimilation of information revealed by the spinoff news into stock prices. For example, Cusatis, Miles and Woolridge (1993) find, for a sample of US spinoffs completed between 1965 and 1988, post-spinoff firms earn significant abnormal returns in the three-year period subsequent to the spinoff completion. They attribute the post-spinoff price drift to an incomplete market response to positive information about the benefits with potential takeovers.

However, Fama (1998) questions the validity of long-run post-spinoff abnormal returns. Fama specifically points out that the long-run return methodology used by Cusatis et al. does not take into account the cross-sectional event-firm-return dependence problem. He further contends that testing market efficiency requires appropriate benchmarks and most abnormal returns documented in long-run event studies would disappear when robust return methodologies were to be used. Since most prior studies on spinoffs do not consider cross-sectional dependence in calculating long-run abnormal returns, it is unclear whether spinoffs create superior stock returns in the long run when a robust return calculation methodology is used.

Second, there is no empirical study directly testing the impact of investor irrationality on spinoff value effects although some news reports have indicated that investors may overreact to spinoff news and managers tend to spin off overvalued subsidiaries (e.g. see Dennis, 2006). This view implies that stock markets may be inefficient in valuing certain types of spinoffs, i.e. the initial market reaction to spinoffs may be too high.

Third, the corporate focus hypothesis does not explain the spinoff value effects well. Veld and Veld-Merkoulova (2004) examine the long-term wealth effects of European spinoffs and find that focus-increasing spinoffs do not outperform non-focus-increasing spinoffs in the long run. This finding is contradictory to the early US evidence that firms emerging from focus-increasing spinoffs have significantly better performance than those emerging from non-focus-increasing spinoffs (e.g. see Daley et al., 1997; Desai and Jain, 1999).

There may be two different reasons for the mixed evidence on the corporate focus hypothesis. The first reason is that focus-increasing spinoffs in Veld and Veld-Merkoulova (2004) may include spinoffs of overvalued subsidiaries. As suggested by the behavioural model of spinoffs, spinoffs of overvalued subsidiaries have lower long-term performance than other types of spinoff because investors may initially overreact to the former.

The second reason could be that focus-increasing spinoffs in Veld and Veld-Merkoulova (2004) may include spinoffs of family firms, which are very common in Europe as pointed out in Faccio and Lang (2002). The benefits of focus-increasing spinoffs may not be realised when post-spinoff firms have weak corporate governance and agency problems remain severe. Chemmanur and Yan (2004) develop a corporate control model to explain spinoff value effects. According to their model, a spinoff creates value by facilitating market discipline on managers of post-spinoff firms since post-spinoff firms are more focused and easier to be acquired than pre-spinoff firms. Such takeover control benefits may not apply to spinoffs of family firms since family shareholders are often excessively interested in maintaining control over the companies even in the presence of potentially value-increasing acquirers (Burkart, Panunzi and Shleifer, 2003). Thus, it is important to examine whether post-spinoff firms have an improvement in corporate governance and whether the corporate governance structure of post-spinoff firms is related to spinoff value effects.

Fourth, there is contradictory evidence on the information asymmetry hypothesis. From a recent sample of US spinoffs, Veld and Veld-Merkoulova (2005) observe that the information asymmetry proxy measured by residual stock volatility prior to the spinoff announcement has an insignificant impact on the spinoff announcement returns. Again, this finding is different from the early evidence documented in Krishnaswami and Subramaniam (1999) that the information asymmetry level of pre-spinoff firms significantly and positively affects spinoff announcement returns.

There may be two reasons for the inconsistent evidence on the information asymmetry hypothesis. First, the supporting evidence for the information asymmetry hypothesis documented in Krishnaswami and Subramaniam (1999) may be sample-specific. The spinoff sample examined in Krishnaswami and Subramaniam (1999) may consist of firms that have severe information asymmetry problems prior to the spinoff announcements. The recent US spinoff sample examined in Veld and Veld-Merkoulova (2005) may mainly contain firms that undertake spinoffs for non-information-related reasons. Second, the evidence in Veld and Veld-Merkoulova (2004) may be inconclusive. They only use one information asymmetry proxy, the residual standard deviation of the market-adjusted daily stock returns, to measure the information asymmetry level of spinoff firms. In contrast, Krishnaswami and Subramaniam (1999) use five different information asymmetry measures, including three proxies based on equity analysts' earning forecast data and two proxies based on stock return volatility data. They observe that the information asymmetry proxies based on analysts' forecast data have greater explanatory power than the residual standard deviation in explaining the spinoff announcement effects.

To address these afore-mentioned issues, this thesis conducts a comprehensive examination of the value creation from corporate spinoffs for a sample of completed European spinoffs in the period between January 1987 and December 2005. Investigating both the short-run and long-run market reaction to spinoff announcements, this study aims to address the following two related research questions. First, do corporate spinoffs really create shareholder value? Second, what are the determinants of spinoff value effects?

In the first empirical chapter, I investigate the stock and operating performance of firms involved in spinoffs. For the long-run stock performance of post-spinoff firms, I use a number of different return methodologies to control for the cross-sectional return-dependence problem. As the measurement of long-run stock returns is controversial, I also inspect the long-run accounting returns of post-spinoff firms. Using different robust return methodologies, I expect to provide convincing evidence on market efficiency in valuing spinoff news.

In the subsequent three empirical chapters, I explore the underlying sources of spinoff value effects. Using a standard event study methodology, I investigate the determinants of spinoff announcement effects by testing the relative validity of behavioural, governance-based, and information-based models for explaining spinoff announcement gains. I also examine whether these models can explain the variation of the long-run spinoff performance since the recent finance literature has demonstrated that the initial market reaction to corporate events may be inefficient.

Main findings of the thesis are summarised as follows:

1. The average of announcement period abnormal returns to firms conducting corporate spinoffs is significantly positive. The positive spinoff value effects do not substantially differ across sample countries. This evidence suggests that European stock markets widely view corporate spinoffs as value-enhancing transactions.

2. There are insignificant long-run abnormal stock returns to post-spinoff firms. The significance of post-spinoff buy-and-hold abnormal returns substantially reduces when I use robust return measurement methodology as proposed in

Jegadeesh and Karceski (2004), Lyon, Barber and Tsai (1999) and Mitchell and Stafford (2000). The calendar-time regression approach using the Fama and French (1993) three-factor model or the Carhart (1997) four-factor model shows that investing in post-spinoff firms does not deliver superior long-run abnormal returns. Using the calendar-time abnormal portfolio approach, as advocated in Mitchell and Stafford (2000), yields similar results. Moreover, neither parent nor offspring earn significant long-run abnormal accounting returns in the three-year post-spinoff period. Therefore, my results indicate that the overall market reaction to European spinoffs is efficient.

3. The overall efficiency of European stock markets may conceal irrational investor behaviour towards certain types of spinoffs. To examine this possibility, I inspect the relationship between investor sentiment and the market reaction to spinoff announcement returns. I document a significant and positive association between investor demand for corporate focus (and glamour stocks of offspring) and the spinoff announcement returns. The strong association holds even after controlling for the value factors suggested in prior studies such as increased corporate focus and reduced information asymmetry. Therefore, my results indicate that investor sentiment does affect the market reaction to spinoff announcements.

4. Based on a behavioural approach, I further propose the catering theory of corporate spinoffs that managers may undertake spinoffs to cater to temporary investor demand. I contend that managers of undervalued parent firms have strong incentives to cater to investor demands by spinning off overvalued subsidiaries in order to maximise short run share prices. A possible reason for managers to conduct non-value-maximising spinoffs is that they may benefit from realising stock options or trading equities of post-spinoff firms due to their private information (Allen, 2001). I use three different measures to indicate such catering spinoffs. I find that the announcement returns to catering spinoffs are significantly higher than those to other types of spinoff. However, offspring following catering spinoffs underperform those from other types of spinoff. This evidence suggests that initial investor beliefs of the long-run performance of overvalued subsidiaries are unfounded and eventually

expectations are replaced with results.

5. The benefits of an increase in corporate focus of post-spinoff firms may not be realised if these firms have weak corporate governance and agency conflicts are not mitigated. I find that spinoffs of family firms have higher announcement returns but lower long-run performance than those of non-family firms. I also observe that post-spinoff firms that are subject to takeover bids over a three-year period have better stock performance than those that do not receive a bid. In addition, I document evidence that an increase of board independence in post-spinoff firms is positively associated with the long-run post-spinoff stock returns. Taken together, my results are in line with the prediction of the governance-based model that enhancement of corporate governance in post-spinoff firms is positively associated with the spinoff value creation.

6. I find little evidence supporting the information asymmetry hypothesis. In general, spinoff parents and industry- and size-matching non-spinoff firms have a similar level of information asymmetry problems prior to spinoff. Furthermore, there is no improvement in the information asymmetry measures and the analyst coverage following a spinoff. The long-run spinoff performance is also negatively associated with the information asymmetry measures of a pre-spinoff parent firm, which is contradictory to the prediction of information asymmetry hypothesis that a spinoff creates value by reducing information asymmetry. Thus, it is unlikely that a European spinoff is motivated by the information asymmetry problem. A further examination reveals that the information asymmetry problem may be exacerbated when the organisational complexity of post-spinoff firms is reduced. One explanation for this finding is that refocusing firms lose the benefits of liquidity premium in the stock markets (Chang and Yu, 2004) and the market’s incentive to collect information is reduced when the firm’s liquidity is reduced (Goldman, 2005).

However, my results should be interpreted with the following limitations in mind. First, my spinoff sample size is quite small because spinoff transactions have only become popular in Europe in recent years. Thus my results are subject to data limitation problems. Second, although I consider the country-level shareholder protection in cross-country analysis, I have not controlled a number of important differences across European countries. For example, European countries differ substantially in terms of their accounting standards and capital market regulations, which will have an impact on the spinoff value effects. Third, although I have employed several recently-suggested return methodologies to assess market efficiency to evaluate spinoffs, these methodologies have their statistical and model misspecification problems. Fourth, my proxy variables for investor irrationality may capture factors other than market misvaluation. For example, the market-based industry valuation of spun-off subsidiary may simply reflect the growth potential of spun-off subsidiary and managers may not conduct spinoffs to exploit market misvaluation. To obtain more convincing results, future research may consider other variables to measure managerial incentives to exploit market misvaluation, such as managerial stock-based compensation. Fifth, certain corporate governance variables that I used contain personal biases. For instance, the classification of independent directors is based on my own assessment of directors' relationship with a sample firm by reading directors' profiles in annual reports and related news reports. Finally, I have not examined the endogeneity issue in this thesis, which may affect the interpretation of my results. Future research should consider this issue since corporate spinoffs are self-selection events and firms involved in spinoffs are non-random.

The rest of this thesis is organised as follows. Chapter 2 surveys the existing literature on the motives and consequences of corporate spinoffs. Chapter 3 reviews the arguments for and against the market efficiency as well as the related return measurement issues. Chapter 4 presents the research questions and develops testable hypotheses based on different theoretical perspectives. Chapter 5 employs several robust return methodologies to inspect stock market efficiency in valuing corporate spinoffs. Chapter 6 investigates the impact of investor irrationality on the spinoff wealth effects and examines if some spinoffs are undertaken to exploit market misevaluation. Chapter 7 explores whether a spinoff creates shareholder value by mitigating agency conflicts. Chapter 8 tests the information asymmetry hypothesis for spinoff value gains. Chapter 9 discusses the main findings of this study and offers suggestions for future research.

Chapter 2 Literature Review on Spinoff Value Effects

2.1 Introduction

The precise mechanism for a corporate spinoff to create shareholder values is ambiguous. Existing explanations of spinoff value effects focus on how changes of organisational structure following a spinoff help improve the operating efficiency of post-spinoff firms. However, the empirical studies report mixed evidence for explanations derived from the efficiency view. This chapter surveys the extant literature on spinoff value effects and identifies the limitations of past empirical studies.

This chapter is organised as follows. Section 2.2 defines corporate spinoffs. Section 2.3 presents explanations based on the efficiency view to justify spinoff value effects. Section 2.4 describes a behavioural view of spinoff value effects. Section 2.5 identifies the limitations of extant empirical studies of spinoff value effects. Section 2.6 concludes this chapter.

2.2 Spinoff Definition

Corporate spinoff is a restructuring transaction to reduce firm size by divesting one or more subsidiaries. In a spinoff, shares of a firm's subsidiary are distributed pro-rata among the existing shareholders of the company. There is no cash transaction taking place. After the spinoff, the shareholders of the spinoff parent hold shares in both the parent and spunoff subsidiary company. In this thesis, the divestor is called parent and the spunoff subsidiary is termed offspring.

It is worth noting that there are two alternative forms of corporate restructuring to reduce the firm size. One is the asset sale, in which part of a firm's assets are sold to outsiders very often for cash. Corporate spinoff differs from asset sale because the former has no cash flow implications and it cannot be motivated by financing needs, which is often the key rationale for asset sale (Afshar, Taffler and Sudarsanam, 1992; Alexandrou and

Sudarsanam, 2001; John and Ofek, 1995; Lang, Poulsen and Stulz, 1995; Lasfer, Sudarsanam and Taffler, 1996). The other is the equity carveout, in which some of the shares of a subsidiary are sold to the public and the divested subsidiary is also listed on the stock market. Equity carveout is similar to corporate spinoff since both transactions make the subsidiary become public. However, equity carveouts also result in cash flows to the parent and the parent company often holds a substantial stake on the carved out subsidiary. Thus, equity carveout is often undertaken as an alternative mechanism to obtain external finance either for the parent or subsidiary (Allen and McConnell, 1998; Vijh, 1999). In sum, corporate spinoff is a special type of restructuring to reduce firm size. The absence of cash flow in spinoff transaction implies that there must be other underlying economic forces driving the division of a large firm into two or more smaller ones.

The 1990s witnesses a growing trend of corporate spinoffs. The annual transaction value of completed US spinoffs rose from US$5.7 billion in 1990 to US$140.4 billion in 1999; on average 62 deals were completed per year during this period (Sudarsanam, 2003, p.347, Table 11.3). This trend has reversed since the high tech bubble burst in the early 2000. In 2005 there were only 17 completed spinoffs in the US and their transaction value was just US$ 14.0 billion. In general, spinoff announcements are applauded by investors. For example, in February 2001 Canadian Pacific announced that it was going to spin off four of its subsidiaries, including Canadian Pacific Railway and PanCanadian Petroleum, and would only retain the business in Canadian Pacific Hotels. On the day of the spinoff announcement, the shares of Canadian Pacific increased by $5.60 to $57.15, resulting in a return of almost 11% within one day. Such a significant stock return on the spinoff announcement date conveys a clear message that a spinoff transaction enhances shareholder values. The subsequent two sections describe different views on the spinoff value effects. Empirical predictions for both views are also discussed.

2.3 The Efficiency View of Spinoff Value Effects

Spinoff is involved with assets and liabilities reallocation across post-spinoff firms but also the recontracting of the relationship between managers and shareholders in post-spinoff firms. These contemporaneous changes during a spinoff transaction may account for the variation of shareholder gains from corporate spinoffs. The rest of this section reviews a number of hypotheses which explore the value implication of those rearrangements of resources and relationships through the spinoff transaction.

2.3.1 Corporate Focus Hypothesis

Corporate focus literature argues that enhanced corporate focus leads to an increase in firm value (Lang and Stulz, 1994; Comment and Jarrell, 1995; Berger and Ofek, 1995). In the context of corporate divestiture, a spinoff of unrelated businesses can reduce organisation's complexity and eliminate the negative synergy stemming from the interference between distinct divisions. Therefore, firms undertaking focus-increasing spinoffs will witness favourable market reactions, which incorporate investor expectation of an improvement in both operating performance and stock performance for post-spinoff firms. Extant empirical studies have shown that the focusing status of a spinoff is positively associated with the short-run market reaction to spinoff announcements (e.g. see Daley et al., 1997; Krishnaswami and Subramaniam, 1999; Desai and Jain, 1999).

Desai and Jain (1999) investigate the long-run stock performance of post-spinoff firms. They find that parent firms involved in focus-increasing spinoffs earn significant positive abnormal returns of 25.37% over the three-year period subsequent to the spinoff completion while parent firms involved in non-focus-increasing spinoffs earn insignificant negative abnormal returns of -10.51% over the same holding period. Similarly, spunoff subsidiaries involved in focus-increasing spinoffs earn significant positive abnormal returns of 54.45% over the three-year period subsequent to the spinoff completion, while parent firms involved in non-focus-increasing spinoffs earn insignificant negative abnormal returns of -21.85% over the same holding period. Their findings lend strong support to the corporate focus hypothesis.

This corporate focus hypothesis is examined in Veld and Veld-Merkoulova (2004) for a European sample but receives only limited support. It is somewhat surprising that, for their spinoff sample, the focus-increasing measure is positively associated with spinoff announcement returns but negatively related to the long-run stock returns to post-spinoff firms albeit of no statistical significance.

An explanation for the mixed evidence on the corporate focus hypothesis may be that the benefits of refocusing spinoffs are not realised when the corporate governance in post-spionoff firms is weak and the agency conflicts are not mitigated. This concern is particularly important since many restructuring firms have weak corporate governance before the restructuring announcements. Therefore, the fundamental issue for the corporate restructuring is to mitigate the agency conflicts not just the asset redistribution.

The extant literature has presented some evidence that refocusing transactions, including spinoffs, create value by correcting mistaken strategies due to agency problems. Berger and Ofek (1999) have conducted detailed analysis of antecedents and outcomes of corporate refocusing programmes, including both focus-increasing spinoffs and asset sales of unrelated businesses. They find that refocusing announcements are often preceded by corporate control events, such as failed takeover threats and shareholder activisms. In contrast, control firms, which have similar operating characteristics to those of refocusing firms but do not refocus, do not experience such a high frequency of corporate control events. Berger and Ofek argue that agency problems are a contributing factor in firms maintaining value-destroying diversification strategy. In addition, the diversification value-effect measure[1] for refocusing parents is significantly lower than that for control firms. Following the refocusing transaction, the diversification value-effect measure for a refocusing firm increases significantly. Taken together, the evidence indicates that refocusing transactions, such as a focus-increasing spinoff, create shareholder values by reducing the agency costs of diversification.

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[1] Berger and Ofek (1995) propose a measure of diversification's value effect, which is the natural log of the ratio of a multi-segment firm's actual value to its imputed value. The imputed value of a multi-segment firm is the sum of the imputed value of each segment, which is the product of the median ratio, for single-segment firms in the same industry, of total capital to one of three accounting items (assets, sales, or earnings before interest, tax and depreciation). Negative excess value indicates that diversification reduces the value of segments below that of their stand-alone counterparts.

Allen et al. (1995) investigate the source of spinoff value gains in a similar spirit. They trace the origin of the spunoff subsidiaries and identify a sample of 73 spinoffs in which the spunoff subsidiaries were originally purchased through acquisitions. They propose a “correction-of-a-mistake” hypothesis for the spinoff value effects. They argue that corporate spinoffs create shareholder values by reversing the value losses from earlier mistaken acquisitions. They find supporting evidence for the argument. First, the acquiring firm’s stock price reaction around the announcement of takeover that is spun off later is negative, indicating that the prior acquisition is indeed a mistaken strategy based on the market reaction. Second, the stock price reaction to the announcement of spinoffs of prior acquisitions is positive, but is negatively associated with the stock returns to the earlier acquisitions. To put it differently, the greater the prior acquisition loss, the bigger the price reverse when the spinoff is announced. However, they document no evidence that the announcement returns to spinoffs of earlier acquisitions are higher than those to other types of spinoff. Therefore, reversing an earlier mistaken acquisition is just one value source for focus-increasing spinoffs. It is possible that a spinoff recovers value losses of other suboptimal strategies that are due to agency problems.

The above-mentioned studies demonstrate that diversification is costly and managers often execute the value-enhancing refocusing strategy only after they face pressure from external forces such as shareholder activisms. However, there is little direct evidence on the link between agency problems and spinoff value effects. To my best knowledge, there is one study that has explored the role of corporate governance mechanisms in the value creation from spinoffs. Seward and Walsh (1996) analyse the design of internal governance mechanisms in offspring and relate the attributes of offspring’s governance structure to the short-run market reaction to spinoff announcements. They observe no relationship between the strength of internal governance mechanism and spinoff announcement returns. However, their evidence may be inconclusive because they wrongly assume that stock markets would foresee the future internal governance structure in offspring at the spinoff announcement date.

2.3.2 Information Asymmetry Hypothesis

A spinoff can also create value by mitigating the information asymmetry in the market about the operating performance of distinct divisions of a multi-segment divesting firm. Two simultaneous changes in the information environment of the divesting firm may account for the transparency benefits of spinoff. First, separate financial reports of parent and offspring make disclosure policy more informative to investors and improve market understanding of firm operation (Lang and Lundholm, 1996). Second, following spinoff, there is an increase in the number of analysts following the parent firm and the accuracy of analysts' forecast for the parent earnings, thereby facilitating improved financial intermediation for the parent's stock (Gilson, Healy, Noe and Palepu, 2001). Since information asymmetry often results in the market undervaluation of a firm, a firm with higher level of information asymmetry prior to spinoff will exhibit higher excess returns upon spinoff announcement (Krishnaswami and Subramaniam, 1999).

However, a spinoff may not necessarily improve the information transparency level of post-spinoff firms. Thomas (2002) questions the information transparency benefits of spinoff by emphasizing the information diversification advantage of the conglomerate firm. He argues that a diversified firm may have less information asymmetry problems than a focused firm because the forecast errors across divisions may 'balance out' and the aggregate nature of reporting will imply a more accurate forecast for a diversifier than for a focuser.[2] This beneficial effect is similar to the information benefits of trading baskets of stocks relative to the trading of individual stocks that constitute the baskets.

A further counter argument against the information asymmetry hypothesis is that the substantial reduction of size for the spinoff parent firm may reduce its attractiveness to equity analysts and institutional investors. Therefore, the information asymmetry problem

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[2] There is anecdotal evidence in the financial press for information diversification benefit. For example, the merger of Time Warner and American Online in 1999 combined not only different industries but also entirely different philosophies of valuation, posing an evaluation challenge for analysts following the combined company. However, the possibility of offsetting forecast errors across these businesses is proposed as a mitigating factor. (See, Paul Sherer and Elizabeth MacDonald, "AOL and Time Warner Leaves Street Guessing on New Animal's Value", *The Wall Street Journal*, January 13, 2000.)

will not be mitigated following a spinoff. For instance, GKN, a British engineering conglomerate, spun off its industrial services business in August 2001 and was dropped out of the Financial Times (London) Stock Exchange (FTSE) 100 index due to the size reduction. One analyst points out that the dropout of the FTSE-100 for GKN substantially lowers its publicity to investment funds and analysts, thus making its future access to capital markets more difficult (Sudarsanam, 2003, Chapter 11). Goldman (2005) uses a theoretical model to explain this effect that the market's incentive to collect information is reduced following a spinoff when the post-spinoff firm's liquidity is reduced.

Finally, Huson and MacKinnon argue that the informed traders have higher incentives to trade stocks of focused firms than to trade stocks of diversified firms since the information advantage of informed traders is likely to be segment-specific and is unlikely to be useful for their trading of a diversified firm's stocks.

Empirical evidence on the information asymmetry hypothesis is also mixed. Krishnaswami and Subramaniam (1999) document a strong association between information asymmetry measures and spinoff announcement returns for the US spinoff sample. Huson and MacKinnon (2003) observe that the information asymmetry level significantly increases subsequent to a spinoff based on the market microstructure data such as the bid-ask spread. Veld and Veld-Merkoulova (2004, 2005) find information asymmetry measures have insignificant explanatory power in explaining the spinoff value effects. A possible explanation is that the sample of Krishnaswami and Subramaniam (1999) consists of spinoff firms with severe information asymmetry problems while the samples of other studies mainly contain firms that conduct spinoffs for non-information-related reasons.

2.3.3 Corporate Control Hypothesis

In most cases, a spinoff enables separately listed companies to let each of them specialize in its own business. For example, Desai and Jain (1999) and Veld and Veld-Merkoulova (2004) find that 103 out of 144 US spinoffs and 73 out of 108 European spinoffs increase corporate focus of the divesting firms, respectively. The ‘pure play’ and small size attributes of post-spinoff firms makes them susceptible to external control contests, which generate takeover premium for shareholders. Cusatis et al. (1993) observe that about 14% of their sample post-spinoff firms are taken over in a subsequent three-year period. Their takeover target post-spinoff firms earn, on average, additional 4-9% long-term abnormal returns relative to other post-spinoff firms. Based on this evidence, they argue that spinoffs create value primarily by providing an efficient method of transferring control of corporate assets to potential bidders since post-spinoff firms are generally smaller, more focused, and thus easier for acquisition than pre-spinoff parent firms.

Chemmanur and Yan (2004) build a theoretical model to explain the spinoff value effects based on the impact of future takeover threats for post-spinoff firms. In their model, the improvement of stock returns to post-spinoff firms is a consequence of the existence of takeover threats. An improvement of stock performance can even happen without the actual occurrence of takeover bids because managers of post-spinoff firms tend to work harder to avoid potential takeovers and consequent job losses.

It is worthwhile mentioning that market for corporate control is just one form of corporate governance mechanisms (Agrawal and Knoeber, 1996). Following the reasoning of Chemmanur and Yan (2004), a spinoff may still have superior long-run performance when post-spinoff firms enhance internal control mechanisms. A comprehensive examination of the corporate control hypothesis is to examine the relationship between changes in corporate governance in post-spinoff firms and the long-run spinoff performance.

The value benefits of enhancing corporate governance are to more closely align the potentially divergent interests of managers and shareholders, which result from the separation of ownership and control in public companies (Fama and Jensen, 1983; Jensen and Meckling, 1976). The existing literature has proposed various internal and external mechanisms to curb agency conflicts and limit agency costs, which are outlined below.

Internal corporate governance mechanisms include executive compensation, inside ownership, board directors, large shareholders, and lenders. First, proper executive compensation may reduce agency costs arising from differences in risk preferences and investment horizons between shareholders and managers. A manager who is compensated via performance-contingent pay on a correct time horizon should incentives to take risks to maximize long-term shareholder values (Core and Guay, 1999; Jensen and Murphy, 1990). Second, the insider ownership can align managerial interests with those of shareholders as it effectively turns managers (agents) into owners (principals). In the absence of managerial entrenchment, a higher level of managerial ownership should reduce agency costs and managerial opportunism to expropriate shareholder wealth (McConnell and Servaes, 1990; Morck, Shleifer, and Vishny, 1988). Third, the board directors act as shareholder representatives in the duty of overseeing and disciplining management. A board consisting of majority independent directors has both the expertise and reputation concern to make better corporate decisions such as CEO selection and corporate acquisitions (Borokhovich, Parrino, and Trapani, 1996; Byrd and Hickman, 1992). Fourth, large shareholders (or blockholders) provide an additional monitoring role. Although it is too costly for small shareholders to actively monitor managers, blockholders have both the means and incentives to do so (Shleifer and Vishny, 1986). Fifth, debt can be an effect control mechanism to monitor self-interested managers (Jensen, 1986).

External mechanisms include the market for managerial labour, product market, analysts, the market for corporate control, and the legal system for shareholder protection (Shleifer and Vishny, 1997). Managers have reputation concern to perform well on their current posts in order to find better employment in the future. Therefore, a competitive labour market may motivate a manager to align his or her interests with those of a firm's shareholders (Gomes, 2000). A competitive product market can effectively discipline managers' opportunism (Hermalin, 1992). Security analysts are also an important mechanism of corporate control since they provide more firm-specific information to stock markets and help external investors to asses the managerial performance (Chung and Jo, 1996). The market for corporate control disciplines poorly performing managers by removing them from their positions through mergers, tender offers or proxy fights (Franks and Mayer, 1996). The legal system on shareholder protection also plays an important role in controlling managerial opportunism to expropriate shareholder wealth (La Porta et al, 1998).

A spinoff transaction is involved with significant changes in corporate governance mechanisms. For example, managers have to consider the design of internal control structure in post-spinoff firms. The analyst coverage and the probability of receiving takeover bids for post-spinoff firms will also change since post-spinoff firms differ from pre-spinoff parents in many aspects such as size and operating structure. Again, extant studies have not explored whether these changes in corporate governance mechanisms help resolve agency problems and whether these changes determine the long-run spinoff performance.

2.3.4 Wealth Transfer Hypothesis

Wealth transfer hypothesis proposes that shareholders of spinoff firms may expropriate the value of debtholders through a disproportionate distribution of debts across post-spinoff firms. Parrino (1997) documents a supportive case in which large wealth is transferred from senior security holders (US$195 million losses) to stockholders (US$81million gains) around the announcement of Marriott's spinoff because the parent was assigned with weaker assets but larger debts than the offspring. Maxwell and Rao (2003) also present evidence consistent with the wealth transfer hypothesis that the spinoff announcement gains are positively associated with losses to debtholders, which are measured as the negative abnormal bond returns in the month of spinoff announcement. The expected bond returns are calculated based on monthly bond returns to spinoff parents.

Maxwell and Rao (2003) further specify two potential sources of wealth transfer from debtholders to shareholders. First, spinoff results in loss of collateral and liquidity of the parent because assets are reallocated to the offspring. Thus, the parent and offspring have different levels of financial risks. For example, Mehrotra, Mikkelson and Partch (2003) find that although post-spinoff firms have shown similar levels of financial leverage, the parent and offspring significantly differ in their interest coverage ratios. Second, spinoff eliminates coinsurance benefits of prior diversification where different division cash flows are imperfectly correlated. A follow-up conjecture is that the dissimilarity of cash flows between parent and offspring is positively associated with value losses to debtholders. Maxwell and Rao (2003) document supporting evidence for these two conjectures.

However, Veld and Veld-Merkoulova (2005) re-examine the wealth transfer hypothesis with daily bond return data of spinoff parents. They observe no evidence that bondholders of spinoff parents do not experience value losses during the spinoff announcement period. Thus, the conclusion of Maxwell and Rao (2003) may be subject to the methodological errors since the abnormal bond returns calculated with monthly bond return data are more likely to be inaccurate than those computed with daily bond return data.

2.3.5 Regulatory Constraints Hypothesis

Relaxation of regulatory constraints on one of the post-spinoff firms can be a motive to engage in a spinoff. Schipper and Smith (1983) mention two separate cases in which this may apply. The first case occurs when a parent spins off a rate-regulated utility. In this case, the spunoff subsidiary can no longer be subsidised by cash flows from unregulated operations of the spinoff parent. According to Schipper and Smith (1983) a loss in subsidy may lead to an increase in the speed and/or magnitude of rate increases. The second case happens when a US multinational firm spins off a foreign subsidiary in order to exempt the latter from restrictions imposed by the US Congress on domestic firms operating abroad. Krishnaswami and Subramaniam (1999) compare abnormal returns to parents for sub-samples with and without a regulation motive. They do not find significant differences between these samples. Schipper and Smith (1983) also compare sub-samples with and without tax and regulatory advantages. They find higher abnormal returns for the sub-samples with tax and regulatory advantages. However, the difference between the two samples is not significant at the 10% level. Gibbs (1999) and Veld and Veld-Merkoulova (2004) argue that there are no motives for European companies to make spinoffs particularly attractive to satisfy regulatory purposes.

2.4 The Behavioural View of Spinoff Value Effects

Section 2.3 examines the theoretical explanations of spinoff value effects based on the efficiency view. However, some researchers and practitioners have cast doubts on the traditional explanations of spinoff value effects, in which spinoff value effects are due to efficiency improvement for post-spinoff firms. They point out some cases where spinoffs are not undertaken to maximise shareholder values in the long term. Specifically, managers tend to spin off assets which are attractive to investors, or are overvalued by markets.

The presumption of such behavioural view is that markets are inefficient and investors have irrational demand for certain assets, resulting in such assets being overvalued. The consequence of stock market misvaluation is that managers tend to cater to investor demand by spinning off an overvalued subsidiary, relative to the parent, to shareholders in order to maximise short-run share prices. By doing so, managers of spinoff firms can enjoy pecuniary benefits from the increase of stock-based compensation due to the price run-up following the spinoff announcement. There is some evidence supporting this conjecture. Allen (2001) documents a strong relationship between the insider trading of stocks of post-spinoff firms and the long-term performance of post-spinoff firms. He contends that managers have private information and view spinoffs as a special opportunity to reshuffle their equity holdings.

A notable example of a spinoff of overvalued subsidiary is the spinoff of Palm by 3Com, which is described in detail in Lamont and Thaler (2003). In anticipation of a full spinoff within nine months, 3Com floated 5% of its high-tech subsidiary Palm on March 2nd 2000. Immediately following the listing, Palm had an even higher market capitalisation than its parent 3Com which still held a 95% stake in Palm. The underlying motive for 3Com to spin off Palm seemed to meet the irrational investor demands for high-tech stocks.

Unsurprisingly, the long-term performance of Palm was substantially lower than the initial market expectation. The stock price of Palm declined from $104.13 per share to $0.10 per share over the three-year period subsequent to its floatation.

However, the spinoff of overvalued subsidiaries is not limited to the peak days of stock markets in the late 1990s. Recent years have seen the spinoff of old economy oil and metal stocks, which are hot sectors now. Therefore, managers try to cater to the time-varying demand of investors by returning the subsidiaries in hot sectors to shareholders.

Another possible behavioural reason for the significant focus-increasing spinoff value effects is because investors like focus-increasing transactions. Baker, Ruback and Wurgler (2004) argue that there is a time-varying pattern for investor demand for corporate diversification. In the 1960s, diversifying acquisitions experience positive market reactions while related acquisitions are penalised by stock markets (Matsusaka, 1993). The diversification premium for acquisitions then declines in the 1970s and becomes negative in the 1980s (Morck et al., 1990). The changing investor appetite for conglomerates may equally explain the growing trend of corporate refocusing transactions since the 1980s (Berger and Ofek, 1995; Comment and Jarrell, 1995, Kaplan and Weisbach, 1992; Porter, 1987). A follow-up conjecture is that the spinoff value effects may be partly attributed to the temporary investor demand for corporate focus.

Many empirical predictions of the behavioural view are similar to those suggested in prior explanations based on the efficiency view. The positive association between the focusing status of a spinoff and the spinoff announcement returns is predicted by the behavioural view since it argues that managers undertake spinoffs to exploit the misevaluation of different businesses of a conglomerate and/or to cater to investor demand for corporate focus. The positive association between information asymmetry measures and spinoff announcement returns is also predicted by the behavioural view because investors are more likely to overestimate the value consequences of a spinoff when the information uncertainty of the spinoff parent firm is high (Zhang, 2006).

The behavioural view of spinoff value effects also has a number of unique predictions. First, the market reaction to spinoff news is substantially influenced by investor demand for stocks of a spunoff subsidiary. Second, investor demand for stocks of a spunoff subsidiary may be irrational. Third, the managers have a rationale to exploit market mispricing of different businesses of a conglomerate by spinning off the overvalued subsidiaries to shareholders. Fourth, the spunoff subsidiaries from spinoffs to exploit the market mispricing tend to underperform the benchmark or spunoff subsidiaries from other types of spinoffs in the long term. However, at present, there is no empirical study testing the behavioural view of spinoff value effects because behavioural finance is an emerging field and there are difficulties in finding good proxy variables for investor irrationality. Therefore, it is ambiguous to say if the behavioural view can explain the evidence that is inconsistent with corporate focus and information asymmetry hypotheses as documented in the Veld and Veld-Merkoulova (2004 and 2005).

2.5 Suggestions for Empirical Studies on Spinoff Value Effects

There are several inferences which can be drawn from the review of the literature on corporate spinoff value effects. First, future empirical studies should compare both the behavioural view and the efficiency view in examining the spinoff value effects. The behavioural view of spinoff value effects can partially resolve why there are generally positive market reactions to spinoff announcements but long-term performance of post-spinoff firms differs substantially across different periods and locations. Managers may cater to time-varying and location-varying investor demand for corporate focus by spinning off subsidiary businesses. However, extant empirical studies have not tested this behavioural view and thus are likely to report conflicting evidence on the efficiency view for different sample periods and countries.

Second, future empirical studies should explore the issue of whether focus-increasing spinoffs create shareholder values by reducing agency costs associated with diversification. Allen et al. (1995) find that the announcement period abnormal returns for spinoffs that begin with an acquisition are negatively correlated with the original acquisition announcement period abnormal returns. In other words, the spinoff gains represent the re-creation of value destroyed at the time of an early acquisition. This evidence is in line with the argument of the governance-based hypothesis that a spinoff creates value by mitigating agency problems. Nevertheless, there is no direct evidence on the relationship between the agency costs and spinoff value effects. Berger and Ofek (1999) document the evidence on the association between the agency costs and refocusing value effects. However, the majority of refocusing transactions that they examine are asset sales. Thus, future empirical study examining the corporate focus hypothesis on corporate spinoffs should present clear evidence on this issue.

Moreover, there is no empirical test on the impact of corporate governance on the long-run spinoff performance. Cusatis et al. (1993) have documented evidence that the long-term stock performance of post-spinoff firms is positively associated with the acquisition for the post-spinoff firms. However, they do not examine the impact of other corporate governance mechanisms. In essence, the governance-based hypothesis argues that spinoffs create shareholder value by reducing agency costs of spinoff parent firms if the strength of corporate control mechanisms is enhanced following the spinoff.

Third, the information asymmetry hypothesis should be examined in more detail in future empirical studies. The evidence for the information asymmetry hypothesis is mixed. Veld and Veld-Merkoulova (2004) find weak empirical evidence for the information asymmetry hypothesis for a sample of European spinoffs. For their sample, there is a significant and positive association between the information asymmetry measures and spinoff announcement returns. However, they observe a negative relationship between the information asymmetry measures and long-run returns to post-spinoff firms. Therefore, it is important to examine whether there are significant changes of information asymmetry measures around a spinoff and whether the changes of information asymmetry measures are related to the long-term performance of post-spinoff firms.

2.6 Summary

This chapter reviews the arguments of both the efficiency view and behavioural view for the spinoff value effects. The efficiency view suggests that the underlying source of spinoff value gains is the improvement of operating efficiency for post-spinoff firms, although the exact mechanisms of the improvement may vary. The behavioural view argues that the spinoff value effects can be driven by investors' behavioural biases in valuing corporate spinoffs. The literature survey in this chapter demonstrates that extant studies have reported contradictory evidence for the explanations based on the efficiency view. This may be explained by the behavioural view but empirical evidence on the behavioural view is scanty. Future empirical research on corporate spinoffs should compare different predictions from these two views in explaining the spinoff value effects.

Chapter 3 Review of Literature on Stock Market Efficiency

3.1 Introduction

This chapter reviews the theoretical arguments and empirical evidence on the market efficiency perspective on spinoffs. Arguments from both standard finance and behavioural finance are introduced and compared. The empirical evidence for each argument is surveyed. Further, important methodological issues in testing market efficiency are discussed. Finally, the extant empirical evidence on the long-run stock returns to spinoff announcements is critically assessed.

The rest of the chapter proceeds as follows. Section 3.2 introduces the efficient markets hypothesis. Section 3.3 summarises the empirical evidence and behavioural explanations for market misreaction. Section 3.4 summarises different asset pricing models proposed in past studies. Section 3.5 examines various return measurement methodologies for measuring long-run abnormal stock returns. Section 3.6 reviews the extant evidence of long-run abnormal stock returns to spinoffs. Section 3.7 concludes.

3.2 The Efficient Markets Hypothesis

Traditional finance assumes that investors rationally process all available information in the decision-making process. Based on this assumption, the Efficient Markets Hypothesis (EMH) contends that, if stock markets are efficient, stock prices should fully incorporate the expectations and information of all market participants. Rubinstein (2001) proposes that the EMH can even hold when investor rationality assumption is relaxed because (1) rational investors can quickly undo price deviations from fundamental values caused by irrational investors[3]; (2) irrational investors cannot survive for a long time due to their

[3] This trading is also known as arbitrage, an investment strategy to profit from exploiting price differences of identical or similar financial instruments, which prevents market prices deviating from fundamental values of underlying securities. However, recent research has clearly indicated that rational investors do not always arbitrage mispricing caused by irrational investors because arbitrage tend to be very costly and highly risky (e.g. see Lamont and Thaler, 2003; Mitchell et al., 2002).

bad investment strategies; (3) mistakes of irrational investors can be self-cancelling at the aggregated level provided that these mistakes are randomly distributed.

In Fama (1970), the EMH is subdivided into three forms. In a weak form efficient market, current stock prices reflect all information contained in past market trading data. If current stock prices reflect all publicly available information, the market is semi-strong form efficient. Finally, strong form efficient markets reflect all information, public or private. Based on a literature review of early studies, Fama (1970) concludes that the evidence against the EMH is rather sparse. Fama (1991) updates his review of the literature on market efficiency and changes the three forms of market efficiency to a) tests for return predictability, b) event studies, and c) tests for private information. In this paper he claims that event studies provide the cleanest evidence on the market efficiency since stock prices respond quickly to corporate event announcements, usually within just a few days.

3.3 Market Misreaction and Behavioural Finance

In recent years, however, a growing trend of research challenges the EMH by questioning the completeness and the unbiasedness of the immediate market reaction to corporate event announcements. On the one hand, an extensive body of empirical literature finds that markets appear to initially underreact to a broad range of corporate events. Specifically, stock markets positively react to positive news events while returns subsequent to the positive news events still show positive, long-horizon abnormal price drifts (e.g. see Grullon and Michaely (2004) and Ikenberry, Lakonishok and Vermaelen (1995) for stock repurchases; Ikenberry and Ramnath (2002) for stock splits; Michaely, Thaler and Womack (1995) for dividend initiations). Similarly, negative news events generally experience a negative market reaction in the beginning and tend to be followed by negative price drifts in the long term (e.g. see Michaely et al., (1995) for dividend omissions; Taffler, Lu and Kausar (2004) for going-concern audit report disclosures).

On the other hand, some empirical articles document that investors overreact to corporate news, with long-run return reversal subsequent to the news announcement. A notable example of market overreaction is the carveout of Palm by 3Com which is described in Section 2.4. Market overreaction to corporate news is not limited to share offering cases in the internet bubble in the 1990s. A recent study by Antweiler and Frank (2006) demonstrates that US stock markets typically overreact to various types of corporate news. Based on an examination of 245,429 Wall Street Journal corporate news stories from 1973 to 2000, they observe that on average there is a reversal of market reaction to corporate news story so that pre-event and post-event abnormal returns have the opposite sign.

Given the considerable evidence of market inefficiency, a behavioural stream of research has developed, seeking to attribute the observed market inefficiency to irrational investors who suffer from various cognitive biases. Following Tversky and Kahneman (1974), there has been a large finance literature demonstrating that investors are not fully rational in processing information and frequently make systematic mistakes in decision making due to common cognitive biases (for related literature reviews see Barberis and Thaler, 2003; Daniel, Hirshleifer and Teoh, 2002; Hirshleifer, 2001; Shleifer, 2000).

Barberis, Shleifer and Vishny (1998) present a behavioural model in which investors suffer from two cognitive biases, conservatism and representative heuristic. Conservatism means that investors are slow to change their prior beliefs in the face of new evidence conveyed in high-weight events. High-weight events are events carrying substantial valuation information. The representativeness heuristics suggests that investors have the tendency to focus too strongly on high-strength events. High-strength events are events marked by size or extremity, such as a long string of positive earnings changes. Barberis et al. (1998) argue that investors underreact to corporate news due to the conservatism bias while overreact to consistent patterns of good or bad news because of the repsentativeness heuristics.

Daniel, Hirshleifer, and Subrahmanyam (1998) provide a model based on two other cognitive biases, overconfidence and biased self-attribution. Investors are overconfident about their abilities to process private information, resulting in overreaction. Biased self-attribution refers to how investors respond to future signals regarding their private information. If the private information is subsequently confirmed by a public signal, the biased investors become even more overconfident. On the other hand, if there is a disconfirming signal, investors attribute the new information to chance and insufficiently revise their confidence downward. Eventually, when all information is revealed to the market, misvaluations are corrected, resulting in price reversals.

A third model is provided by Hong and Stein (1999). Rather than describing investors with cognitive biases, Hong and Stein consider two types of investors, newswatchers and momentum traders, each of which is rational with respect to available information. According to the model, private information regarding fundamentals diffuses slowly to the newswatchers. This gradual information diffusion leads to undereaction and, hence, momentum in stock returns. Momentum traders cannot process fundamental information; they are only able to observe the behaviour of the newswatchers. They follow the newswatchers' trades, arbitraging away any leftover underreaction. Herding by momentum traders eventually leads to overreaction. Reversals occur when prices return to their fundamental values. This model predicts stronger momentum in stocks for which information diffuses slowly. Hong, Lim and Stein (2000) provide supporting evidence by showing momentum trading is most profitable in the smallest stocks and those with the lowest analyst coverage after controlling for firm size.

Although these different theoretical behavioural models are based on different assumptions, they all explain why market misreaction exists in certain circumstances. However, empirical evidence for these models is mixed. Fama (1998) argue that these behavioural models fail to give a consistent explanation for empirical findings of market misreaction since some empirical evidence is not always consistent with the theoretical predictions of these models. Take the behavioural model of Barberis et al (1998) as an example. Their prediction of long-term return reversal is consistent with the findings on seasoned equity offerings (Loughran and Ritter, 1995), new change listing (Dharan and Ikenberry, 1995) and returns to glamour acquiring firms in mergers (Rau and Vermaelen, 1998). Those events are characterised by positive long-term abnormal post-event returns and negative abnormal post-event returns. However, their model fail to explain events characterised by long-term post-event abnormal returns of the same sign as long-term pre-event returns, such as dividend initiations and omissions (Michaely et al., 1995) and stock splits (Ikenberry and Ramnath, 2002).

Considering the ambiguity of event news and re-examining market reaction to four types of events previously reported as anomalies, Kadiyala and Rau (2004) argue that markets generally undereact rather than overreact to news. However, such conclusion is questionable because no strong theoretical justification is presented and further empirical tests are warranted.

3.4 Asset Pricing Models

A definition of efficient markets frequently used in empirical tests is that efficient markets are the one in which investors can not be allowed to "earn above-average returns without accepting above-average risks" (Malkiel, 2003). Consequently, testing market efficiency requires a model of risk and return. A well-specified model of normal returns must be used in order to conclude that some returns are abnormal. Fama (1998) suggests that because an asset pricing model must be used to test the efficient markets hypothesis, tests of the efficient markets hypothesis are subject to a joint hypothesis problem. When a study rejects market efficiency, the asset pricing model being used to test market efficiency may also be rejected. Because of the importance of models of risk and return in testing market efficiency, much of the debate over market efficiency has revolved around the joint hypothesis problem.

Models of expected returns have played an important role in the testing of the efficient markets hypothesis since a rejection of efficient markets involves finding abnormal returns. Whether asset pricing models capture the risks or styles they claim to is a debate closely related to the literature on efficient markets. Models of expected returns begin with the capital asset pricing model (CAPM) (Sharpe, 1964). However, a large number of empirical studies have shown that the relationship between beta and returns does not exist (e.g. see Fama and French, 1992). In addition, beta has a significant difficulty in explaining the returns to portfolios formed on market capitalisation and the ratio of book value to market value (Fama and French, 2004 and 2006).

Since size and book-to-market characteristics appear to capture a large portion of the variation in the cross-section of returns, size and book-to-market factors were used by Fama and French (1993) to augment the capital asset pricing model and create a three-factor model:

$$(R_i - R_f)_t = \alpha + \beta_1 (R_M - R_f)_t + \beta_2 SMB_t + \beta_3 HML_t \tag{3.1}$$

SMB is the return on a portfolio long in small market capitalization stocks and short in big market capitalization stock. HML is the return on a portfolio long in high book-to-market stocks and short in low book-to-market stocks.

Despite its high explanatory power for cross-sectional stock returns, the Fama and French (1993) model is also not without its shortcomings. Jegadeesh and Titman (1993 and 2001) show that returns to portfolios formed on past returns cannot be explained by the returns to stocks of different size and book-to-market characteristics. The past return phenomenon, also known as price momentum, is used by Carhart (1997) for studying the returns to mutual finds. Carhart (1997) augments the Fama and French (1993) model with the momentum factor:

$$(R_i - R_f)_t = \alpha + \beta_1 (R_M - R_f)_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 UMD \tag{3.2}$$

where UMD is the return on a portfolio long in stocks with high past returns and short in stocks with low past returns.

A cautionary note should be made. The Fama and French (1993) and Carhart (1997) factors are imperfect from a theoretical standpoint since both may be a product of data mining (see Berk 1995). There is evidence that Fama-French factors have limited power in explaining the cross-sectional stock returns. A recent study by Cremer, Nair and John (2005) shows that the three factor model cannot explain stock returns to takeover spread portfolios, which refers to an investment strategy that long firms subject to high takeover threats and short firms subject to low takeover threats. Liu (2006) also proposes a capital asset pricing model incorporating both beta and a liquidity factor. He finds that the liquidity-augmented model outperforms Fama-French three-factor model in explaining cross-sectional stock returns. However, these new multi-factor models face the same data mining issue as the Fama-French model. Further empirical work and theoretical models on asset pricing are expected to resolve this issue.

3.5 Long-term Event Study Methodology

Empirical challenges to asset pricing models have prompted researchers to develop a well specified and powerful methodology for measuring long-term abnormal stock returns. Barber and Lyon (1997) compare two methods for measuring long-term abnormal returns. Cumulative abnormal returns and buy and hold abnormal returns are examined using random sampling techniques. Cumulative abnormal returns (CARs) are defined as the summed difference in returns over a sample period between the actual return on a sample firm and the expected return on a sample firm:

$$CAR_{iT} = \sum_{t=1}^{T} AR_{iT} \tag{3.3}$$

where $AR_{it} = R_{it} - E(R_{it})$. Buy and hold abnormal returns (BHARs) are defined as the return on a buy and hold investment in a sample firm less the expected buy and hold investment in the sample firm:

$$BHAR_{it} = \prod_{t=1}^{T}[1 + R_{it}] - \prod_{t=1}^{T}[1 + E(R_{it})] \tag{3.4}$$

Barber and Lyon (1997) notice a number of differences between the cumulative abnormal return method and the buy and hold abnormal return method. Test statistics are misspecified when using the Fama and French (1993) three-factor model to measure long-term cumulative abnormal returns. However, when cumulative abnormal returns are measured with size and book-to-market matched control firms, test statistics are well specified and powerful. Cumulative abnormal returns suffer from measurement bias. They are biased estimators of buy and hold abnormal returns. Barber and Lyon (1997) advocate using buy and hold abnormal returns since cumulative abnormal returns ignore the effects of compounding. In particular, buy and hold abnormal returns using size and book-to-market matched control firms are considered well specified and powerful.

Mitchell and Stafford (2000) compare buy and hold abnormal returns to calendar time abnormal portfolio returns. They suggest that the traditional test statistic is inflated when using buy and hold abnormal returns. A buy and hold methodology often falsely assumes independence among event observations. A bootstrapping procedure that is commonly used to correct for known biases of the buy and hold methodology does not account for the cross-sectional return dependence among event study observations. Their evidence shows that using an adjusted test statistic for buy and hold abnormal returns accounting for the correlation between event study observations substantially reduces the significance of test statistic. Lyon et al. (1999) and Jegadeesh and Karceski (2004) also propose different approaches to adjusting the traditional t-statistic and find that the significance of long-run abnormal returns reduces when an adjusted t-statistic is used. However, these new approaches require an estimation of variance-covariance matrix for monthly stock returns and the statistical inferences can be biased if the sample data are not sufficiently large.

Instead of using buy and hold abnormal returns, Mitchell and Stafford advocate calendar time abnormal portfolios returns. This is because portfolios account for the correlation among observations through the portfolio's variance term. In the calendar time approach, portfolio returns are usually regressed on a factor model and the intercept term or alpha is examined for significance. Non-event size/book-to-market portfolios have non-zero intercepts when regressed on the Fama and French (1993) model. Mitchell and Stafford (2000) suggest using control firm portfolios to correct the model misspecification. Control portfolios are created using non-event firms with size and book-to-market similar to event firms. Because size and book-to-market are similar for event and non-event portfolios, differences in size and book-to-market should not be the main cause of return differences between portfolios. In the case of long-term event studies, differences in abnormal returns from whether or not a firm has undertaken an event should be isolated in testing. Using non-event control firm portfolios, Mitchell and Stafford (2000) find no evidence of several long-term anomalies identified by previous researchers. Their findings support the argument of Fama (1998) that most of anomalies will disappear when reasonable changes on methodology are made.

In sum, the recent development of abnormal return methodology for long-run event studies has cast doubt on the validity of the anomalies documented in earlier studies. The use of appropriate return methodology becomes a critical issue in examining the market efficiency.

3.6 Corporate Spinoffs and Market Efficiency

Some research papers document that stock markets initially underreact to corporate spinoffs events. Cusatis et al. (1993) examine the post-event stock returns of spunoff subsidiaries and their parents for the 1965-1988 period. The abnormal returns are measured against the returns to industry- and size- matching firms. They find that both parents and subsidiaries have positive abnormal returns in the three years after the event. The abnormal returns are, however, limited to post-spinoff firms acquired in mergers. Cusatis et al. conclude that the stock market, at the spinoff announcement date, does not properly assess the increased probability of takeover and associated takeover premium following spinoffs.

Positive abnormal returns to post-spinoff firms are also observed in Desai and Jain (1999). They find that parent (subsidiaries) firms involved in focus-increasing spinoffs earn significant positive abnormal returns of 25.37% (54.45%) over the three-year period subsequent to the spinoff completion. Their evidence suggests that markets do not fully appreciate the benefits from an increase in corporate focus for post-spinoff firms during the spinoff announcement period.

The empirical evidence of superior returns to post-spinoff firms further suggests that investing in post-spinoff firms provides a profitable and feasible investment strategy for practitioners. Indeed, the press has continuously recommended investing in post-spinoff firms as an investment strategy to beat the market (e.g. Hayes, 1997; Serwer, 1992; Sivy, 1996; and Siwolop, 1997). Recent financial news also reports that some professional investment funds, such as Investec's Global Strategic Value Fund and hedge fund Gotham Capital, still use this strategy in stock selection (Financial Times, 1 March 2006). This report is striking since in an efficient market a known investment strategy should not remain economically profitable after such a long time.

However, in an influential literature review of long-run event studies, Fama (1998) questions the validity of the post-event price drifts documented in the empirical literature. In particular, Fama argues that the empirical study of Cusatis et al. (1993) does not control for cross-sectional dependence problem. He further points out that a small adjustment of the cross-section relation can make the reported t-statistic in Cusatis et al. (1993) insignificant. Fama's critique can also apply to the study of Desai and Jain (1999), which uses the traditional t-statistic to measure the significance of long-run post-spinoff abnormal returns.

McConnell et al. (2001) have examined the simple investment strategy of buying post-spinoff firms upon the spinoff completion. They use the buy and hold returns with the benchmarks are size- and book-to-market control portfolios and industry- and size-matching firms. They document some evidence of superior long-run returns to post-spinoff firms when they use the bootstrap procedure to compute the t-statistic. However, for the calendar-time regression approach, they do not find the positive alphas in the regressions on the Fama-French (1993) three-factor model are significant for investment strategies with different holding periods. They claim that the findings of Cusatis et al. may be due to the biased methodology.

Veld and Veld-Merkoulova (2004) also investigate the long-term stock performance of post-spinoff firms for a European spinoff sample. They employ the industry and size matching firm approach to compute the buy and hold returns. An approach advocated in Lyon et al (1999) is used to calculate the adjusted t-statistic in order to account for the cross-section event-firm-return correlation. They also report no superior returns to post-spinoff firms up to the three-year period subsequent to the spinoff completion.

Although recent empirical studies demonstrate that there is no initial market underreaction to spinoff news (e.g. McConnell et al., 2001; Veld and Veld-Merkoulova, 2004), the interpretation of their findings may be inappropriate. First, the recent two empirical studies are also subject to methodological biases. For McConnell et al. (2001), they do find superior returns to post-spinoff firms when the buy and hold returns are used. However, this may be because the bootstrap procedure they use does not account for the cross-section correlation problem. Although the calendar-time regression approach mitigates the event-firm-return dependence problem, they do not consider the heteroskedasticity issue arising from the changing number of event firms in the time-series data. Loughran and Ritter (2000) criticise the approach of the calendar-time regression due to its lower power to detect long-term abnormal returns. Since there is a time clustering of corporate events, the averaging the returns to event firms over calendar months can substantially reduce the chance to find abnormal returns. An appropriate approach may be to use the weighted return over calendar months, where the weight refers to of the number of event firms in the holding portfolio for each calendar month.

For Veld and Veld-Merkoulova (2004), the approach of buy and hold returns relative to industry- and size matching firm is particularly problematic for their European spinoff sample. Since many European stock markets are of small size[4], the number of industry peers is limited and the closest size matching firm within the same industry may be far smaller or larger than the spinoff firm. Therefore, the size is not strictly controlled in calculating the abnormal returns in Veld and Veld-Merkoulova (2004). Moreover, the matching firm selection is based on the universe of firms listed in local countries. This procedure may pick up the firms which have recently completed a spinoff as control firms. Such a case is not unusual. Three largest commercial banks in Sweden spun off their real estate subsidiaries almost within the same time period in the early 1990s. Finally, the adjusted t-statistic approach of Lyon et al may not be appropriate for the study of Veld and Veld-Merkoulova (2004) because this approach requires an estimation of abnormal return covariance across each pair of event firms. For a sample size of 156

[4] For example, there are less than 100 listed firms in the Ireland, on average, over the period from 1990 to 2005 based on the equity data of Datastream.

firms in Veld and Veld-Merkoulova (2004), this approach needs estimating 12,246 (156(156+1)/2) variance and covariance terms. Since the sample period of Veld and Veld-Merkoulova (2004) is just 156 months, it is difficult to precisely estimate such a large number of parameters when there are 156*156=24,336 monthly stock returns available.

3.7 Summary

This chapter reviews the literature on stock market efficiency. Standard finance literature does not take investor irrationality into account and argues that stock markets are efficient in reacting to corporate events. In contrast, behavioural finance literature shows that investors suffer from common cognitive biases and tend to make systematic mistakes in valuing stocks, therefore resulting in either the initial market underreaction to events or the initial overreaction to corporate news. Empirical evidence on market efficiency is mixed and difficult to interpret because the empirical study testing market efficiency subject to a joint hypothesis problem, which means that researchers have to test both market efficiency and the goodness of the asset pricing model used (Ang and Zhang, 2004; Fama, 1998). However, the review shows that the currently used asset pricing models are not well-specified and most abnormal returns documented in long-run event studies are based on biased return methodologies. The recent literature has suggested several different robust methodologies to measure long-run abnormal returns. Finally, I examine past studies on the long-run spinoff performance. I find that most empirical studies of spinoffs have not used robust abnormal return methodologies and the validity of their conclusions is open to question.

Chapter 4 Research Questions

4.1 Introduction

Chapters 2 - 3 discuss the theories and empirical evidence related to the market reaction to spinoff announcements. This chapter identifies the gap in the current research of spinoff value effects based on the preceding literature reviews. Two research questions are then proposed to explore the market reaction to spinoff announcements.

The rest of the chapter is organised as follows. Section 4.2 identifies the gap in the current research on the spinoff value gains and proposes research questions about the market reaction to spinoff announcements. Section 4.3 discusses the factors that may affect the market reaction to spinoff announcements based on the preceding literature reviews. Section 4.4 concludes.

4.2 Literature Gap and Research Questions

Chapter 2 reviews the literature that focuses on the value sources of spinoff wealth effects. Past studies have proposed different explanations for the spinoff wealth effects. However, empirical evidence for these explanations is either mixed or scanty.

First, recent finance literature has demonstrated that the short run stock market reaction to corporate news is often incomplete or biased, as shown in section 3.3. Some professional investment funds even view post-spinoff firms as investment candidates in order to earn superior portfolio returns (Dennis, 2006). However, the empirical evidence of the superior returns to post-spinoff firms is questioned by Fama (1998) due to the methodological concern. Section 3.6 further examines the extant evidence of the long-run spinoff stock performance and finds that past studies have not used robust return methodology in estimating the abnormal stock returns to post-spinoff firms. Thus, whether the stock market is efficiently valuing a corporate spinoff is still unclear.

Market inefficiency may occur because investors react to corporate events for non-fundamental factors. A notable example is that investors may over-extrapolate the past performance of event firms to assess the value implications of the event (e.g. see Rau and Vermaelen, 1998; Rosen, 2006). Corporate spinoffs are joint events combining both focus-increasing divestitures and equity offerings of a subsidiary. Therefore, the market reaction to spinoff announcements may be affected by investors' unrealistic demand for glamour stocks when the offspring's industry is hot sector (e.g. see Montier, 2002, Chapter 7). However, there is no empirical test on the relationship between investor sentiment and spinoff value gains. Thus, it is unknown whether investor sentiment affects the spinoff value gains.

Theories derived from the governance-based model argue that corporate spinoffs enhance firm performance by improving corporate governance and mitigating agency problems. For example, Allen et al. (1995) find that spinoff announcement gains are negatively associated with the value losses from the prior diversifying acquisitions. Given that diversifying acquisitions are often due to agency problems (e.g. Amihud and Lev, 1981), the evidence of Allen et al. (1995) indicates spinoff gains stem from the reduction of the agency conflicts of diversification.

However, the value benefits of efficiency improvement in post-spinoff firms may not be realised when the corporate governance in post-spinoff firms is weak and the agency conflicts remain severe. As discussed in sections 2.3.1 and 2.3.3, empirical studies have not directly examined the relationship between corporate governance and spinoff value gains. Therefore, it is not clear whether the governance-based model can explain the spinoff value gains.

Hypotheses derived from the information-based model contend that corporate spinoffs improve firm valuation by alleviating information asymmetry problems. Theoretical models by Habib, Johnsen and Naik (1997) and Nanda and Narayanan (1999) propose that spinoffs expand the financial disclosures and increase the informativeness of the stock prices, thus improving the investors' understanding of post-spinoff firms. Krishnaswami and Subramaniam (1999) further present evidence that spinoff value gains arise from the reduction of information asymmetry following the spinoffs.

Empirical evidence on the information asymmetry hypothesis is also mixed. Krishnaswami and Subramaniam (1999) use financial analyst forecast data to derive several information asymmetry proxies such as analyst forecast errors and the dispersion of analyst forecasts. They find that these information asymmetry proxies improve following spinoffs and the level of information problems for pre-spinoff firms is positively associated with the announcement returns to spinoff firms. However, Veld and Veld-Merkoulova (2005) use similar information asymmetry proxies but find an insignificant association between information asymmetry proxies and spinoff announcement returns.

There are two theories that predict no information transparency benefits from spinoffs. Thomas (2002) proposes an information diversification hypothesis that diversified firms may have less information asymmetry problems than focused firms because analyst forecast errors for different divisions of a diversified firm can be offsetting and the aggregated earning forecast for a diversified firm is thus more accurate than that for a focused firm. Goldman (2005) argues that a spinoff may reduce the liquidity of stocks of post-spinoff firms and hence the market's incentive to collect information is reduced, thus resulting in an increase of information asymmetry of post-spinoff firms.

Given mixed evidence on the information asymmetry hypothesis, it is possible that the information asymmetry hypothesis may only hold for a sub-sample of spinoff parent firms. Past empirical tests on the information asymmetry hypothesis examine the cross-sectional changes of information asymmetry problems, which may not be able to provide a powerful test on the information asymmetry hypothesis. Thus, it remains ambiguous whether the information asymmetry hypothesis can explain the spinoff value gains.

To sum up, the extant literature has not fully explained the sources of spinoff announcement gains and the evidence on market efficiency in valuing spinoffs is mixed. This thesis aims to fill the literature gap by empirically investigating the short-run and the long-run market reaction to spinoff announcement. Specifically, two research questions are addressed in this thesis:

1. Do corporate spinoffs really create shareholder value?
2. What are the determinants of spinoff value effects?

In the following section, I set out the possible explanations based on the literature reviews to answer these two research questions.

4.3 Factors of Spinoff Value Effects

This section outlines the factors of spinoff value effects, which may explain the short-run and the long-run market reaction to spinoff announcements. Further, the research design to conduct an empirical investigation is presented.

4.3.1 Market Efficiency

Section 3.6 shows that there is inconclusive evidence on market efficiency to react to spinoff news. Earlier studies document significant and positive long-run abnormal returns to post-spinoff firms (e.g. Cusatis et al., 1993; Desai and Jain, 1999). However, Fama (1998) argues that most of long-run post-event abnormal returns will disappear after reasonable changes in methodology are made. Subsequent research has used different return measures and finds no evidence that post-spinoff firms earn superior long run abnormal returns (e.g. Veld and Veld-Merkoulova, 2004). However, there are still some problems for the return methodologies used in subsequent research. For instance, the adjusted t-statistic used by Veld and Veld-Merkoulova (2004) needs to estimate the correlation matrix between all months where returns of post-spinoff firms overlap. Given that the sample time period is not long, their estimation may be unreliable.

Thus, the final issue that I address in the empirical investigation of spinoff value gains is:

are stock markets efficient in reacting to spinoff announcements? In Chapter 5, I use several robust return methodologies proposed in the recent literature to estimate the long run abnormal returns to post-spinoff firms. To ensure the robustness of results, I use both the buy-and-hold abnormal return measures and the calendar time portfolio approach. In addition, I analyse the long-run abnormal returns to focus-increasing spinoffs since the prior literature suggests that stock markets may only underreact to focus-increasing spinoffs. If European stock markets were inefficient, there would be significant positive or negative long-run abnormal returns to post-spinoff firms.

4.3.2 Investor Irrationality

As indicated in section 3.2, behavioural finance theory argues that investors are not fully rational and are likely to be subject to cognitive biases in making investment decisions. For instance, investors may react to corporate events for non-fundamental-value based reasons. Corporate spinoffs are joint events combining divestitures and equity offerings of subsidiary firms. Some practitioners contend that corporate spinoffs receive positive market reaction because investors have strong demands for corporate focus and/or for the subsidiary's stocks (Dennis, 2006).

Consequently, there is one issue which needs to be addressed: do investor sentiment affects the market reaction to spinoff announcements? Corporate spinoffs are joint events combining a refocusing divestiture and the equity listing of a subsidiary. Extant literature has not examined whether investor sentiment about the refocusing and glamour stocks can affect the market reaction to spinoff announcements. In order to examine this possibility, I employ several market-based valuation measures for focused firms and for the spinoff subsidiary's industry. I then examine whether these valuation measures are related to the short-run market reaction to spinoff announcements.

Provided that stock markets are not always efficient, it is interesting to know whether market inefficiency will have effects on managerial decisions. Since managers have private information about the firm operation, they may be able to perceive the market misvaluation of different businesses within the firm they are managing. Then I conduct further tests to explore whether rationale managers tend to conduct spinoffs to cater to investor demand for certain types of subsidiary stocks. All these empirical tests and results are reported in Chapter 6.

4.3.3 Corporate Governance

This governance-based model for spinoff value effects starts from the presumption that corporate diversification is detrimental for shareholders due to agency problems. Agency theory argues that self-interested managers tend to pursue a value-destroying diversification for augmenting their power and prestige (Jensen, 1986; Stulz, 1990) and their compensation (Jensen and Murphy, 1990), to reduce personal wealth risk (Amihud and Lev, 1981), and to increase of job security (Shleifer and Vishny, 1989).

Conversely, corporate restructurings can benefit shareholders by increasing corporate focus to mitigate these agency costs associated with diversification. Berger and Ofek (1999) find managers make value-enhancing corporate refocusing transactions after the disciplinary events such as outside shareholder pressure, managerial turnover and substantial performance decline. Allen et al. (1995) document evidence that a spinoff creates value by reversing the value loss from earlier mistaken acquisition.

Although these above findings imply that restructuring gains come from the reduction of agency conflicts, there is no empirical study directly testing this prediction. In addition, most of empirical studies focus on the short-run market reaction, which sometimes may be inefficient and the conclusions based on the announcement effects may be biased (see section 3.3 for related discussion).

I test this governance-based hypothesis by analysing the relationship between the strength of corporate governance of firms involved in corporate spinoffs and spinoff value gains. If spinoffs are conducted to mitigate agency problems, I expect that (1) spinoff parent firms have more severe agency problems than non-spinoff control firms, which can be related to the strength of a firm's corporate governance mechanisms, (2) spinoff parent firms with weak corporate governance earn higher announcement period returns than those with strong corporate governance since a spinoff can create more shareholder value by reducing agency costs in the former, and (3) post-spinoff firms that have an improvement in corporate governance earn higher long-run abnormal stock returns than those without an improvement in corporate governance.

I consider a number of different corporate governance mechanisms, including corporate board, executive ownership, blockholders, lenders, security analysts, market for corporate control, product market competition, and the legal system. All these corporate governance mechanisms have been examined extensively in the prior research (for recent review articles see Becht, Bolton and Roell, 2002; Denis and McConnell, 2003). However, few research has tested the value impact of these governance mechanism altogether. Therefore, it is not clear whether the strength of corporate governance mechanisms is related to the firm value and which form of corporate governance mechanism leads to shareholder value creation in corporate restructurings such as spinoffs. I propose governance-based hypothesis to explain spinoff value effects and conduct empirical tests on these hypotheses in Chapter 7.

4.3.4 Information Asymmetry

A frequently cited reason for managers to undertake a spinoff is to improve investors' understanding of the divesting firm. The market undervaluation problem for a multi-division firm can arise because investors cannot unambiguously observe divisional cash flows (Nanda and Narayanan, 1999). For instance, ITT decided to split itself into three distinct parts because "ITT's fast-growing leisure business" was "submerged by the more staid manufacturing and insurance businesses"[5]. Conversely, a spinoff creates separate businesses that investors are able to understand and makes the stock price of post-spinoff firms more informative (Habib et al., 1997). Therefore, Krishnaswami and Subramaniam

[5] See Lex Column, *Financial Times*, June 14, 1995.

(1999) propose the information asymmetry hypothesis that a spinoff can create shareholder value by mitigating the information asymmetry problem.

On the other hand, there are doubts about the information benefits of a spinoff. First, corporate diversification does not strictly exacerbate the information asymmetry problem. Thomas (2002) proposes an information diversification hypothesis that diversified firms have information benefits due to the aggregated nature of financial reports. He points out that, if the errors that investors make in forecasting segment cash flows are not perfectly positively correlated, the consolidated forecast for a multi-segment firm may be more accurate than a forecast for a single-segment firm. Second, the information asymmetry problem for a spinoff firm may exacerbate following a spinoff when either post-spinoff firm is covered by fewer equity analysts and institutional investors. This will happen when a spinoff firm's size becomes lower than the coverage threshold of those investment analysts following a spinoff. Goldman (2005) argues that the market's incentive to collect information is negatively related to a firm's liquidity. Thus, a spinoff may lead to worsening information asymmetry problems since the liquidity of post-spinoff firms might decrease.

Empirical evidence on the information asymmetry hypothesis is mixed. Krishnaswami and Subramaniam (1999) and Gilson et al. (2001) both find that the accuracy of analysts' earnings forecast for a spinoff firm improves following the spinoff transaction. Krishnaswami and Subramaniam (1999) further document a positive association between the information asymmetry level of a spinoff firm prior to the spinoff and the market reaction to spinoff announcement. Krishnaswami and Subramaniam claim that information benefits are a source of spinoff value gains. On the contrary, Veld and Veld-Merkoulova (2004, 2006) use similar information asymmetry proxies as Krishnaswami and Subramaniam (1999) but document no evidence for the information asymmetry hypothesis for both samples of European and American spin-offs. In addition, Huson and MacKinnon (2003) observe that the information asymmetry level of a spinoff firm actually increases subsequent to a spinoff based on the market microstructure data such as the bid-ask spread. This contradictory evidence may be due to different information asymmetry measures used in Huson and MacKinnon (2003).

To address this issue, I re-examine the information asymmetry hypothesis of spinoff value gains with a sample of European spinoffs. I use four information asymmetry proxies, based on both the analysts' earning forecasts and the market microstructure data, to conduct a comprehensive test of the information asymmetry hypothesis. The empirical results and analysis are presented in Chapter 8.

4.4 Summary

This chapter identifies the literature gap and suggests two research questions. Since different theories use the market reaction to spinoff announcements to measure the extent of spinoff value gains, it is important to examine the efficiency of market reaction to spinoff news, which is also the second research question addressed in this thesis. Existing finance literature shows that stock markets may overreact or underreact initially to corporate news and correct such a reaction in a long run. However, the evidence of long-run post-event price drift is subject to question primarily due to possible methodological deficiencies as discussed in section 3.6. Using more robust return methodologies, I investigate whether stock markets react to spinoff announcements in a complete and unbiased manner in Chapter 5. Specifically, I use the buy-and-hold abnormal returns approach, calendar-time regressions on multi-factor models and calendar-time portfolio abnormal returns approach to examine the significance of long-run abnormal returns to spinoffs. I also compute the long-run abnormal accounting returns for robustness checks.

One explanation of positive spinoff announcement effects is that investor sentiments drive the market reaction to spinoff announcements. In Chapter 6, I study whether investor demand for corporate focus (and investor demand for glamour stocks) affects the spinoff value gains. I also propose a catering theory of spinoffs to explain managerial decisions to spin off overvalued subsidiaries to irrational investors.

In the last two empirical chapters, I use different approaches to test the predictions of the governance-based and information-based models. In Chapter 7, I examine whether corporate spinoffs create shareholder value by reducing agency costs. In Chapter 8, I investigate whether corporate spinoffs create shareholder value by mitigating information asymmetry problems. I use different information asymmetry proxies proposed in earlier studies and specifically test several predictions of the information asymmetry hypothesis.

Chapter 5 Market Efficiency and Spinoff Value Effects

5.1 Introduction

As shown in section 3.6, the extant evidence on the long-run spinoff performance is mixed. Earlier studies show that both parent and offspring earn significant and positive abnormal returns in the three-year post-spinoff period (e.g. Cusatis et al, 1993; Daley et al., 1997; Desai and Jain, 1999). Recent research, however, demonstrates that post-spinoff firms do not earn superior stock returns in the long term (e.g. McConnell et al, 2000; Veld and Veld-Merkoulova, 2004). Fama (1998) contends that most long-run event studies do not use robust return methodologies and their conclusions are open to question. In particular, Fama points out that the long-run abnormal returns of post-spinoff firms in Cusatis et al. (1993) do not account for the cross-sectional return-dependence issue.

In section 3.5, I outline several different return calculation methodologies to control the cross-sectional dependence problem. The aim of this chapter is to investigate the spinoff value effects with these robust methodologies and assess the efficiency of European stock markets in valuing corporate spinoffs. The sample is 170 completed spinoffs in Europe between the years 1987 and 2005. There are two testable hypotheses as suggested in chapter 3.

The first one is related to the initial market reaction to spinoff announcements, which is stated below:
H1: Spinoff parent firms earn significant and positive announcement returns.

The second one is related to the long-run market reaction to spinoff announcements, which is presented as follows:
H2: Post-spinoff firms do not earn superior long-run stock returns.

I first test hypothesis H1 to examine whether spinoff parent firms experience favourable market reactions during the spinoff announcement period. I use the standard event study methodology, the market model, to estimate the abnormal returns to spinoff parent firms during the spinoff announcement period (Brown and Warner, 1985; Campbell, Lo and MacKinlay, 1997; Dodd and Warner, 1983; Kothari and Warner, 2006). I also apply a world market model to compute the abnormal announcement period returns in order to account for the impact of global stock markets and foreign exchange rates on the stock returns to spinoff parents (Park, 2004). Using different models I report qualitatively similar results, i.e. that there is a significant and positive market reaction to spinoff announcements. Further analyses of announcement returns to UK spinoffs and those to non-UK spinoffs show that positive spinoff announcement effects exist for both UK and non-UK countries.

I then examine the long-run stock returns to post-spinoff firms, which are related to hypothesis H2. The empirical investigation employs three different return calculation approaches, including the characteristic-based matching approach or the BHAR approach, the calendar-time regression approach or the CTRG approach and the calendar-time portfolio abnormal return approach or the CTAR approach. The use of different return methodologies is motivated by the argument of Fama (1998) that long-run event studies should use alternative return approaches to test market efficiency.

Barber and Lyon (1997) argue that the buy-and-hold approach accurately measures the true investment experience of investors and the characteristic-based matching approach has significant powers in detecting the long-run abnormal returns. The BHAR approach in this study uses two different benchmarks, returns to size- and book-to-market-control portfolio and returns to industry- and size-matching firm (Barber and Lyon, 1997; Ikenberry, Lakonishok and Vermaelen. 1995; Lyon et al. 1999). The size- and book-to-market-control portfolio construction is used to capture two important risk factors identified in Fama and French (1993). The industry- and size-matching firm construction is employed because Fama and French (1997) show that it is important to control the industry-specific risks when measuring cross-sectional stock returns. In addition, this industry- and size-matching firm approach facilitates the comparison of my results with evidence from earlier empirical studies such as Desai and Jain (1999) and Veld and Veld-

Merkoulova (2004).

An important issue for the BHAR approach is to control the cross-sectional return dependence problem. I use the four different methodologies outlined in Section 3.5 to assess the significance of long-run abnormal returns to post-spinoff firms. Specifically, they are the adjusted t-statistics based on the covariance estimation proposed in Lyon et al. (1999) and Mitchell and Stafford (2000), and the serial correlation and heteroskedasticity-consistent tests proposed in Jegadeesh and Karceski (2004).

Fama (1998) and Mitchell and Stafford (2000) prefer the calendar time regression (CTRG) approach to the BHAR approach because the BHAR approach can boost the abnormal returns over a long period even if there is no true abnormal return. The CTRG approach in this chapter employs two different benchmarks, the Fama-French (1993) three-factor model and Carhart (1997) four-factor model. My spinoff sample covers different European countries. A way to use the CTRG approach is to estimate these two multi-factor models for each sample European country and then construct value-weighted factor models for the whole sample, where the weight is the monthly stock market value of each sample country. However, Griffin (2002) argues that Fama-French factors are country-specific and a country-weighted factor models have a poor power in explaining cross-sectional stock returns. Thus, I estimate the Fama-French (1993) three-factor model and Carhart (1997) four-factor model only for the UK since the number of sample firms in a non-UK European country is too small for using the CTRG approach.

For the empirical testing with the CTRG approach, I weight calendar months by the number of post-spinoff firm observations in the month to take into account the managers' timing decision to undertake corporate spinoffs (Fama, 1998; Kothari and Warner, 2006). Loughran and Ritter (2000) contend that a calendar-time approach that simply averages event observations over "hot" and "cold" periods will have lower power in detecting the long-run abnormal returns to event firms. The calendar time approach adjusting monthly observation numbers used in this study can mitigate the problem as discussed in Loughran and Ritter (2000).

I further use the calendar time portfolio abnormal returns (CTAR) approach to calculate average abnormal returns to post-spinoff firms for each calendar month, where the expected returns on the event portfolio are proxied by returns to size- and book-to-market-control portfolios and returns to industry- and size-matching firms. Mitchell and Stafford (2000) advocate the CTAR approach because it has sufficient power to detect abnormal performance relative to the CTRG approach. In addition, Mitchell and Stafford argue that the CTAR approach is less subject to the event-firm-return correlation problem than the BHAR approach since the potentially correlated sample observations are grouped over calendar months. Finally, the CTAR approach is easier to understand and implement for professional investment practitioners than the BHAR approach. For the CTAR approach, the performance of post-spinoff firms is reported on a calendar time basis, which is consistent with the performance reporting practice of fund managers.

As a robustness check, the long-run abnormal BHARs to post-spinoff parent/offspring combined firms are regressed on the cumulative abnormal returns (CARs) to spinoff announcements. This approach allows me to detect whether the positive and significant announcement returns are followed by long-run price drifts. The regressions of BHARs with different holding periods present consistent evidence that European stock markets efficiently react to spinoff announcement news.

Finally, I investigate the long-run accounting returns to spinoff parents and spunoff subsidiaries, which also test hypothesis H2. Following Barber and Lyon (1996) and Ghosh (2001), three different methods are employed to obtain the benchmark accounting returns, including the industry-adjusted returns on assets (ROAs), the industry- and size-adjusted ROAs, and the industry- and performance-adjusted ROAs.

The rest of this chapter is organised as follows. Section 5.2 outlines the sample selection. Section 5.3 reports the stock returns to the sample spinoff parent firms during the spinoff announcement period. Section 5.4 presents the evidence on long-run stock returns to post-spinoff firms compared with different benchmark returns. Section 5.5 analyses the long-term abnormal accounting returns to post-spinoff firms against several industry-based benchmarks. Section 5.6 conducts the robustness checks. Section 5.7 concludes.

5.2 Spinoff Sample Selection

This study analyses a sample of European spinoffs. A European spinoff is defined as a spinoff where a European parent firm spins off a subsidiary. This subsidiary can be either from the same or from a different country. All European countries are taken into account initially, with the exception of the Eastern European countries because I have limited financial data for these countries. Both parent and offspring must be independently managed and separately valued at the stock market after the completion of the spinoff. I also require that the spinoff parent should distribute a majority of its interests in the subsidiary to its existing shareholders since the offspring would not be independently managed if the offspring were still subject to the control of its parent.

The sample of European spinoffs covers the period from January 1987 to December 2005. The spinoff sample is gathered from SDC M&A Database. The sample countries searched include Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Norway, the Netherlands, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. The initial sample consists of 367 spinoffs, where the transactions were announced during the sample period.

The data selection process in this study uses the following screening criteria and the reduction of observations following the application of a criterion is reported in parentheses:

a) parent firms or offspring firms have no stock price information in *Datastream* (67);
b) other types of restructuring transaction are mistakenly recorded as spinoffs in SDC, such as divestiture of a joint-venture with multi-parents, privatisation deals and asset redistribution as part of a merger deal (19)[6];

[6] The SDC often includes other types of restructurings in the spinoff sample. For example, SDC records the

c) less than 50% of interests of offspring are distributed to existing shareholders (9)[7];

d) the same spinoff announcements are double counted in SDC (9)[8];

e) offspring are already listed before the spinoff (6);

f) parents are not trading in the Europe (6);

g) the shares of offspring are sold to either existing shareholders or the market (3); and

h) the announced spinoffs are not completed by the end of year 2005 (78).

I identify the spinoff announcement dates by cross-checking the spinoff transactions with the details in the press reports via the Factiva newspaper database. Specifically, I search the Factiva database at least one year before the SDC-identified spinoff announcement date for the earliest press announcement of the spinoff. When an announcement is reported in the news, I search back another year from that date to confirm that there are no earlier announcements.

The cross-checking of announcement dates is undertaken because I am primarily interested in the initial market reaction to the spinoff announcement. I find that, for my sample, 157 out of 170 completed spinoffs have earlier announcement dates in the news reports than the SDC-identified announcement dates. In addition, the calculation of cumulative abnormal returns (CARs) based on SDC-identified announcement dates will

spinoff of the Adam and Harvey unit of Stocklake Holdings to its shareholders in July 1991. However, the deal was actually part of the liquidation plan of Stocklake Holdings. Stocklake Holdings' shares were delisted in September 1991. Another example is the spinoff of their non-automotive business to shareholders by Sommer Allibert SA in 2001 as recorded in SDC. The spinoff was actually undertaken to facilitate the acquisition of Sommer Allibert SA by Peugeot Citroen. I remove non-spinoff transactions from the spinoff sample when they are either part of a complex restructuring plan or part of a predefined merger plan since those transactions are not spinoff and such transaction announcement news often contains confounding information.

[7] This sample selection criterion is chosen for two reasons. First, I hope that our results are comparable with earlier US studies on corporate spinoffs. Prior US studies typically define a spinoff as a divestiture where the majority of shares of the subsidiary are distributed to the parent's existing shareholders. Second, I want to avoid the cases where parent firms retain the control over offspring firms in the post-spinoff period, where the performance of either parent of offspring firm might be substantially affected by the related transactions. A more than 50% interest of the subsidiary held by the parent in the post-spinoff period could allow parent managers to make such transactions. Thus it is difficult to assess the real long-term value creation from a spinoff under such circumstances.

[8] When a parent firm is split into two or three independent firms via a spinoff, SDC sometimes records the number of spinoffs as the number of independent post-spinoff firms rather than the number of offspring firms. I remove the spinoff announcement about the post-spinoff parent firm from the sample in such cases.

be quite different from that based on the earliest announcement dates in the news reports. For example, SDC reports that Culver Holdings announced the spinoff of World Travel Holdings on May 22nd, 2000. The two-day announcement period (-1, 0) CARs based on an estimated market model is -0.66%. However, the actual earliest announcement date is December 23rd, 1999 (see 'Culver Holdings PLC Prop. Offer for Shr Subscriptn', Regulatory News Service, December 23rd, 1999). The two-day announcement period (-1, 0) CARs based on the earliest announcement date using the same method is 10.54%.

A further check of the SDC-identified spinoff completion dates is conducted with the details of a spinoff transaction in the news reports via Factiva and the stock price data in *Datastream*. This cross-checking is undertaken to confirm the completion status of a spinoff and to obtain an accurate completion date. I find that SDC sometimes mistakenly classifies one spinoff as uncompleted when the spinoff was actually completed.[9] When there are mistakes in the SDC-reported completion details identified by crosschecking, I amend the sample data based on the verified information.

The final sample includes 170 completed European spinoff deals during the sample period, including 144 spinoff parent and 170 offspring firms, where 10 parents spin off two subsidiaries at the same time, 3 parents spin off three subsidiaries concurrently, and a further 13 parents conducted spinoffs at different times during the sample period. The number of European spinoffs will be 157 if I consider the firms announcing spinoffs at different times as different observations. For the completed spinoff sample, parents operate in 46 different industries and offspring operate in 50 different industries (defined as the two-digit SIC level). In total, both parent and offspring operate in 59 different industries.

The final spinoff sample covers 13 European countries. The earliest year with spinoff data available in my sample is the year 1987. Table 5.1 shows the distribution of 170

[9] For example, SDC reports that the spinoff of three units (EQ Holdings, Evox Rifa Holdings, and Vestcap) by Finvest Oy in March 2000 is pending (at the data collection date, February 2006). Actually, the spinoff was completed on November 1st, 2000 (See 'Finvest Details Demerger Listing Plan', Reuters News, October 26th, 2000).

completed spinoff deals by the parent's listing country and announcement year.

[Insert Table 5.1 about here, see page 77]

5.3 Spinoff Announcement Period Stock Returns

Existing studies suggest alternative methodologies to estimate the announcement period abnormal returns to corporate events, such as market adjusted returns, abnormal returns based on the Fama and French (1993) three-factor model, and abnormal returns relative to reference portfolios (e.g. size-matching firms). As discussed in section 3.5, argue that different methodologies often yield qualitatively similar results for estimating short-run abnormal returns to event firms because the statistical problems are trivial within a short event window such as the three-day announcement period (Kothari and Warner, 2006). Fama (1991 and 1998) also contends that event studies provide the strongest support to the efficient market hypothesis because the stock markets respond to corporate announcements quickly and completely within several days.

Therefore, I employ a standard event-study methodology, the market model, as described in Campbell et al. (1997: Chapter 4) and Kothari and Warner (2006)[10]. The formula for expected return for firm i in time t based on a market model is given by:

$$R_{it} = \alpha_i + \beta_i R_{Mt} \tag{5.1}$$

Where the parameters α_i and β_i are estimated by regressing the security return, R_{it}, on the market return, R_{Mt}, for the estimation period.

The abnormal returns are defined as the difference between actual stock returns and expected stock returns:

$$AR_{it} = R_{it} - E(R_{it}) \tag{5.2}$$

Where AR_{it} is the abnormal return, R_{it} is the realised return and $E(R_{it})$ is the expected

[10] The same event methodology is initially proposed in Dodd and Warner (1983) and has been used in prior empirical studies on corporate spinoffs, such as Krishnaswami and Subramaniam (1999) and Veld and Veld-Merkoulova (2004).

return on firm i for period t. The expected return is calculated with the estimated market model with the earlier-mentioned formula.

Cumulative abnormal returns (CARs) are then computed as the sum of daily abnormal returns over the horizon of the study. CAR for firm i during the period T is given by:

$$CAR_{iT} = \sum_{t=1}^{T} AR_{it} \tag{5.3}$$

In this chapter, the estimation period for the parameters of the market model comprise trading days [-220, -20] relative to the spinoff announcement day, which is day 0. The market return is estimated based on the total market return index for each country given in *Datastream*. The total market return index is calculated by *Datastream* with value-weighted average returns to representative companies comprised in the index for each country it covers. The calculation of total market return index by *Datastream* includes both the capital gains and the dividend yields. The selection of the total market return index for each country is to ensure the consistency of stock return results across different countries. I then calculate the three-day CARs in the window (-1, +1) for each spinoff announcement. I also compute CARs during different event windows, (-10, +1), (-1, 0), 0, and (+1, +10). The same approach for abnormal returns to spinoff announcements has been used in Veld and Veld-Merkoulova (2004).

Abnormal returns to all spinoff announcements between January 1987 and December 2005 are reported in Table 5.2. For the full sample, the average CARs over the three-day event window (-1, +1) are 4.82%, which are somewhat higher than the announcement returns documented in earlier US studies (3.84% in Desai and Jain, 1999; 3.28% in Krishnaswami and Subramaniam, 1999). The announcement returns over one-day, two-day, and three-day event windows are all significant at the 1% level, indicating that European stock markets strongly react to spinoff announcement news.

[Insert Table 5.2 about here, see page 78]

The full sample of spinoff announcements is further split into two sub-groups, UK spinoffs and non-UK spinoffs). Examination of announcement returns for these two sub-samples yields the following conclusions. UK spinoffs are slightly better perceived in the market than non-UK spinoffs as the former have an average of 5.48% CARs over the three-day event window while non-UK spinoffs have an average of 4.27%. The median three-day cumulative abnormal return to UK spinoffs is 3.03%, which is similar to the median three-day CARs to non-UK spinoffs of 3.33%. The announcement abnormal return pattern remains unchanged if the comparison of announcement period returns is based on alternative announcement windows such as the two-day window or the one-day window.

As indicated in Panel D of Table 5.2, the difference in CARs between UK and non-UK spinoffs is generally insignificant. The only significant difference is the mean difference of CARs between UK and non-UK spinoffs for the announcement date, which is significant at the 5% level (t-statistic = 2.20). The difference in CARs between UK and non-UK spinoffs is statistically insignificant for other event windows. For example, the mean (median) difference in CARs between UK and non-UK spinoffs during the three-day announcement period is 1.21% (0.87%), which has a t-statistic of 0.75 (z-statistic of 0.52).

Park (2004) argues that event studies in a multi-country setting should use a world market model in estimating abnormal announcement returns to events rather than a market model with a local market index. Park shows that a world market model incorporating the impacts of a local market index, world market index and foreign exchange rate has more power in explaining announcement returns to events across different countries. The formula for expected return for firm i in time t based on a world market model is given by:

$$R_{it} = \alpha_i + \beta_{1i} R_{LMt} + \beta_{2i} R_{WMt} + \beta_{3i} ER_t \quad (5.4)$$

Where the parameters α_i, β_{1i}, β_{2i}, and β_{3i} are estimated by regressing the security returns on the market return for the estimation period, R_{LMt} is the return of local stock market index, R_{WMt} is the return of world stock market index orthogonal to the return of local market index, and ER_t is the relative change of foreign exchange rates of the local currency.

I follow Park's approach to re-estimate announcement abnormal returns by using the *Datastream* total market return index for a sample country as the local market index, the *Datastream* total global market return index as the world market index, and the US dollar to local currency rate in the world market model. The use of a different world market index such as the Morgan Stanley EFMA index and the S&P 500 index does not change the estimated results. To save space, I do not report results based on alternative world market indices.

Table 5.3 reports the abnormal announcement returns to sample spinoff parents against the world market model. The estimation results of Table 5.3 are very similar to those of Table 5.2. For the full sample, the CARs over the three-day event window (-1, +1) are 4.83%. Announcement returns to UK spinoffs are comparable to those to non-UK spinoffs since the former have an average of 4.76% cumulative abnormal returns over the three-day event window while non-UK spinoffs have an average of 4.24%. Thus, the world market model does not differ much from the market model in estimating CARs to spinoffs. This evidence is consistent with the argument of Kothari and Warner (2006) that different return methodologies would produce qualitatively similar abnormal returns for a short event window.

[Insert Table 5.3 about here, see page 79]

Overall, my results show that abnormal stock returns to European spinoff announcements are significantly positive. In addition, the positive abnormal returns to European spinoff announcements are similar to those reported in prior empirical studies, such as Desai and Jain (1999), Krishnaswami and Subramaniam (1999), and Veld and Veld-Merkoulova (2004). This evidence supports hypothesis H1 that spinoff parent firms earn significant and positive announcement returns.

5.4 Long-run Stock Returns to Post-spinoff Firms

This section reports the long-run abnormal stock returns to post-spinoff firms against different benchmarks. Section 5.4.1 analyses the BHARs to post-spinoff firms, where the benchmarks are returns to size- and book-to-market-control portfolios and returns to industry- and size-matching firms. Section 5.4.2 presents the results for calendar-time regression models, where the benchmarks are the Fama-French (1993) three-factor and Carhart (1997) four-factor models. Section 5.4.3 shows the calendar-time portfolio abnormal returns, where the benchmarks are returns to size- and book-to-market-portfolios and returns to industry- and size-matching firms. Section 5.4.4 reports further tests on market efficiency in reacting to spinoff announcements.

5.4.1 The Buy-and-hold Abnormal Return Approach

The buy-and-hold abnormal return, or BHAR, approach measures the average multi-year return from a strategy of buying all firms involved with an event and selling at the end of a pre-specified holding period versus a comparable strategy investing otherwise similar non-event firms. The BHAR approach is favoured by some researchers because BHARs are more consistent with the true investor experience than the CARs (Barber and Lyon, 1997; Lyon et al., 1999)[11].

For post-spinoff firms, raw buy-and-hold returns are calculated as follows:

$$R_{i,T} = \left[\prod_{t=1}^{T} (1 + r_{i,t}) \right] - 1 \tag{5.5}$$

where $r_{i,t}$ is the return on stock *i* in month *t* relative to the spinoff completion date, 0. The return over the first partial calendar month is considered as the return in the spinoff completion month. The first one-year return includes the first partial calendar month's return and the returns over the next 11 months. The average of the N individual buy-and-

[11] Fama (1998) is against the BHAR approach to measure long-run abnormal returns because the BHAR approach can bias upwards the abnormal returns over a long horizon.

hold returns for the T months subsequent to the completion month is computed as below:

$$\overline{R_T} = \frac{\sum_{i=1}^{N} R_{i,T}}{N} \tag{5.6}$$

Buy-and-hold returns are calculated for the matching stock ($R_{i,T}^{bm}$) with the above procedure. The buy-and-hold abnormal returns are then given below:

$$AR_{i,T} = R_{i,T} - R_{i,T}^{bm} \tag{5.7}$$

Then control-portfolio (or matching-firm) adjusted returns, ARs, are calculated as the average of the differences in the buy-and-hold returns over the T months following the completion date as

$$\overline{AR_T} = \frac{\sum_{i=1}^{N} (R_{i,T} - R_{i,T}^{bm})}{N} \tag{5.8}$$

The t-statistic to estimate the statistical significance of the ARs is given below:

$$t = \frac{\overline{AR_T}}{s / \sqrt{N}} \tag{5.9}$$

where s is the cross-sectional standard deviation of AR_T for the N firms in the sample. Fama (1998) argues that the calculation of an unadjusted t-statistic for the ARs inappropriately assumes that event-firm returns are independent.

The selection of benchmarks for the calculation of long-run excess returns is not straightforward because most of previously suggested return methods suffer from statistical problems[12]. Recent empirical studies have argued that matching sample firms with control firms based on similar company-specific characteristics provides an appropriate benchmark to detect abnormal returns (Daniel and Titman, 1997; Daniel, Titman and Wei, 2001; Jegadeesh, 2000).

[12] See e.g. Ang and Zhang (2004), Barber and Lyon (1997), Fama (1998), Kothari and Warner (2006), Lyon, et al. (1999) for related discussion on the various methods to calculate long-run stock returns.

Following their arguments, I use two different characteristics-based benchmarks in measuring the long-run abnormal returns to post-spinoff firms. One benchmark is returns to size- and book-to-market-control portfolios. The other is returns to industry- and size-matching firms.

The first benchmark is used to capture the power of size and book-to-market ratio in explaining cross-sectional returns (Fama and French, 1993 and 1995). To implement the size and book-to-market matching portfolio procedure, all stocks in each sample country are grouped into five portfolios based on their market capitalisation at the end of June for each sample year[13]. Each portfolio contains an equal number of stocks. Stocks with the smallest market values are placed into portfolio 1, and those with the largest market values are placed into portfolio 5. For each stock, I also calculate the book-to-market ratio using the most recently reported book value of equity prior to the portfolio construction date. I then divide stocks within each size quintile into five equal-sized subgroups based on their book-to-market ratio. Stocks with the smallest book-to-market ratios are placed into sub-group 1, and those with the largest book-to-market ratios are placed into sub-group 5.

After constructing 25 size and book-to-market control portfolios, post-spinoff parent and offspring stocks are matched with a portfolio based on the post-spinoff firm's market value and the book-to-market ratio at the spinoff completion date for the sample country.[14] Then I calculate market-value-weighted average stock returns to the control portfolio. If stock returns for a firm in the control portfolio are missing in the computation period, I assume that the investment proceeds are reinvested in the remaining stocks of the control portfolio on a pro-rata basis. Specifically, the investment proceeds will be reallocated to the remaining stocks of the control portfolio

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[13] Similar to Fama and French (1993), I use a firm's market capitalisation in June to construct control portfolios. Our results remain qualitatively similar when portfolio construction relies on a firm's market capitalisation in other calendar months.

[14] In some cases, *Datastream* does not have the data of the book value of equity for the sample firms. I then calculate the ratio based on the book value of equity given in the annual reports of sample firms, which are downloaded from Thomson Research.

proportionally, where the reallocation weight is the stocks' market values. When no matched firm is available in the size- and book-to-market control portfolio for the sample country[15], returns on the total market return index for each country given in *Datastream* is then used[16].

I compute these abnormal stock return measures during the post-spinoff period for each parent/offspring portfolio. Combining performance data from post-spinoff parent and offspring into a single portfolio is to gauge the overall performance gains from a spinoff. Specifically, I create a pro-forma combined firm following the spinoff by calculating value-weighted abnormal returns of parent and offspring. The value weight is based on market values of spinoff parent and offspring on the spinoff completion date. The same approach to measure the long-run performance of combined firms is used in Desai and Jain (1999), McConnell et al. (2001) and Veld and Veld-Merkoulova (2004).

The second benchmark is employed to control industry-specific risks. Fama and French (1997) show that current asset pricing models have not been able to explain industry-specific risks. My industry- and size-matching firm approach is based on the two-digit SIC industry, which is similar to that used by Veld and Veld-Merkoulova (2004) except for the following changes. First, I select matching firms which do not undertake a spinoff within the five-year period centring on the spinoff completion date of a sample firm involved with the spinoff. Second, I require that the industry matching firm's size is within the scope of (50%, 150%) of the market capitalisation of the sample firm. The additional size constraint is used to avoid selecting control firms that are too small or too large relative to sample firms. This size constraint is particularly important for finding matching firms for parents. For my spinoff sample, I find that many spinoff parents are very large firms in local stock markets, where sometimes few industry peers can match the size of parents.

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[15] Such cases sometimes occur for some European countries which have a small stock market. For example, Ireland has an average of only 73 stocks during the 1990s as indicated by the stock data in *Datastream*.
[16] Results for long-run post-spinoff performance do not materially change when I use the value-weighted stock returns to all listed firms in the sample country as the benchmark returns rather than the total market return index for the sample country given in *Datastream*.

As discussed in Section 3.5, there are statistical problems associated with the use of the BHAR approach to measure the long-run abnormal returns. I use four different approaches to calculate the adjusted t-statistic in order to account for the return dependence problem. Following Mitchell and Stafford (2000), I estimate the correlation of complete overlapping monthly returns of post-spinoff firms and calculate an adjusted t-statistic (MS_t). Similar to Lyon et al. (1999), I estimate the correlation matrix of overlapping monthly returns of post-spinoff firms and obtain an adjusted t-statistic (LBT_t). Following Jegadeesh and Karceski (2004), I estimate the serial correlation consistent t-statistic (SC_t) as well as the heteroskedasticity and serial correlation consistent t-statistic (HSC_t), which are based on the estimators for the variance-covariance matrix. The computation details of different adjusted t-statistics are given in Appendix 5.1. Results based on different adjusted t-statistics are generally consistent. Since my sample size is not large, I choose to focus on the adjusted t-statistic proposed in Mitchell and Stafford (2000), which requires the fewest sample observation to estimate the adjusted t-statistic and is less subject to the misestimation problem due to limited data.

The long-term size- and book-to-market-adjusted abnormal returns of the parent, offspring, and the pro-forma combined firms in the three-year post-spinoff period are reported in Table 5.4. The abnormal returns are calculated as the difference between the sample firm returns and the returns on the control portfolio, as per the matching process introduced earlier. I examine the long-run performance of post-spinoff firms over the three-year post-spinoff period. Therefore, I focus on the post-spinoff firms following spinoffs completed between January 1987 and December 2002 in order to have three-year post-spinoff data to calculate the long-run performance.

[Insert Table 5.4 about here, see page 81]

Panel A in Table 5.4 demonstrates no significant stock returns to post-spinoff parent/offspring combined firms. For instance, the mean and median three-year size- and book-to-market-adjusted BHARs to post-spinoff combined firms are 0.06 and -0.03, respectively. Both the mean and the median are insignificant at conventional significance levels (MS_t = 0.59 and z-statistic = -0.19). The results documented in this study differ from earlier US findings on corporate spinoff value effects. For example, Cusatis et al. (1993) and Desai and Jain (1999) observe that post-spinoff firms perform significantly better than matching firms in the three-year post-spinoff period. However, my evidence is consistent with Veld and Veld-Merkoulova (2004) who also observe insignificant long-run abnormal returns to European spinoffs..

Panel B presents the summary statistics of long-term size- and book-to-market-adjusted BHARs to post-spinoff parents. As shown in Table 5.4, abnormal returns to post-spinoff parent firms are not-statistically different from zero. Since the sample size is not large, I focus on the analysis of the median returns to post-spinoff parents to avoid biased statistical inferences. The median BHARs to parents are -0.06, -0.08 and -0.09 for one-year, two-year, and three-year holding periods, respectively. None of those returns is significant at conventional levels. Again, this evidence is different from the US findings that post-spinoff parents earn superior long-run stock returns (e.g. see Desai and Jain, 1999).

Panel C of Table 5.4 further demonstrates that long-run BHARs to post-spinoff offspring are insignificant across different holding periods. The mean two-year (and three-year) BHARs to post-spinoff offspring is 0.23 (0.26). Both returns would be significant at the 5% level if a traditional t-statistic were used. Adjusted t-statistics show that the mean BHARs to post-spinoff offspring are no longer significant. The median BHARs to post-spinoff offspring are also insignificantly different from zero for different holding periods. Therefore, my evidence indicates that European stock markets generally react efficiently to spinoff announcements and post-spinoff offspring do not earn superior long-run stock returns.

Table 5.5 reports the long-run industry- and size-adjusted BHARs to post-spinoff pro-forma combined firms. Panel A in Table 5.5 shows that there are insignificant stock returns to post-spinoff parent/subsidiary combined firms. The mean and median three-year industry- and size-adjusted BHARs to post-spinoff combined firms are 0.02 and -0.07, respectively. Both the mean and the median are not significant at conventional levels (MS_t = 0.57 and z-statistic = -0.27). Returns in different holding periods such as one-year and two-year periods are also insignificant at the 10% level. The binomial tests also show that half of sample firms have positive abnormal returns while half experience negative abnormal returns. The results documented in Table 5.5 are very similar to those reported in Table 5.4.

[Insert Table 5.5 about here, see page 82]

Panel B of Table 5.5 presents the results of long-term industry- and size-adjusted BHARs to post-spinoff parents. The abnormal returns to post-spinoff parents are also not-statistically different from zero. The mean BHARs to post-spinoff parents are 0.01, 0.13 and 0.07 for one-year, two-year, and three-year holding periods, respectively. The median BHARs to post-spinoff parent firms are -0.01, 0.0003 and -0.01 for one-year, two-year, and three-year holding periods, respectively. None of those returns is significant at conventional levels.

Panel C of Table 5 demonstrates that the long-run industry- and size-adjusted abnormal returns to post-spinoff offspring firms are also insignificant across different holding periods. The mean two-year (and three-year) BHARs to post-spinoff offspring firms are 0.16 (0.22). Both returns would be significant at the 5% level if the traditional t-statistics were to be used. However, adjusted t-statistics to account for the event dependence problems show that the mean BHARs to post-spinoff offspring firms are no longer significant. As my sample size is small, the z-statistic for the median long-run abnormal returns has more reliable statistical inferences than the t-statistic for the mean long-run abnormal returns. As shown in the table, the median BHARs to post-spinoff offspring firms are also insignificantly different from zero over different holding periods.

Overall, my evidence suggests that initial stock market reaction to spinoff announcements is generally efficient and neither post-spinoff parents nor their offspring earn superior long-run stock returns. This evidence differs from earlier US findings on corporate spinoff value effects. For example, Cusatis et al. (1993) and Desai and Jain (1999) observe that post-spinoff firms outperform industry matching firms in the three-year post-spinoff period. However, my evidence is consistent with results from McConnell et al. (2001) and Veld and Veld-Merkoulova (2004), which show no long-run abnormal stock returns to American and European spinoffs.

5.4.2 The Calendar Time Regression Approach

As discussed in section 3.5, the adjusted t-statistics in calculating BHARs do not fully resolve the event-firm-return dependence problem. An alternative approach to measuring long-term stock returns is to track the performance of a portfolio of firms involved in an event in calendar time relative to an explicit asset pricing model. The calendar-time portfolio approach is recommended in Fama (1998) and Mitchell and Stafford (2000). The event portfolio is formed each period to include all firms that experience a similar event within the prior n periods, where the n periods refer to a specific investment holding period of event firms, such as 12 and 24 months. With these event portfolios, the cross-sectional correlations of the individual event firm returns are automatically accounted for in the portfolio variance over the calendar time. When assessing the abnormal returns, the returns to event portfolios are regressed on the pre-specified asset pricing models and the statistical significance of the intercept will indicate the level of long-run abnormal returns.

Currently, two different multi-factor asset pricing models are popular for empirical long-run event studies. The first one is the Fama and French (1993) three-factor model, which captures the power of size and book-to-market in explaining the stock returns. Specifically, the multi-factor model is given below:

$$(R_i - R_f)_t = \alpha + \beta_1 (R_M - R_f)_t + \beta_2 SMB_t + \beta_3 HML_t \tag{5.10}$$

SMB is the return on a portfolio long in small market capitalization stocks and short in big market capitalization stock. *HML* is the return on a portfolio long in high book-to-market stocks and short in low book-to-market stocks.

Recent empirical studies suggest another factor of explaining stock returns: momentum. Jegadeesh and Titman (1993, 2001) show that returns to portfolios formed on past returns cannot be explained by the returns to stocks of different size and book-to-market characteristics. Carhart (1997) augments the Fama and French (1993) model with the momentum factor:

$$(R_i - R_f)_t = \alpha + \beta_1 (R_M - R_f)_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 UMD \quad (5.11)$$

Where *UMD* is the return on a portfolio long in stocks with high past returns and short in stocks with low past returns.

The risk-free rate used in this study is the monthly rate derived from the redemption rate for one-year government benchmark bonds for each local country given in *Datastream*. The local market index is the *Datastream* total return index for the local country. The measurement of factors for the Fama and French (1993) three-factor models is to form 5×5 size and book-to-market portfolios based first on the size rank and then on the book-to-market rank. The measurement of factors for Carhart (1997) four-factor models is to form $3 \times 3 \times 3$ size and book-to-market portfolios based first on the size rank and then on the book-to-market rank and finally on the past-year return rank. The details to compute factor loadings of Fama and French (1993) and Carhart (1997) models are reported in Appendix 5.2. The average monthly return on the portfolio of parent (offspring) stocks less the contemporaneous return on the risk free rate is then regressed against the contemporaneous returns of the three factors of the Fama and French (1993) model or against the contemporaneous returns of the four factors of the Carhart (1997) model.

Loughran and Ritter (2000) question the robustness of calendar-time regression approach because simply averaging monthly returns in each calendar month fails to detect long-run abnormal returns and ignores the existence of the “hot” period in which more corporate events are completed. To address this concern, I use the monthly-observation-number weighted monthly return rather than the simple average monthly return in the regression models. This approach assigns more weight to the hot period, when more corporate events are undertaken, than to the cold period.

Table 5.6 reports the time-series regressions of post-spinoff firm portfolios. In general, the R-squared for time-series regression models are very small. This is due to the small sample size problem.

[Insert Table 5.6 about here, see page 83]

Panel A of Table 5.6 reports the Fama-French (1993) model regression results for parents. When holding event firms for one year following the spinoff completion date, the model intercept (-0.02) is significantly negative (t-statistic = -1.75). However, the whole model is insignificant since the F-statistic is just 1.58. When holding event firms for two years, the model intercept is positive (0.01) but it is insignificant at conventional levels (t-statistic = 0.72). Similar results obtain when holding event firms for three years. Panel B of Table 5.6 presents the Fama-French (1993) model regression results for offspring.

Panel C of Table 6 reports the Carhart (1997) model regression results for parents. When holding event firms for one year following the spinoff completion date, the model intercept is negative (-0.01) but is insignificant (t-statistic = -0.68). When holding event firms for two years, the model intercept is positive (0.02) but it is not significant at conventional levels (t-statistic = 1.45). When holding event firms for three years, the model intercept is again positive (0.01) while not significant at conventional levels (t-statistic = 1.46). Panel D of Table 5.6 presents the Carhart (1997) model regression results for offspring.

5.4.3 The Calendar Time Portfolio Abnormal Return Approach

There are also statistical problems using the CTRG approach in measuring long-run abnormal returns, as mentioned in section 3.5. A most important one is that the regressions wrongly assume that the factor loadings are constant over a relatively long period (e.g. up to 190 months in this study). This is unlikely since the composition of the event portfolio changes over time. Fama and French (1997) have shown that different industries have different factor loadings and Mitchell and Mulherin (1996) observe that corporate events tend to cluster through time by industry. The portfolio composition of events firms is likely to be heavily concentrated in a few industries at each point in time but in different industries over a long period. Therefore, the CTRG approach that assumes constant factor loadings can lead to biased estimation results.

I therefore use the calendar time abnormal returns (CTAR) approach to account for this problem. The CTAR approach is the average abnormal return of each calendar month for all event firms within the prior pre-specified investment periods (such as one year, two years and three years). I also require that at least five firms exist in the event portfolio for each time point in calendar months. The expected return on the event portfolio is estimated by both the 25 size- and book-to-market-control portfolios and the industry- and size-matching firms. The benchmarks used in this section are actually those used in the BHAR approach. Similar to Mitchell and Stafford (2000), I standardise the monthly CTARs by estimates of the portfolio standard deviation in order to control for heteroskedasticity. The measurement of long-run abnormal returns to event firms is thus based on the time-series mean of the monthly standardised CTARs and standard error of the mean.

The results from the CTAR analysis are presented in Table 5.7. The CTARs to post-spinoff parents are insignificant for different holding periods and for different benchmarks. For instance, holding post-spinoff parents for three years on average earn negative but insignificant average monthly returns (-0.01) against the size- and book-to-market-control portfolio (t-statistic = -0.01). Similarly, holding post-spinoff parents for three years on average earn positive but insignificant average monthly returns (0.07) against the industry- and size-matching firm (t-statistic = 0.94).

[Insert Table 5.7 about here, see page 85]

The CTARs to post-spinoff offspring firms are also generally insignificant for different holding periods and for different benchmarks. The only exception is that of the CTARs to post-spinoff offspring firms when the holding period is the two-year period and the benchmark is the size- and book-to-market control-portfolio. The average monthly return for this case is 0.15, which is statistically significant at the 10% level (t-statistic = 1.87). However, none of other CTARs is significant at conventional levels. Therefore, the significant CTAR result for a particular return benchmark is likely to be a product of luck (Fama, 1998).

Therefore, the CTAR approach reports evidence that is consistent with the results of previous approaches. I conclude that post-spinoff firms do not earn superior abnormal returns in the long run against different benchmarks. The results documented here differ from earlier US findings on the long-run performance of firms involved in spinoffs such as Cusatis et al. (1993) and Desai and Jain (1999). The difference may be due to different return methodologies used. Since prior studies have not used robust return methodologies as I have in this chapter, I conjecture that the significant long-run BHARs to post-spinoff firms reported in Cusatis et al. (1993) and Desai and Jain (1999) may be due to biased return methodologies used.

5.4.4 Further Regression Tests on Market Efficient

If markets are inefficient in reacting to spinoff announcements, there should be an association between the announcement period returns to spinoff announcements and the long-run abnormal returns to firms involved in spinoffs. I test this possibility by regressing the long-run BHARs to post-spinoff parent/offspring combined firms on the three-day cumulative abnormal returns to parents during the announcement period. The regression results are reported in Table 5.8.

[Insert Table 5.8 about here, see page 86]

Results in Table 5.8 show that there is no significant association between long-run stock returns to post-spinoff firms and short-run market reaction to spinoff announcements. The coefficients for the three-day announcement returns are not significant for different regression models. In addition, the explanatory power of all regressions is extremely small. The adjusted R-square ranges from -0.8% to 0.5%. Therefore, there is no evidence that stock markets initially underreact to spinoff announcement news.

5.5 Accounting Returns to Post-spinoff Firms

I use the benchmark-adjusted performance approach suggested in Barber and Lyon (1996) to obtain the abnormal accounting returns to post-spinoff firms. I examine the accounting performance for pre-spinoff firms for the two-year period prior to the spinoff announcement date and the accounting performance for post-spinoff firms for the three-year period following the spinoff completion date. The performance measures is the cash flow return on assets (ROA), measured as the ratio of income before interest, tax, depreciation and amortization (EBITDA) to book value of assets. The cash-flow based accounting measure is adopted to minimise the impact of managerial manipulation of accounting numbers.

The first approach to calculate industry-adjusted ROAs as abnormal accounting returns, used in Daley et al. (1997) for post-spinoff firms, is subject to measurement errors because firms undertaking spinoffs are usually large and diversified firms in their industry and industry median firms tend to be substantially smaller than the spinoff firms. As shown in Berger and Ofek (1995) and others, large and diversified firms differ significantly from their small and focused industry counterparts in both operating performance and market valuation. Ghosh (2001) argues that a research design accounting for pre-event performance and size for firms experiencing corporate events is superior to the industry-median-adjusted approach. Following Loughran and Ritter (1997) and Ghosh (2001), I control for size and pre-event performance in measuring abnormal accounting returns. The procedure to estimate different benchmark-adjusted accounting returns is illustrated through the following example of ROA computation.

The first measure is industry-adjusted ROA. This proxy is computed as the return on assets of the event firm subtracted by the median return on assets for all firms, except the event firm, that operate in the same two-digit SIC code industry as the pre-spinoff parent.

The second measure is industry- and size-adjusted ROA. This proxy is calculated as the median ROA for all firms, except for the event firm, that share the same two-digit SIC code industry as the event firm and have asset values within 50% of the asset value of the pre-spinoff parent in the same fiscal year.[17]

The third measure is industry-, and performance-adjusted ROA. First, I calculate an ROA for all firms, except for the event firm , that are in the same two-digit SIC industry as the event firm and whose ROA is within the range between 50% and 150% of the asset values of the event firm in the same fiscal year. From those firms a firm that is closest to the sample firm in terms of ROA in the preceding fiscal year is then selected. The industry-and performance-adjusted ROA is computed as the ROA of the event firm subtracted by the ROA of the matching firm in the same 2-digit SIC industry.

Results of the accounting performance of firms involved in spinoffs are reported in Table 5.9. Panel A of Table 5.9 reports the accounting performance for pre-spinoff parents over the two-year period preceding the spinoff announcement date. In general, the accounting performance of pre-spinoff parents is in line with that of their industry peers. For three industry-based benchmarks, the abnormal accounting returns to pre-spinoff parents are insignificantly different from zero.

[Insert Table 5.9 about here, see page 87]

Panel B of Table 5.9 presents the accounting performance of post-spinoff parents. The results show that post-spinoff parents are not performing better than their industry peers in terms of accounting returns. None of the abnormal accounting returns is significant at conventional levels. For example, the mean (median) of average three-year industry- and size-adjusted ROAs is -0.5% (-0.7%), which is statistically insignificant at 10% level (t-

[17] The size matching on a smaller scope such as between 70% and 130% often gives no matching industry firms. Using a broader industry definition (one-digit SIC code industry) does not solve the data limitation problem because most of mainland European stock markets contain less than 500 public firms. To make industry- and size-matching feasible and meaningful, I use 50% instead of 30% as in Daley et al (1997).

statistic = -0.45 and z-statistic = -0.68).

Panel C of Table 9 shows the accounting performance of post-spinoff offspring. There is some evidence that post-spinoff offspring earn positive abnormal accounting returns. For the industry- and size-adjusted ROAs, the mean (median) of abnormal ROAs for post-spinoff offspring is 4.5% (2.3%), which is significant at 5% level (t-statistic = 2.17 and z-statistic = 2.15). However, the industry-adjusted ROAs are not significant. In addition, the abnormal accounting returns to post-spinoff offspring are insignificant for other holding periods. I do not examine the industry- and performance-adjusted ROAs for offspring because there are no prior performance data available for such firms.

Overall, my results for the accounting returns show that post-spinoff firms do not earn superior accounting returns in the long term. This evidence is consistent with the stock performance of post-spinoff firms documented in section 5.4.

5.6 Robustness Checks

Desai and Jain (1999) present evidence that US stock markets may only underreact to focus-increasing spinoffs, where parent and offspring operate in different two-digit SIC industries. Specifically, Desai and Jain observe that only focus-increasing spinoffs earn superior long-run stock returns in the post-spinoff period. In contrast, their sample firms following non-focus-increasing spinoffs do not have significant long-run abnormal returns. I examine the long-run abnormal returns to post-spinoff firms emerging from focus-increasing spinoffs to assess whether this focus-related performance obtains for my European sample.

Similar to Desai and Jain (1999), I define focus-increasing spinoffs as those in which the parent and the offspring firms do not share the same two-digit SIC industry and non-focus-increasing spinoffs as those in which the parent and offspring operate in the same two-digit SIC industry.

In Table 10, I report the size- and book-to-market-adjusted BHARs to post-spinoff firms following focus-increasing spinoffs and those to post-spinoff firms following non-focus-increasing spinoffs. Because the sample size of focusing spinoffs is quite small, I use the adjusted t-statistic proposed in Mitchell and Stafford (2000) to estimate the mean significance in order to avoid biases estimates due to small sample size. The data in Panel A of Table 5.10 show that post-spinoff firms following focus-increasing spinoffs do not have long-run abnormal returns. For the post-spinoff parent/offspring combined firms, the mean (median) of the three-year size- and book-to-market-adjusted BHARs is 0.06 (-0.03), which has a t-statistic of 0.59 (z-statistic of -0.30). The mean and median returns for the one-year (and the two-year) holding period are also insignificant at conventional levels.

[Insert Table 5.10 about here, see page 88]

I also examine whether post-spinoff parents following focus-increasing spinoffs earn superior long-run returns in Panel B of Table 5.10. Contrary to the findings of Desai and Jain (1999), post-spinoff parents following focus-increasing spinoffs have insignificant long-run abnormal returns. For instance, the mean (median) of the three-year size- and book-to-market-adjusted BHARs to post-spinoff parents following focus-increasing spinoffs is 0.05 (-0.08), which has a t-statistic of 0.37 (z-statistic of -0.93).

Results in Panel C of Table 10 demonstrate that the offspring following focus-increasing spinoffs have no superior long-run stock returns. The mean (median) of the three-year size- and book-to-market-adjusted BHARs to post-spinoff offspring firms from focus-increasing spinoffs is 0.12 (-0.001), which has a t-statistic of 0.93 (z-statistic of 0.46). Again, my results are against the evidence reported in Desai and Jain (1999) that focus-increasing spinoffs earn significant long-run abnormal returns.

For the purpose of a robustness check, I also analyse the long-run industry- and size-adjusted BHARs to post-spinoff firms from focus-increasing spinoffs in Table 5.11. Results in Table 5.11 indicate that post-spinoff firms from focus-increasing spinoffs generally have insignificant long-run abnormal returns. The only exception is that the two-year BHARs to offspring have a mean of 0.16, which is significant at the 10% level (t-statistic = 1.72). However, the median (0.10) of two-year BHARs to post-spinoff offspring firms is insignificant at the 10% level (z-statistic = 1.01). In addition, the long-run BHARs to offspring for other holding periods are insignificant. Therefore, the results in Table 5.11 are generally consistent with those presented in Table 5.10.

[Insert Table 5.11 about here, see page 89]

Finally, I use the calendar time abnormal portfolio approach to examine whether focus-increasing spinoffs earn superior long-run returns[18]. The results are reported in Table 5.12. As shown in Table 5.12, investing in post-spinoff firms from focus-increasing spinoffs does not have superior portfolio returns. For example, the monthly abnormal returns for buying parent firms for three years at the spinoff completion dates have an average of 0.01, which is insignificant at the 10% level (t-statistic = 0.36).

[Insert Table 5.12 about here, see page 90]

The further analysis of long-run abnormal returns to focus-increasing spinoffs lends support to the efficient markets hypothesis. There is no evidence that European stock markets underreact to focus-increasing spinoffs.

5.7 Summary

This chapter examines the efficiency of stock markets in valuing corporate spinoffs. There are mixed views on whether stock markets underreact to spinoff announcements. On the one hand, the efficient markets hypothesis contends that there is no superior long-run performance for firms involved in spinoffs. On the other hand, some practitioners have argued that investing in post-spinoff firms can earn superior portfolio returns. I address this issue by examining both short-run and long-run returns to firms involved in

[18] I do not use the CTRG approach here because the reduction of monthly observations for focus-increasing spinoffs makes statistical inference from the regressions less informative and less reliable.

spinoffs with different return methodologies in order to avoid biased results. I test two hypotheses based on the market efficiency view. The first is that spinoff parent firms earn superior announcement returns. The second is that post-spinoff firms do not earn superior stock returns in the long run. My empirical results support these two hypotheses.

First, I find that spinoff announcement returns are significantly positive for both UK and non-UK countries. The spinoff announcement effects hold for different methods to estimate abnormal announcement returns to spinoff parent firms. As contended in Fama (1991 and 1998), the initial market reaction to spinoff announcements should be quick and completed. My findings are consistent with the first hypothesis.

Second, I use three different approaches to examine the long-run stock returns to post-spinoff firms. The BHAR approach is used as in prior empirical studies but with the adjusted t-statistics to account for the return dependence problem. I also use two different benchmarks, size- and book-to-market control portfolios and industry- and size- matching firms. For both benchmarks, I find none of the BHARs to post-spinoff firms is statistically significant across different holding periods.

The calendar time regression approach is used against two popular asset pricing models, i.e. the Fama and French (1993) three-factor and Carhart (1997) four-factor models. In addition, I use the observation-number weighted average monthly returns to increase the statistical power to detect the long-run abnormal returns. I find that none of the model intercepts is significantly positive when I use multi-factor models (Carhart, 1997; Fama and French, 1993) for the UK sub-sample. Based on my evidence, I conclude that post-spinoff firms do not have superior long-run returns against the multi-factor models.

I also employ the calendar time abnormal portfolio returns approach to analyse the long-run abnormal returns. The benchmarks are again the size- and book-to-market control portfolios and industry- and size- matching firms. The standardised average monthly abnormal returns are not significant for post-spinoff parent firms across different holding periods. The standardised average monthly abnormal returns against the size- and book-to-market- control portfolios for post-spinoff offspring firms are significant when the holding period is two years. However, it is only significant at the 10% significance level. When the benchmark changes to industry- and size- matching firms or the holding period changes to three-year (one-year), the result is again insignificant.

As a robustness check, I regress the long-run BHARs to post-spinoff combined firms on the spinoff announcement returns. I find no evidence that markets initially underreact to spinoff announcements. Overall, my results show that there are no superior long-run stock returns to post-spinoff firms. The second hypothesis is thus supported.

Third, I examine the long-run accounting performance of firms involved in spinoffs. The results are consistent with the stock return results. Post-spinoff firms do not earn superior accounting returns in the three-year post-spinoff period either. Therefore, European stock markets do not seem to underreact to spinoff announcements.

Fourth, I conduct robustness checks for long-run stock returns to post-spinoff firms from focus-increasing spinoffs. Extant studies imply that stock markets may only underreact to focus-increasing spinoffs but react efficiently to non-focus-increasing spinoffs. The further analysis results show that European stock markets are efficient in valuing focus-increasing spinoffs as well.

The evidence of this study stresses the importance of using robust return methodologies in estimating the long-run abnormal returns. Further, it questions the validity of an investment strategy of buying post-spinoff firms to beat the market. Further research using more refined methodologies to assess the long-run stock returns to other corporate events will be helpful in examining the efficiency of stock markets in reacting to different corporate news.

Table 5.1 Distribution of European spinoffs by announcement year and country of spinoff parents

Distribution of European companies that completed a spinoff in the period from January 1987 to December 2005 by announcement year and listing country of the spinoff parent firm. A total of 367 spinoff announcements are originally identified from the SDC Mergers and Acquisitions Database. Spinoffs are eliminated for the following reasons with data reduction number in parentheses: a) parent firms or offspring firms have no stock price information in *Datastream* (67); b) other types of restructuring transaction are mistakenly recorded as spinoffs in SDC, such as divestiture of a joint-venture with multi-parents, privatisation deals and asset redistribution as part of a merger deal (19); c) less than 50% of interests of offspring firms are distributed to existing shareholders (9); d) the same spinoff announcements are double counted in SDC (9); e) offspring firms are already listed before the spinoff (6); f) parent firms are not traded in Europe (6); g) the shares of offspring firms are sold to either existing shareholders or the market (3); and h) the announced spinoffs are not completed by the end of year 2005 (78). The final sample includes 144 parent firms (157 distinct announcements) and 170 offspring firms. Countries are coded as follows: BD for Germany, BG for Belgium, DK for Denmark, FN for Finland, FR for France, IR for Ireland, IT for Italy, NL for the Netherlands, NW for Norway, PT for Portugal, SD for Sweden, SW for Switzerland, and UK for the United Kingdom.

Year	BD	BG	DK	FN	FR	IR	IT	NL	NW	PT	SD	SW	UK	Total
1987													1	1
1988									1				3	4
1989									1				6	7
1990											1			1
1991									1				2	3
1992									1		1		1	3
1993													2	2
1994							1				1			2
1995							1		1		2		2	6
1996					1		1		1		5		8	16
1997						1	1	1			4	1	6	14
1998	2					1		1	2		5		8	19
1999	1	1	1	1			4	3	1		2	2	5	21
2000		1		4			1				3		13	22
2001	1				3				1		5		11	21
2002							1	1					1	3
2003	1	1		1			2		2				3	10
2004	1	1		1					1	1	5		3	13
2005											1		1	2
Total	6	4	1	7	4	2	12	6	13	1	35	3	76	170

Table 5.2 CARs to spinoff parents based on the market model

This table reports the average cumulative abnormal returns (CARs) for the entire sample of 157 completed spinoffs from January 1987 to December 2005.The spinoff announcements are identified from SDC Merger & Acquisitions Database. Abnormal returns are calculated with the market model, estimated over a 200-day period for each sample firm (from day -220 to day -21 relative to spinoff announcement date). The market model is estimated with the following equation: $R_{it} = \alpha_i + \beta_i R_{Mt}$,

where the parameters α_i and β_i are estimated by regressing the security return, R_{it}, on the market return, R_{Mt}, for the estimation period. The significance of the mean is tested by t-statistic. The significance of the median is tested by the Wilcoxon signed rank test. The binomial test is used to test the significance of the percentage of sample firms with positive abnormal announcement returns, with the null hypothesis that the proportion of positive abnormal announcement-period returns is 50%. [a], [b] indicates the significance level at the 1% and 5% level, respectively.

Interval	Mean%.	t-statistic	Median%	z-statistic	% (+)
Panel A: CARs based on the market model for All spinoffs (N=157)					
-10 to -1	1.75[b]	2.62	0.79[b]	2.36	56.05
-1 to 0	4.24[a]	6.64	2.64[a]	7.06	70.70[a]
0	3.45[a]	6.25	1.75[a]	6.57	68.15[a]
-1 to +1	4.82[a]	6.14	2.61[a]	6.80	73.25[a]
+1 to +10	-0.06	-0.08	-1.14	-1.55	40.76
Panel B: CARs based on the market model for UK spinoffs (N=72)					
-10 to -1	1.95	1.59	0.72	1.18	52.78
-1 to 0	5.26[a]	4.67	3.02[a]	4.98	75.00[a]
0	4.80[a]	4.70	2.19[a]	5.06	70.83[a]
-1 to +1	5.48[a]	4.12	3.03[a]	4.31	69.44[a]
+1 to +10	0.57	0.43	-1.21	-0.32	45.83
Panel C: CARs based on the market model for Non-UK spinoffs (N=85)					
-10 to -1	1.58[b]	2.38	0.99[b]	2.14	58.82
-1 to 0	3.39[a]	4.91	2.61[a]	4.99	67.06[a]
0	2.29[a]	4.50	1.32[a]	4.20	65.88[a]
-1 to +1	4.27[a]	4.65	3.33[a]	5.29	76.47[a]
+1 to +10	-0.59	-0.72	-1.03[b]	-2.03	36.47
Panel D: Difference in CARs between UK and Non-UK spinoffs					
-10 to -1	0.38	0.27	-0.27	-0.53	
-1 to 0	1.87	1.42	0.41	1.40	
0	2.51[b]	2.20	0.87	1.58	
-1 to +1	1.21	0.75	0.70	0.52	
+1 to +10	1.62	0.74	-0.18	-0.24	

Table 5.3 CARs to spinoff parents based on the world market model

This table reports the average cumulative abnormal returns (CARs) for the entire sample of 157 completed spinoffs by 144 European firms from January 1987 to December 2005.The spinoff announcements are identified from SDC Merger & Acquisitions Database. Abnormal returns are calculated with the world market model, estimated over a 200-day period for each sample firm (from day -220 to day -21 relative to spinoff announcement date). The world market model is estimated with the following equation:

$$R_{it} = \alpha_i + \beta_{1i} R_{LMt} + \beta_{2i} R_{WMt} + \beta_{3i} ER_t$$

where the parameters α_i, β_{1i}, β_{2i}, and β_{3i} are estimated by regressing the security returns on the market return for the estimation period, R_{LMt} is the return of local stock market index, R_{WMt} is the return to the *Datastream* global market index, and ER_t is the relative change of US dollar rates of the local currency.

The significance of the mean is tested by t-statistic. The significance of the median is tested by the Wilcoxon signed rank test. The binomial test is used to test the significance of the percentage of sample firms with positive abnormal announcement returns, with the null hypothesis that the proportion of positive abnormal announcement-period returns is 50%. [a], [b] indicates the significance level at the 1% and 5% level, respectively.

Interval	Mean%.	t-statistic	Median%	z-statistic	% (+)
Panel A: CARs based on the world market model for All spinoffs (N=157)					
-10 to -1	1.64[b]	2.46	0.75[b]	2.26	56.05
-1 to 0	4.25[a]	6.62	2.52[a]	7.06	69.43[a]
0	3.47[a]	6.30	1.86[a]	6.66	67.52[a]
-1 to +1	4.83[a]	6.14	2.74[a]	6.86	72.61[a]
+1 to +10	0.04	0.06	-1.17	-1.47	40.13
Panel B: CARs based on the world market model for UK spinoffs (N=72)					
-10 to -1	1.69	1.36	0.65	0.98	54.17
-1 to 0	5.29[a]	4.70	2.97[a]	5.04	75.00[a]
0	4.76[a]	4.76	2.63[a]	5.07	68.06[a]
-1 to +1	5.52[a]	4.15	2.88[a]	4.40	69.44[a]
+1 to +10	0.86	0.64	-0.73	-0.07	45.83
Panel C: CARs based on the world market model for Non-UK spinoffs (N=85)					
-10 to -1	1.60[b]	2.46	0.88[b]	2.22	57.65
-1 to 0	3.36[a]	4.84	2.49[a]	4.89	64.71[a]
0	2.30[a]	4.51	1.66[a]	4.28	67.06[a]
-1 to +1	4.24[a]	4.61	2.36[a]	5.29	75.29[a]
+1 to +10	-0.64	-0.78	-1.28[b]	-2.18	35.29

Table 5.3 (continued)

Interval	Mean%.	t-statistic	Median%	z-statistic	% (+)
Panel D: Difference in CARs between UK and Non-UK spinoffs					
-10 to -1	0.08	0.06	-0.23	-0.67	
-1 to 0	1.93	1.46	0.48	-1.53	
0	2.55[b]	2.24	0.97	-1.62	
-1 to +1	1.28	0.79	0.52	-0.61	
+1 to +10	1.50	0.95	0.55	-0.65	

Table 5.4 Long-run size- and book-to-market-adjusted BHARs to post-spinoff parent/offspring combined firms, parents, and offspring

This table reports long-run size- and book-to-market-adjusted buy-and-hold abnormal returns (BHARs) for 129 European post-spinoff parent/offspring combined firms, 129 parents and 142 offspring in the period between January 1987 and December 2002. Panel A reports the t-statistic associated with the abnormal returns and the percentage of positive abnormal returns for post-spinoff parent/offspring combined firms. Panel B reports the data for post-spinoff parent firms. Panel C reports the data for post-spinoff offspring firms. The reported t-statistic is adjusted for cross-sectional dependence (SC_t and HSC_t are based on Jegadeesh and Karceski, 2004; LBT_t is based on Lyon et al., 1999; MS_t is based on Mitchell and Stafford, 2000). The benchmark for size- and book-to-market-adjusted BHARs is the returns to a group of firms selected based on the closeness of market capitalizations and book-to-market ratios. The significance of the mean (median) is tested by the t-statistic (Wilcoxon test z-statistic). The binomial test is used to test the significance of the percentage of sample firms with positive abnormal announcement returns, with the null hypothesis that the proportion of positive abnormal announcement returns is 50%. ^{b} and ^{c} indicate the significance level at 5% and 10%, respectively.

Interval	Mean	SC_t	HSC_t	LBT_t	MS_t	Median	z-stat.	% (+)
Panel A: Size- and book-to-market adjusted BHARs for post-spinoff combined firms (N=99)								
(0, +1 year)	-0.01	-0.64	-0.75	-0.42	-0.47	-0.001	-0.58	48.84
(0, +2 year)	0.14	1.33	1.35	1.48	1.31	-0.04	0.76	49.61
(0, +3 year)	0.06	0.59	0.71	0.65	0.59	-0.03	-0.19	48.06
Panel B: Size- and book-to-market adjusted BHARs for post-spinoff parents (N=99)								
(0, +1 year)	-0.03	-0.48	-0.61	-0.30	-0.33	-0.06	-1.33	44.19
(0, +2 year)	0.14	0.99	0.78	0.97	0.36	-0.08	-0.44	44.19
(0, +3 year)	0.01	0.11	0.23	0.09	0.10	-0.09	-1.38	43.41
Panel C: Size- and book-to-market adjusted BHARs for offspring (N=107)								
(0, +1 year)	0.09	1.10	1.36	0.79	0.82	0.005	0.45	50.70
(0, +2 year)	0.25	1.79^c	2.09^b	1.49	0.96	0.06	1.57	56.34
(0, +3 year)	0.29	1.22	1.41	0.50	1.74^c	0.04	1.46	52.11

Table 5.5 Long-run industry- and size-adjusted buy-and-hold abnormal returns (BHARs) to post-spinoff combined firms, parents, and offspring

This table reports long-run industry- and size-adjusted BHARs for 129 European post-spinoff combined firms, 129 parents and 142 offspring in the period between January 1987 and December 2002. Panel A reports the t-statistic associated with the abnormal returns and the percentage of positive abnormal returns for post-spinoff parent/offspring combined firms. Panel B reports the data for post-spinoff parent firms. Panel C reports the data for post-spinoff offspring firms. The reported t-statistic is adjusted for cross-sectional dependence (SC_t and HSC_t are based on Jegadeesh and Karceski, 2004; LBT_t is based on Lyon et al., 1999; MS_t is based on Mitchell and Stafford, 2000). The benchmark for size- and book-to-market-adjusted BHARs is the returns to a group of firms selected based on the closeness of market capitalisations and book-to-market ratios. EX is the month of completion date of spinoff. The significance of the mean (median) is tested by the t-statistic (Wilcoxon test z-statistic). The binomial test is used to test the significance of the percentage of sample firms with positive abnormal announcement returns, with the null hypothesis that the proportion of positive abnormal announcement returns is 50%. [c] indicate the 10% significance level.

Interval	Mean	SC_t	HSC_t	LBT_t	MS_t	Median	z-stat.	% (+)
Panel A: Industry- and size-adjusted BHARs for post-spinoff combined firms (N=99)								
(0, +1 year)	-0.02	0.09	0.11	0.06	0.08	-0.004	-0.48	48.84
(0, +2 year)	0.07	0.97	1.23	1.12	1.03	-0.06	-0.16	48.06
(0, +3 year)	0.02	0.48	0.57	0.49	0.57	-0.07	-0.27	45.74
Panel B: Industry- and size-adjusted BHARs for post-spinoff parents (N=99)								
(0, +1 year)	0.01	0.09	0.13	0.06	0.13	-0.01	-0.07	48.84
(0, +2 year)	0.13	0.89	1.06	0.92	0.65	0.003	-0.07	51.16
(0, +3 year)	0.07	0.41	0.45	0.41	0.50	-0.01	-0.10	48.84
Panel C: Industry- and size-adjusted BHARs for offspring (N=107)								
(0, +1 year)	0.05	0.62	0.86	0.48	0.79	0.04	0.40	52.11
(0, +2 year)	0.16	1.10	1.64[c]	0.97	0.96	0.05	0.99	54.23
(0, +3 year)	0.22	1.21	1.63	1.28	1.67[c]	0.11	1.39	54.93

Table 5.6 Time-series regressions of post-spinoff parent and offspring portfolios

This table reports the time series regression results for post-spinoff parent and offspring. Panel A (B) shows the coefficients of the following time-series regression for post-spinoff parent (offspring) stocks over the holdings periods EX+1 to EX+12, EX+1 to EX+24, and EX+1 to EX+36, where EX is the spinoff completion date: $(R_P - R_f)_t = \alpha + \beta_1 (R_M - R_f)_t + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_t$
where $(R_P - R_f)_t$ is the average monthly return on the portfolio of parent (offspring) stocks less the contemporaneous return on the local one-month risk-free rate in calendar month t; $(R_M - R_f)_t$ is the return on the *Datastream* return index of the country's stocks less the contemporaneous return on the local one-month risk-free rate in calendar month t; SMB_t is the difference between the value-weighted average return on the small-cap portfolios and large-cap portfolios; and HML_t is the difference between the value-weighted average return on the high book-to-market portfolios and low book-to-market portfolios. Panel C (D) shows the coefficients of the following time-series regression for post-spinoff parent (offspring) stocks over the holdings periods EX+1 to EX+12, EX+1 to EX+24, and EX+1 to EX+36, where EX is the spinoff completion date:
$(R_P - R_f)_t = \alpha + \beta_1 (R_M - R_f)_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 UMD_t + \varepsilon_t$
where $(R_P - R_f)_t$ is the average monthly return on the portfolio of parent (offspring) stocks less the contemporaneous return on the local one-month risk-free rate in calendar month t; $(R_M - R_f)_t$ is the return on the *Datastream* return index of the country's stocks less the contemporaneous return on the local one-month risk-free rate in calendar month t; SMB_t is the difference between the value-weighted average return on the small-cap portfolios and large-cap portfolios; HML_t is the difference between the value-weighted average return on the high book-to-market portfolios and low book-to-market portfolios; and UMD_t is the difference between the value-weighted average return on the high past-year stock-return portfolios and low past-year stock-return portfolios. New parent (offspring) stocks are added to the portfolio in the calendar month of the stock's EX date and stock are removed in the calendar month when the holding period ends. The number of observations is the number of calendar months used to estimate the time-series regression. The t-statistics (F-statistics) are in parentheses (brackets). [a], [b], [c] indicates the significance level at 1%, 5% and 10% level, respectively.

Holding Period	α	β 1	β 2	β 3	β 4	R^2
Panel A: Regression of Fama-French (1993) three-factor model for post-spinoff parents						
EX+ 1 to EX+12	-0.02[c]	0.53[c]	-0.10	0.50		0.03
No. of obs. = 63	(-1.75)	(1.74)	(-0.24)	(0.87)		[1.58]
EX+ 1 to EX+24	0.01	0.33	-0.05	-0.84		0.04[c]
No. of obs. = 116	(0.72)	(1.17)	(-0.14)	(-1.60)		[2.37]
EX+ 1 to EX+36	0.01	0.31	-0.18	-0.65		0.03[c]
No. of obs. = 147	(0.71)	(1.49)	(-0.68)	(-1.62)		[2.59]
Panel B: Regression of Fama-French (1993) three-factor model for offspring						
EX+ 1 to EX+12	-0.02	0.31	-0.26	0.16		0.01
No. of obs. =72	(-1.43)	(1.15)	(-0.68)	(0.30)		[1.13]
EX+ 1 to EX+24	0.001	0.27	0.01	-0.34		0.02
No. of obs. =117	(0.13)	(1.47)	(0.04)	(-0.99)		[1.80]
EX+ 1 to EX+36	0.002	0.29[c]	-0.05	-0.39		0.03[b]
No. of obs. =150	(0.28)	(1.93)	(-0.27)	(-1.32)		[2.78]

Table 5.6 (Continued)

Holding Period	α	β 1	β 2	β 3	β 4	R^2
Panel C: Regression of Carhart (1997) four-factor model for post-spinoff parents						
EX+ 1 to EX+12	-0.01	0.25	-0.18	-0.44	-0.74	0.02
No. of obs. = 63	(-0.68)	(0.66)	(-0.38)	(-0.76)	(-1.36)	[1.34]
EX+ 1 to EX+24	0.02	-0.02	-0.39	-1.55[a]	-0.95[c]	0.07[b]
No. of obs. = 116	(1.45)	(-0.07)	(-1.04)	(-2.76)	(-1.77)	[3.19]
EX+ 1 to EX+36	0.01	0.06	-0.43	-1.21	-0.70	0.06[b]
No. of obs. = 147	(1.46)	(0.23)	(-1.56)	(-2.85)	(-1.67)	[3.39]
Panel D: Regression of Carhart (1997) four-factor model for offspring						
EX+ 1 to EX+12	-0.01	0.13	-0.32	-0.68	-0.08	0.01
No. of obs. =72	(-0.45)	(0.38)	(-0.74)	(-1.26)	(-0.15)	[1.14]
EX+ 1 to EX+24	0.01	-0.09	-0.39	-1.26[a]	-0.73[b]	0.11[a]
No. of obs. = 117	(1.30)	(-0.42)	(-1.65)	(-3.59)	(-2.16)	[4.63]
EX+ 1 to EX+36	0.01	0.11	-0.26	-0.90[a]	-0.45	0.07[a]
No. of obs. = 150	(1.09)	(0.61)	(-1.36)	(-2.98)	(-1.49)	[3.96]

Table 5.7 Mean calendar-time portfolio abnormal returns to post-spinoff firms

This table reports the mean calendar-time portfolio abnormal returns (CTARs) for post-spinoff parent and post-spinoff offspring firms. The CTARs are calculated each month as the difference between the event-portfolio return and the expected return on the portfolio, standardised by the portfolio residual standard deviation. Each month, equal-weight event portfolios contain all post-spinoff parent or offspring stocks. The event portfolio is rebalanced monthly to drop all stocks that reached the end of their respective holding period and add all stocks that have just emerged from the spinoff transaction. The portfolio expected returns are proxied by value-weighted returns on size- and book-to-market-control portfolios and value-weighted returns on industry- and size- matching firms. Abnormal returns are calculated as monthly differences of event portfolio returns and portfolio expected returns. Mean CTARs and standard errors are calculated from the time-series of monthly CTARs. The t-statistic is in parentheses and the number of observations is in square brackets. The number of observations is the number of calendar months used to calculate the mean calendar-time portfolio abnormal returns. [c] indicates the significance level at the 10% level.

	Size- and book-to-market-adjusted calendar-time abnormal returns		**Industry- and size-adjusted calendar-time abnormal returns**	
Holding Period	**Parent**	**Offspring**	**Parent**	**Offspring**
(0, +1 year)	-0.09	0.04	0.03	-0.03
	(-0.87)	(0.36)	(0.25)	(-0.27)
	[92]	[94]	[92]	[94]
(0, +2 years)	0.01	0.15[c]	0.11	0.11
	(0.17)	(1.87)	(1.43)	(1.42)
	[156]	[158]	[156]	[158]
(0, +3 years)	-0.01	0.06	0.07	0.09
	(-0.11)	(0.87)	(0.94)	(1.19)
	[190]	[190]	[190]	[190]

Table 5.8 Regression of long-run BHARs to post-spinoff combined firms on the three-day CARs to spinoff parents

Regression coefficients for long-run BHARs for 129 post-spinoff parent/offspring combined firms from the 142 spinoffs completed from January 1987 to December 2002. Panel A reports the regression results when the dependent variable is size- and book-to-market-adjusted BHARs. Panel B reports the regression results when the dependent variable is industry- and size-adjusted BHARs. CAR (-1, +1) is the three-day (-1, +1) CARs to spinoff parents based on the market model, estimated over a 200-day period for each sample firm. White heteroscedasticity-adjusted t-statistics are in parentheses. [b], [c] indicates the significance at the 5% and 10% level, respectively.

Variable	One-year BHAR		Two-year BHAR		Three-year BHAR	
Panel A: Dependent variable is size- and book-to-market-adjusted BHARs						
Intercept	0.01	(0.28)	0.17[c]	(1.82)	0.12	(1.39)
CAR (-1, +1)	-0.004	(-1.61)	-0.006	(-1.22)	-0.01[b]	(-2.50)
No. of Obs.	129		129		129	
Adjusted R^2	0.001		-0.005		0.005	
F statistic	1.15		0.39		1.61	
Sig. level	0.29		0.53		0.21	
Panel B: Dependent variable is industry- and size-adjusted BHARs						
Intercept	-0.01	(-0.30)	0.07	(0.59)	0.04	(0.37)
CAR (-1, +1)	-0.0003	(-0.08)	-0.00007	(-0.01)	-0.003	(-0.54)
No. of Obs.	129		129		129	
Adjusted R^2	-0.008		-0.008		-0.007	
F statistic	0.01		0.00		0.09	
Sig. level	0.95		1.00		0.77	

Table 5.9 Long-run accounting returns for post-spinoff firms

This table reports the long-run accounting returns for parent and offspring firms. The return on assets (ROA) ratio is the fiscal year's operating cash flows divided by the beginning-of-fiscal year asset value. Industry-adjusted ROAs are computed by subtracting the median value for all firms in the same two-digit SIC code from the corresponding spinoff firm variable. Size-adjusted ROAs are computed by subtracting the median value for all firms in the same two-digit SIC code, whose asset value is within 50% of the asset value of the parent, from the corresponding spinoff firm variable. Performance-adjusted ROAs are computed by subtracting the median value for all firms in the same two-digit SIC code, whose ROA value is within 50% of the ROA value of the parent, from the corresponding spinoff firm variable. Mean (median) excess ROAs are tested against zero using the t-statistic (the Wilcoxon sign rank test-statistic). None of the excess ROAs is significant at conventional levels.

Holding period (from, to)	No. of obs.	Unadjusted ROA		Industry-adjusted ROA		Industry- and size-adjusted ROA		Industry- and performance-adjusted ROA	
(years)		Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel A: Pre-spinoff parents									
(-2, -1)	145	0.143	0.124	0.008	0.001	0.011	-0.008	-0.011	0.001
				(0.75)	(0.29)	(0.73)	(-0.29)	(-0.82)	(0.39)
(-1, 0)	156	0.116	0.105	-0.009	0.001	-0.022	-0.005	0.006	0.002
				(-0.59)	(0.07)	(-1.28)	(-0.83)	(0.37)	(0.68)
Panel B: Post-spinoff parents									
(0, +1)	157	0.101	0.105	-0.003	-0.005	-0.002	-0.003	0.001	0.005
				(-0.23)	(-0.38)	(-0.11)	(-0.22)	(0.06)	(0.85)
(+1, +2)	120	0.109	0.103	0.007	0.001	0.011	-0.008	-0.011	0.001
				(0.76)	(0.30)	(0.72)	(-0.28)	(-0.81)	(0.39)
(+2, +3)	100	0.090	0.100	-0.009	0.001	-0.022	-0.005	0.006	0.002
				(-0.59)	(0.07)	(-1.28)	(-0.82)	(0.37)	(0.65)
Average of (0,+3)	157	0.097	0.102	-0.003	-0.008	-0.005	-0.007	-0.016	-0.001
				(-0.28)	(-0.51)	(-0.45)	(-0.68)	(-1.20)	(-0.05)
Panel C: Offspring									
(0, +1)	160	0.084	0.100	-0.026	-0.004	-0.029	-0.010		
				(-1.33)	(-0.92)	(-1.41)	(-1.33)		
(+1, +2)	117	0.105	0.110	0.005	-0.002	0.045[b]	0.023[b]		
				(0.23)	(-0.91)	(2.17)	(2.15)		
(+2, +3)	101	0.081	0.120	-0.027	-0.014	-0.029	-0.006		
				(-0.67)	(-0.30)	(-0.65)	(-0.22)		
Average of (0,+3)	160	0.088	0.105	-0.025	-0.010	-0.014	0.000		

Table 5.10 Long-run size- and book-to-market adjusted buy-and-hold abnormal returns (BHARs) to post-spinoff combined firms, parent s, and offspring following focus-increasing spinoffs

This table reports long-run industry- and size-adjusted BHARs for 99 European post-spinoff combined firms, 99 parents and 107 offspring from focus-increasing spinoffs in the period between January 1987 and December 2002. Panel A reports the t-statistic associated with the abnormal returns and the percentage of positive abnormal returns for post-spinoff parent/offspring combined firms. Panel B reports the data for post-spinoff parent firms. Panel C reports the data for post-spinoff offspring firms. The reported t-statistic is adjusted for cross-sectional dependence (Mitchell and Stafford, 2000). The benchmark for size- and book-to-market-adjusted BHARs is the returns to a group of firms selected based on the closeness of market capitalisations and book-to-market ratios. EX is the month of completion date of spinoff. The significance of the mean (median) is tested by the t-statistic (Wilcoxon test z-statistic). The binomial test is used to test the significance of the percentage of sample firms with positive abnormal announcement returns, with the null hypothesis that the proportion of positive abnormal announcement returns is 50%. None of the BHARs is significant at conventional levels.

Interval	Mean%.	t-statistic	Median%	z-statistic	% (+)
Panel A: Size- and book-to-market adjusted BHARs for post-spinoff combined firms (N=99)					
(0, +1 years)	-0.02	-0.47	0.00	-0.47	49.49
(0, +2 years)	0.16	1.31	0.03	0.90	50.51
(0, +3 years)	0.06	0.59	-0.03	-0.30	48.48
Panel B: Size- and book-to-market-adjusted BHARs for post-spinoff parents (N=99)					
(0, +1 years)	-0.03	-0.83	-0.05	-0.67	47.47
(0, +2 years)	0.20	1.01	-0.07	-0.08	45.45
(0, +3 years)	0.05	0.37	-0.08	-0.93	46.46
Panel C: Size- and book-to-market-adjusted BHARs for post-spinoff offspring (N=107)					
(0, +1 years)	0.06	0.93	-0.03	0.04	49.53
(0, +2 years)	0.14	1.50	0.06	1.16	56.07
(0, +3 years)	0.12	0.93	-0.001	0.46	49.53

Table 5.11 Long-run industry- and size- BHARs to post-spinoff combined firms, parents, and offspring following focus-increasing spinoffs

This table reports long-run industry- and size-adjusted BHARs for 99 European post-spinoff combined firms, 99 parents and 107 offspring from focus-increasing spinoffs in the period between January 1987 and December 2002. Panel A reports the t-statistic associated with the abnormal returns and the percentage of positive abnormal returns for post-spinoff parent/offspring combined firms. Panel B reports the data for post-spinoff parent firms. Panel C reports the data for post-spinoff offspring firms. The reported t-statistic is adjusted for cross-sectional dependence (Mitchell and Stafford, 2000). The benchmark for size- and book-to-market-adjusted BHARs is the returns to a group of firms selected based on the closeness of market capitalisations and book-to-market ratios. EX is the month of completion date of spinoff. The significance of the mean (median) is tested by the t-statistic (Wilcoxon test z-statistic). The binomial test is used to test the significance of the percentage of sample firms with positive abnormal announcement returns, with the null hypothesis that the proportion of positive abnormal announcement returns is 50%. [c] indicates the 10% significance level.

Interval	Mean%.	t-statistic	Median%	z-statistic	% (+)
Panel A: Industry- and size-adjusted BHARs for post-spinoff combined firms (N=99)					
(0, +1 years)	0.003	0.08	0.03	0.21	52.53
(0, +2 years)	0.13	1.03	0.01	0.42	50.51
(0, +3 years)	0.07	0.57	0.007	0.39	50.51
Panel B: Industry and size-adjusted BHARs for post-spinoff parents (N=99)					
(0, +1 years)	0.03	0.72	0.04	0.99	53.54
(0, +2 years)	0.22	1.09	0.08	0.69	55.56
(0, +3 years)	0.16	1.01	0.02	0.73	52.53
Panel C: Industry- and size-adjusted BHARs for post-spinoff offspring (N=107)					
(0, +1 years)	0.05	0.76	0.002	0.15	50.47
(0, +2 years)	0.16[c]	1.72	0.10	1.01	55.14
(0, +3 years)	0.14	0.99	0.08	0.76	54.21

Table 5.12 Mean calendar-time portfolio abnormal returns to post-spinoff firms following focus-increasing spinoffs

This table reports the mean calendar-time portfolio abnormal returns for post-spinoff parent and offspring firms. The CTARs are calculated each month as the difference between the event-portfolio return and the expected return on the portfolio, standardised by the portfolio residual standard deviation. Each month, equal-weight event portfolios contain all post-spinoff parent or offspring stocks. The event portfolio is rebalanced monthly to drop all stocks that reached the end of their respective holding period and add all stocks that have just emerged from the spinoff transaction. The portfolio expected returns are proxied by value-weighted returns on size- and book-to-market control portfolios and value-weighted returns on industry- and size- matching firms. Abnormal returns are calculated as monthly differences of event portfolio returns and portfolio expected returns. Mean CTARs and standard errors are calculated from the time-series of monthly CTARs. The t-statistic is in parentheses and the number of observations is in square brackets. The number of observations is the number of calendar months used to calculate the mean calendar-time portfolio abnormal returns. None of the portfolio returns is significant at conventional levels.

	Size- and book-to-market-adjusted calendar-time abnormal returns		**Industry- and size-adjusted calendar-time abnormal returns**	
Holding Period	**Parent**	**Offspring**	**Parent**	**Offspring**
(0, +1 years)	-0.001	0.10	0.08	-0.02
	(-0.03)	(0.94)	(0.74)	(-0.32)
	[91]	[93]	[91]	[93]
(0, +2 years)	0.01	0.10	0.07	0.03
	(0.23)	(1.19)	(0.81)	(0.62)
	[127]	[128]	[127]	[128]
(0, +3 years)	0.01	0.06	0.02	0.05
	(0.36)	(0.33)	(0.81)	(1.19)
	[176]	[176]	[176]	[176]

Appendix 5.1 Calculation of Adjusted t-statistics

The first adjusted t-statistic is the serial correlation-consistent t-statistic (SC_t) proposed in Jegadeesh and Karceski (2004). The approach is outlined as follows.

Let N_t denotes the number of stocks in the sample in month *t*, and *N* is the total number of stocks in the sample. Then define the average abnormal return for each event month t across all stocks in the sample that month (this group of firms is defined as a monthly cohort)

$$\overline{AR}(t,H) = \begin{cases} \frac{1}{N_t}\sum_{i=1}^{N_t} AR(t,H) \ \ if \ \ N_t > 0 \\ 0, \ \ otherwise \end{cases}$$

Let $\overline{AR}(H)$ be a $T \times 1$ column vector where the t^{th} element equals $\overline{AR}(t,H)$. $\overline{AR}(H)$ is then the average long-run abnormal return of each monthly cohort. Define *w* as a $T \times 1$ column vector of weights where the t^{th} element is the ratio of the number of events that occur in month t divided by *N*. Thus the sample average abnormal return is equal to the monthly weight vector w times the average abnormal return of each monthly cohort. Formally, the sample average abnormal return is computed as follows:

$$\overline{AR}_{sample}(H) = w'\overline{AR}(H)$$

The variance of $\overline{AR}_{sample}(H)$ is then given by

$$\mathrm{var}iance[\overline{AR}_{sample}(H)] = w'Vw'$$

where *V* is the $T \times T$ variance-covariance matrix of $\overline{AR}(H)$.

The approach of serial correlation-consistent t-statistic is to estimate the variance-covariance matrix and the estimator is denoted SC_V. Allowing for serial correlation of monthly returns, the ij^{th} element of SC_V is given by

$$sc\_v_{i,j} = \begin{cases} \sigma^2 = \frac{1}{T_N} \sum_{\substack{t=1 \\ N_t > 0}}^{T} [\overline{AR}(t,H) - \overline{AR}_{by\ month}(H)]^2, if\ i = j \\ \rho_j = \frac{1}{T_{N,j}} \sum_{t=1}^{T} [\overline{AR}(t,H) \times \overline{AR}(t+j,H)], if\ 1 \le |i-j| \le H-1\ and\ T_{N,j} \ge 5 \\ 0, otherwise \end{cases}$$

Where $T_{N,j}$ is the number of times where month t and month j both have at least one event. σ^2 is the variance of monthly cohort H-period abnormal returns including only months with at least one event. ρ_j is the estimator of j^{th}-order serial covariance. To reduce the estimation error, I require at least five cases where month t and $t+j$ both have at least one event. If $T_{N,j} < 5$, the covariance is set to 0.

Then the serial correlation consistent t-statistic is given by

$$SC\_t = \frac{\overline{AR}_{sample}(H)}{\sqrt{w' SC\_Vw}}$$

The second adjusted t-statistic is the heteroskedasticity and serial correlation consistent t-statistic (HSC_t) proposed in Jegadeesh and Karceski (2004). The estimation procedure is similar to that of the first approach except for the estimation of variance-covariance matrix. The estimator of variance-covariance matrix is denoted for HSC_V for the heteroskedasticity and serial correlation consistent t-statistic.

The ij^{th} element of HSC_V is given by

$$hsc\_v_{i,j} = \begin{cases} \overline{AR}(i,H)^2, if\ i = j \\ AR(i,H) \times AR(j,H), if\ 1 \le |i-j| \le H-1 \\ 0, otherwise \end{cases}$$

Then the heteroskedasticity and serial correlation consistent t-statistic is computed as follows:

$$HSC\_t = \frac{\overline{AR}_{sample}(H)}{\sqrt{w' HSC\_Vw}}$$

The third adjusted t-statistic (LBT_t) is the one proposed in Lyon et al. (1999). I estimate the elements of the variance-covariance matrix for the overlapping long-run returns of firm *i* and firm *j* as

$$\sigma_{i,j} = \frac{1}{\tau - \alpha} \sum_{t=s+\alpha}^{s+\tau} (AR_{i,t} - \overline{AR_i})(AR_{j,t} - \overline{AR_j})$$

where the firm *i*'s abnormal return is calculated from period s to $s+\tau$, firm *j*'s abnormal return is calculated from period $s+\alpha$ to $s+\alpha+\tau$, and $0 \le \alpha < \tau$. $AR_{i,t}$ and $AR_{j,t}$ are monthly abnormal returns for firms *i* and *j*, respectively, and $\overline{AR_i}$ and $\overline{AR_j}$ are their means calculated over the $\tau - \alpha$ period.

The fourth adjusted t-statistic (MS_t) is the one proposed in Mitchell and Stafford (2000) to mitigate the event firm dependence problem. I first estimate the average correlation of 3-year BHARs for sample firms with complete (36 months) calendar-time overlap. Then I calculate the estimated correlation between sample firms with less than 36-month overlap by assuming the correlation is decreasing linearly as the amount of overlap falls from complete calendar-time overlap of 36 months to no overlap between observations (see Table 5A1 for details). The calculated average correlation of BHARs with complete overlap for my sample is p=0.0622. Then the estimated correlation of 3-year BHARs with 35-month overlap is calculated as 35/36 * p=0.0604, and so on. The estimated correlation for non-overlapping observations is zero. Then the grand average correlation for the BHARs is 0.0174.

The t-statistic without assuming independence for my sample firms (N= 129) is then calculated by using the following formula:

$$\frac{\sigma_{BHAR(independence)}}{\sigma_{BHAR(dependence)}} \approx \frac{1}{\sqrt{1+(N-1)\overline{\rho_{i,j}}}} = \frac{1}{\sqrt{1+(129-1)*0.0115}} = 0.6365$$

This adjustment of t-statistics is moderate compared with the adjustment of 0.2463 in Mitchell and Stafford (2000) for their seasoned equity offerings sample.

Table 5A1 Correlation structure of three-year BHARs for the European spinoff parent firms

Number of Months of Overlap	Number of Unique Correlations n(n-1)/2	Assumed Correlation Structure	Estimated Correlation
36	92	p	0.0409
35	168	35/36*p	0.0397
34	127	34/36*p	0.0386
33	168	33/36*p	0.0375
32	124	32/36*p	0.0363
31	108	31/36*p	0.0352
30	138	30/36*p	0.0341
29	127	29/36*p	0.0329
28	126	28/36*p	0.0318
27	139	27/36*p	0.0307
26	128	26/36*p	0.0295
25	117	25/36*p	0.0284
24	145	24/36*p	0.0272
23	158	23/36*p	0.0261
22	115	22/36*p	0.0250
21	125	21/36*p	0.0238
20	149	20/36*p	0.0227
19	100	19/36*p	0.0216
18	90	18/36*p	0.0204
17	138	17/36*p	0.0193
16	110	16/36*p	0.0182
15	102	15/36*p	0.0170
14	132	14/36*p	0.0159
13	116	13/36*p	0.0148
12	111	12/36*p	0.0136
11	130	11/36*p	0.0125
10	94	10/36*p	0.0114
9	81	9/36*p	0.0102
8	113	8/36*p	0.0091
7	116	7/36*p	0.0079
6	83	6/36*p	0.0068
5	80	5/36*p	0.0057
4	103	4/36*p	0.0045
3	74	3/36*p	0.0034
2	74	2/36*p	0.0023
1	97	1/36*p	0.0011
0	4058	0/36*p	0.0000
No. of firms=129	Total=8256		Average=0.0115

Appendix 5.2 Portfolio Construction for the Calendar Time Regression Approach

For the estimation of Fama and French (1993) three-factor model, the SMB, and HML portfolios are constructed following the approach of Daniel, Titman and Wei (2001). For each calendar month, I use only stocks for which I have the market capitalisation (MV) and a book-to-market ratio (*B*/*M*).

To construct the portfolios, I sort all stocks that pass the above requirements by MV and create tritile portfolios. I then take the portfolio of stocks with the highest MV and re-sort all stocks by *B/M*, thereby creating three *B/M* portfolios within the high MV group. I repeat the same procedure for the low MV groups. After sorting for MV and *B*/*M*, I have six portfolios. Table 5A2 depicts the portfolio construction procedure. The two trading strategies are constructed as follows:

$$\mathrm{SMB} = 1/3 * ((\mathrm{SL} - \mathrm{BL}) + (\mathrm{SM} - \mathrm{BM}) + (\mathrm{SH} - \mathrm{BH}))$$

$$\mathrm{HML} = 1/2 * ((\mathrm{SH} - \mathrm{SL}) + (\mathrm{BH} - \mathrm{BL}))$$

Table 5A2 Portfolio construction procedure for the Fama and French (1993) three-factor model

Market Capitalisation (MV)	**Book-to-market (B/M)**	**Portfolio**
Small	High	SH
	Medium	SM
	Low	SL
Big	High	BH
	Medium	BM
	Low	BL

For the estimation of Carhart (1997) four-factor model, the SMB, HML, and UMD portfolios are constructed following the approach of Liew and Vassalou (2000). For each calendar month, I use only stocks for which I have the market capitalization (MV), a book-to-market ratio (*B*/*M*), and at least twelve monthly observations so as to be able to calculate the momentum (MOM). I consider only the 12-month momentum strategy, and I implement it by calculating the average of past year's returns, excluding the most recent month.

To construct the portfolios, I sort all stocks that pass the above requirements by MV and create tritile portfolios. I then take the portfolio of stocks with the highest MV and re-sort all stocks by *B/M*, thereby creating three *B/M* portfolios within the high MV group. I repeat the same procedure for the medium MV and low MV groups. After sorting for MV and *B/M*, I have nine portfolios. I then sort the securities in each of these nine portfolios according to MOM and create tritile portfolios within the nine portfolios. I obtain, in this manner, 27 portfolios.

Table 5A3 depicts the portfolio construction procedure. "Down" are the bottom third of the total stocks with the lowest last year's average return, excluding the most recent month. "Up" are the top third of the total stocks with the highest last year's average return, excluding the most recent month. "Medium" are the remaining third of the stocks.
The three trading strategies are constructed as follows:

$$
\begin{aligned}
SMB = 1/9 * (&(P1 - P19) + (P2 - P20) + (P3 - P21) + (P4 - P22) + (P5 - P23) + (P6 - P24) \\
&+ (P7 - P25) + (P8 - P26) + (P9 - P27))
\end{aligned}
$$

$$
\begin{aligned}
HML = 1/9 * (&(P1 - P7) + (P2 - P8) + (P3 - P9) + (P10 - P16) + (P11 - P17) + (P12 - P18) \\
&+ (P19 - P25) + (P20 - P26) + (P21 - P27))
\end{aligned}
$$

$$
\begin{aligned}
UMD = 1/9 * (&(P1 - P3) + (P4 - P6) + (P7 - P9) + (P10 - P12) + (P13 - P15) + (P16 - P18) \\
&+ (P21 - P19) + (P22 - P24) + (P25 - P27))
\end{aligned}
$$

SMB represents the return to a portfolio that is long on small MV stocks and short on big MV stocks, controlling for the size and momentum effects. In other words, HML is a zero investment strategy that is both size and momentum neutral. Similar interpretations can be given for SMB and UMD. The 27 portfolios are value-weighted at construction. In the presence of small capitalization stocks, value-weighted portfolios result in more realistic returns.

Table 5A3 Portfolio construction procedure for the Carhart (1997) four-factor model

Market Capitalisation (MV)	Book-to-market (B/M)	Past year's returns (MOM)	Portfolio
Small	High	Up	P1
		Medium	P2
		Down	P3
	Medium	Up	P4
		Medium	P5
		Down	P6
	Low	Up	P7
		Medium	P8
		Down	P9
Medium	High	Up	P10
		Medium	P11
		Down	P12
	Medium	Up	P13
		Medium	P14
		Down	P15
	Low	Up	P16
		Medium	P17
		Down	P18
Big	High	Up	P19
		Medium	P20
		Down	P21
	Medium	Up	P22
		Medium	P23
		Down	P24
	Low	Up	P25
		Medium	P26
		Down	P27

The factor returns are calculated for annual rebalancing frequencies. Annually rebalanced portfolios use December-end *B*/*M* values, June-end market capitalization, and past 12 months of returns prior to July. If a stock does not have returns for any month through the duration of the holding period, I invest that portion of the portfolio into the market as measured by the UK total return index given in *Datastream*. My portfolio construction procedure differs from the one used in Fama and French (1993), in which two independent sorts created the HML and SMB. I cannot use independent sorts because of the smaller number of securities I have than that of the US market.

Chapter 6 Investor Irrationality and Spinoff Value Effects

6.1 Introduction

The literature review in Chapter 2 shows that corporate spinoffs are value-enhancing restructuring transactions. However, corporate spinoffs are joint events which combine features of divestitures and equity offerings. Less attention has been paid to the managerial rationale of and the market reaction to the offering of equity of the subsidiary. Recent literature suggests that shareholder reaction to a corporate announcement can be affected by investor sentiment, which means the investor reaction to factors other than the value creation logic of the corporate transaction (e.g. see Ljungqvist, Nanda and Singh (2006) for initial public offerings and Rosen (2006) for mergers).

Likewise, the positive market reaction to spinoff announcements may result from overly optimistic beliefs of investors about the value benefits from the spinoff transaction. For investors, corporate spinoffs have two distinctive features, increasing corporate focus of the divesting parent and listing a subsidiary. Therefore, there may be a positive correlation between the investor sentiment about corporate focus (or glamour stocks) and the market reaction to a spinoff announcement. Although to date no empirical study specifically has tested the impact of investor sentiment about spinoffs on stockholder returns, there is some evidence that such sentiment may affect the market reaction to spinoff announcements.

Prior empirical studies have shown that there is a time-varying pattern of investor demand for corporate focus and that such demand affects the market valuation of diversification or refocusing transactions. For example, diversifying acquisitions experienced favourable market reactions in the 1960s (Matsusaka, 1993) but have been penalised by markets since the 1980s (Morck, Shleifer and Vishny, 1990). In a recent literature review, Baker et al. (2004) put forward that the variation of investor appetite for conglomerates over time have may been responsible for the different valuation effects of diversifying and refocusing transactions between 1960s and 1980s.

Investor sentiment changes over time. Therefore, corporate transactions that are initially favoured by stock markets due to investor sentiment may turn out to be value destroying for shareholders. The consideration of the relationship between investor sentiment and spinoff announcement returns could resolve why there are generally positive market reactions to spinoff announcements but long-term performance of post-spinoff firms differs substantially across different periods and locations. For instance, with the refocusing argument gaining strength among academics and practitioners since the late 1980s, there has been a fast growing trend of refocusing divestitures with an aim to improve shareholder values. However, empirical studies employing recent data have demonstrated that corporate focus has no significant impact on long-term performance of post-spinoff firms[19].

Managers may seek to exploit investor sentiment. If market valuations for different businesses of a diversified firm are driven by investor sentiments at any time, managers of undervalued parent firms may tend to spin off overvalued subsidiaries because such spinoffs maximise the short-run share prices and temporarily relieve the pressures to improve the firm performance[20]. Practitioners have pointed out that managers often spin off overvalued subsidiaries to shareholders (e.g. see Montier, 2002, Chapter 7). A recent press comment from the Financial Times on the managerial rationale of spinoffs also highlights this issue, which is given below:

> "In the late 1990s, a spate of companies donated overvalued technology offshoots to their shareholders. Recent months have seen demergers of old economy oil, metals and even paper and pulp subsidiaries. Perhaps one clear lesson is that spin-

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[19] For example, Desai and Jain (1999) studied a US sample of 155 spinoffs between the years 1975 and 1991 and found a highly significant average abnormal return of 19.82% to the post-spinoff parent as well as post-spinoff offspring firms in the three-year post-spinoff period. On the other hand, McConnell, Ozbilgin, and Wahal (2001) examined a US sample of 96 spinoffs over the period 1989-1995 and document ed insignificant abnormal returns to either parent firms or to subsidiary firms. The two sample periods are largely non-overlapping.

[20] Spinoffs are large-scale corporate restructurings and it may take a long time for investors to fully understand the value benefits (or detriments) of such dramatic restructurings. Sanders and Carpenter (2003) argue that managers are likely to use share repurchase programmes to resolve potentially conflicting pressures – maximising shareholder wealth in the long term and appeasing shareholders in the near term. This argument can also apply to the case of spinoffs.

offs sometimes point to asset categories that are overvalued."

(“Spin-offs”, Lex Column, Financial Times, 12 February 2005)

I thus propose a catering theory to describe some spinoffs that are undertaken for reasons other than operating efficiency improvement. The catering theory is based on a behavioural perspective where investors are less than fully rational (for detailed discussions on irrational investors, see Shleifer, 2000). Irrational investors are likely to react to non-fundamental factors in making investment decisions. For example, there is an excessive investor demand for glamour stocks, such as internet (dotcom) stocks during the 1990s. The consequence of such investor sentiment is that the stocks subject to such excessive demand become overpriced (Baker et al., 2004). Rational corporate mangers may then cater to a temporary investor demand by spinning off overvalued subsidiary businesses to shareholders. When the positive spinoff announcement returns are partially caused by investor sentiment, the initial high expectation on the offspring should eventually turn out to be unfounded. Put differently, the stock price of offspring should reverse in the long run as sentiments are replaced by reality. Therefore, the catering theory also predicts that offspring firms from spinoffs that are undertaken to cater to unrealistic investor demand will initially outperform but in the long term underperform those from other types of spinoffs.

The rest of the paper is organised as follows. Section 6.2 develops testable hypotheses based on the assumption of investor irrationality. Section 6.3 outlines the test methodology. Section 6.4 examines the relationship between investor sentiment and the spinoff announcement returns. Section 6.5 investigates both the short-run and the long-run market reaction to spinoffs that cater to investor demand for glamour stocks. Section 6.6 concludes.

6.2 Theory Development

Extant literature demonstrates that irrational investors tend to react to non-fundamental factors upon the announcement of corporate transactions. The early empirical investigation of the relationship between investor sentiment and stock returns was conducted by De Bondt and Thaler (1985, 1987, and 1990). They find systematic price reversals for stocks that experience extreme long-term gains or losses: past losers significantly outperform past winners. They interpret this as evidence that investors tend to make biased expectation of a stock's future performance when confronting a series of good or bad earnings news[21]. Later empirical research documents evidence that investors often form systematic mistakes on assessing the desirability of different corporate transactions based on the past performance of event firms. Ritter (1991) and Loughran and Ritter (1995) find that firms that issue equities have high earnings growth prior to earnings announcements but have poor long-run performance. Rau and Vermaelen (1998) and Sudarsanam and Mahate (2003) observe that the bidder with good past performance, as reflected in its low book-to-market ratio, underperform the bidders with poor past performance in the long run.

It is also possible that investor sentiment may affect the market reaction to spinoff announcement news. I consider two cases of investor reactions to non-fundamental factors upon the spinoff announcement. First, investors may be over-optimistic about the value benefits of a spinoff that increases the corporate focus. Second, investors may be over-optimistic about the value benefits of a spinoff that lets investors own a subsidiary whose industry stocks are currently attractive to the markets. Therefore, there should be a positive association between an investor demand for corporate focus (and stocks of the offspring's industry) and the market reaction to spinoff announcements.

Prior studies have revealed that corporate focus is valued by stock markets differently over time. Ravenscraft and Scherer (1987, p40) document that the average return on 13 leading conglomerates reached 385% from July 1965 to June 1968, against the modest gains of 34% of the S&P 425. Klein (2001) observes that the diversification premium

[21] There is a hot debate on how to explain the finding of market overreaction documented by De Bondt and Thaler. Fama and French (1996) argue that the documented market overreaction is due to mis-specified asset pricing models used in the measuring of stock performance by De Bondt and Thaler. Chan, Frankel and Kothari (2004) find that investors do not overreact to consistent earnings news based on trends in accounting data. However, both Daniel and Titman (2006) and Lee (2006) document evidence that investors overreact to intangible information contained in the news after using more robust return measurement methodologies.

turned into a discount of 1% in 1969-1971 and 17% in 1972-1974. The diversification discount has remained around 15% for the US in the 1980s and 1990s (Berger and Ofek, 1995). Lins and Servaes (1999) even document no diversification discount in Germany in the early 1990s. Baker et al. (2004) review the empirical studies on corporate diversification and propose that the diversification and subsequent re-focusing wave in the US seems to be driven by managerial efforts to cater to a temporary investor appetite for conglomerates.

If there is a time-varying pattern of investor demand for corporate focus, such investor sentiment will affect the market reaction to announcements of corporate spinoffs that are widely believed to be refocusing corporate transactions. Therefore, I propose the first hypothesis on the impact of investor sentiments on spinoff announcement returns:

H3: There is a positive association between the prevailing investor demand for corporate focus and spinoff announcement returns.

A large number of studies have found investor over-optimism to equity issues. Using annual data from the 1920s on aggregate equity issuance relative to debt plus equity issuance, Baker and Wurgler (2000) find that the fraction of equity issuance is negatively associated with the overall stock market return in the following year, suggesting reversal of investor over-optimism subsequent to equity issues. Shefrin (2002) also proposes that overvalued IPOs (defined as new issuers with high market-to-book ratios) will underperform in the long-term because investors who buy the issue suffer from an unsustainable excess of optimism about the future prospects of the issuing firms. Investigating companies issuing stock during the period from 1970 to 1990, Loughran and Ritter (1995) find that IPO firms underperform size-matching non-issuing firms by about seven percent per year in the five-year post-listed period. Brav, Geczy, and Gompers (2000) re-examine the long-term performance of IPO firms in the period between 1975 and 1992 with various long horizon test methodologies and observe that IPO returns are similar to non-issuing firm returns matched on the basis of size and book-to-market ratios. Mitchell and Stafford (2000) also observe insignificant long-run abnormal returns to IPO firms with the calendar-time portfolio abnormal return approach.

However, Brav et al. (2000) still find that small issuing firms with high market-to-book ratios underperform various benchmarks in the long term, which is consistent with Shefrin's investor- overoptimism argument.

Since spinoffs are actually a transaction to issue equities of subsidiaries to investors, the investor sentiment about the offspring's industry will affect the market reaction to spinoff announcements. Thus, I suggest the second hypothesis on the relationship between the investor sentiments and spinoff announcement returns:

H4: There is a positive association between the prevailing investor demand for stocks of the offspring's industry and spinoff announcement returns.

A growing literature begins to view managerial decisions as rational responses to inefficient markets. Based on an information asymmetry model, Baker and Wurgler (2002) suggest that firms respond to investors' over-optimism by issuing equity to exploit a "window of opportunity". Shleifer and Vishny (2003) propose a market timing theory of mergers which suggests managers rationally use overvalued stocks to purchase target firms[22]. Baker and Wurgler (2004) develop a theoretical model to explain managerial decisions to initiate dividends as a response to investor demand for dividends[23]. Ljungqvist et al. (2006) also model an IPO company's optimal response to sentiment-driven investors in order to explain the underpricing puzzle of new issues. Their model shows that the equity issuers intentionally underprice the issued equities to facilitate a quick equity sale to sentiment-driven investors later because a sentiment demand for new stocks may disappear prematurely.

Provided that investor sentiment is expected to affect the spinoff announcement returns,

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[22] A well-know case of market-driven acquisition is the merger of AOL and Times Warner in early 2000. At that time, AOL used its highly overvalued stocks to acquire Times Warner, a traditional media giant. This high-profile deal eventually turned out to be a value-destroying acquisition (Geoffrey Colvin, "Time Warner, Don't Blame Steve Case", February 3, 2003, Fortune)

[23] Hoberg and Prabhala (2006) argue that idiosyncratic risk rather than catering explains the change of propensity to pay dividends over time. However, Gemmill (2005) documents evidence that investor demand for dividends explains the price changes of dividend shares of "split-capital" closed-end funds in the UK, which is difficult to explain with the risk-based consideration since dividend shares are stripped from mutual fund portfolios with pre-determined payment rules.

managers may rationally react to investor sentiment to undertake spinoffs. I formulate a catering model that some spinoffs are undertaken to cater to investor demand for glamour stocks rather than to improve the operating efficiency of post-spinoff firms. The catering theory argues that if the investor demand for an offspring's industry stocks is high, managers may respond to such demand by spinning off subsidiaries that are currently attractive to investors to maximise the firm's short-run share price. Therefore, the market reaction to announcements of spinoffs that cater to investor demand for glamour stocks should be more positive than to announcements of other types of spinoff. This argument gives rise to my third hypothesis:

H5: Parent firms of spinoffs undertaken to cater to investor demand for glamour stocks earn significantly higher announcement abnormal returns than those of other types of spinoffs.

However, the long-run stock performance of an offspring from such glamour spinoffs will be lower than that of an offspring from other types of spinoff because the investor optimism is eventually replaced by results. Hence, I propose the following fourth hypothesis:

H6: Offspring firms from spinoffs undertaken to cater to investor demand for glamour stocks earn significantly lower long-run abnormal returns than those from other types of spinoffs.

6.3 Test Methods

This section sets out the models to be tested. The sample selection procedure is the same as that described in Section 5.2.

6.3.1 Investor Sentiment Proxies

Through a corporate spinoff, a parent increases its corporate focus and a divested subsidiary is listed on the stock market. Investors may react to a spinoff announcement favourably if they have strong demand for corporate focus and/or the stocks of the offspring's industry. I construct four investor sentiment proxies to measure investor demand for corporate focus and investor demand for offspring's stocks.

The first two investor sentiment proxies, called focus premium variables in this study, measure the prevailing investor demand for corporate focus. These two proxies are market-based variables to measure the market valuation of focused firms relative to diversified firms. The valuation methodology starts from the procedure to identify both focused firms and diversified firms in each European country. Then I calculate the aggregate valuation difference between focused firms and diversified firms.

The first focus premium variable, FPMTB, is the difference of natural logarithms of market-to-book value (MTBV) of assets ratios between diversified firms and focused firms. First, business segment data for all publicly traded firms from the 13 sample European countries are collected from Worldscope for the period between 1987 and 2005. Worldscope provides financial data for a large number of companies which have been previously used by Lins and Servaes (1999) to calculate the diversification discount on international firms. I classify firms as diversified when they report sales in two or more segments (defined at the two-digit SIC code level), and the most important segment accounts for less than 90 percent of total sales. This 90 percent cut-off uses a diversification classification similar to the one companies are required to follow in the United States (Berger and Ofek, 1995). If a firm has two or more segments but has more than 90% of its sales in one segment, this firm will be classified as a focused firm. To avoid misclassification of diversified firms into focused firms, I define focused firms as those operating in the single two-digit SIC code level based on segment sales data available in Worldscope.[24]

Second, I calculate the value-weighted average MTBV of assets ratios for all diversified

[24] In some cases, Worldscope reports that a firm has segments operating in different two-digit SIC industries but gives no details of the firm's segment sales. Following my definition of diversified firms, such firms may not necessarily be diversified firms if one segment's sales accounts for more than 90% of the total revenues. To avoid the potential misclassification of focused firms into diversified firms, I remove such observations during the calculation of focus premium.

firms and focused firms, separately. The calculation of MTBV of assets ratio employs firms' market capitalisation at the month end prior to the spinoff announcement date and the most recently available accounting data at the spinoff announcement date [25]. Specifically, the market value of total assets for a firm is the sum of its market value of equity and its book value of total debt. The book value of total assets is the sum of its book value of equity and its book value of total debt. The computation of value-weighted average uses the book value of total assets.

Finally, I compute the difference in the natural logarithms of the average MTBV of assets ratios of focused firms and diversified firms (i.e. the ratio for focused firms minus the ratio for diversified firms). This proxy for investor demand for corporate focus follows the same construction approach of Baker and Wurgler (2004) to measure investor demand for dividends. They use the difference in logs of the MTBV of equity ratios of dividend payers and non-dividend payers to gauge the investor demand for dividends.

The second focus premium variable, FPRET, is the difference in past-year stock returns between diversified firms and focused firms. The identification of diversified and focused firms for FPRET uses the same approach as for FPMTB. After diversified and focused firms are identified, I calculate the cumulative stock returns to diversified firms and those to focused firms over the 12-month period prior to the spinoff announcement date. The value-weighted past-year returns to diversified and focused firms are then computed. The computation weights are based on the market capitalisations of diversified firms and focused firms, respectively. Then the investor demand for corporate focus is measured as the value-weighted average past-year stock returns to focused firms minus the value-weighted average past-year stock returns to diversified firms.

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[25] I require a more than four-month gap between the most recent financial year-end and focus premium measurement date to avoid the looking-ahead bias when using the most recent accounting data to calculate the market valuation ratios. Let me suppose I compute the MTBV of assets ratio, at the date of June 30th 2004, for BAA PLC, whose accounting year ends at March 31st. The most recent financial year-end for BAA for calculation is the March 31st 2003 rather than March 31st 2004 because there is only a three-month gap between financial year end of 2004 and the measurement date. This time-gap setting assumes that the current year's financial reports will not be available to the public within four months immediately following the financial year end.

The remaining two investor sentiment proxies, called glamour stock variables in this study, measure the prevailing investor demand for the stocks of the offspring's industry.

I consider two market-based measures to capture the investor demand for stocks of the offspring's industry. The first glamour stock variable, SUBMTB, is the industry MTBV of assets ratio for the offspring. The industry MTBV of assets ratio is calculated as the value-weighted average of MTBV of assets ratios to all firms in the offspring's industry. The MTBV of assets ratio for SUBMTB is computed similarly to that for FPMTB. The second glamour stock variable, SUBRET, is the industry past-year stock returns for the offspring. The industry past-year stock returns are computed as the value-weighted average of past-year stock returns to all firms in the offspring's industry. For proxies SUBMTB and SUBRET, the weight is the market capitalisation of industry peers of the offspring's industry, where the industry is defined at two-digit SIC level[26]. The definitions of these above four investor sentiment proxies are also given in Table 6.1.

[Insert Table 6.1 about here, see page 128]

6.3.2 Glamour Spinoff Proxies

Not all spinoffs are undertaken to improve operating efficiency. The catering theory of spinoff argues that some spinoffs are undertaken to exploit potential market misevaluation of different segments of a diversified firm as a rational response to investor sentiment. In particular, managers of undervalued parent firms tend to spin off potentially overvalued subsidiaries. When the parent business is undervalued while the subsidiary business is overvalued, stock markets are likely to misprice different segments of a diversified firm and the parent's managers may face significant shareholder pressure to improve the market valuation of the parent firm. In this circumstance, managers of the undervalued parents have strong incentives to cater opportunistically to investor demand

[26] Alternative measures for SUBMTB and SUBRET are the offspring's industry valuation ratio minus the median value of all valuation ratios of all two-digit SIC industries. In the following section, I use dummy variables to indicate the glamour status of an offspring relative to the market median, which are also significantly and positively associated with spinoff announcement-period returns.

for glamour stocks by spinning off the overvalued subsidiary.

I construct three dummy variables, called glamour spinoff proxies in this study, to indicate whether a spinoff is undertaken to cater to investor demand for glamour stocks. Whether a segment of a conglomerate firm is undervalued or overvalued following spinoffs is not straightforward to measure because there are no sufficient segment data for measuring the true values of different segments of a diversified firm. For the first two glamour spinoff proxies, I use the market-based valuation for firms in an offspring's industry to estimate the market valuation of the offspring within a conglomerate. The market valuation measures are the MTBV of assets ratio for the offspring's industry and past-year returns for the offspring's industry. When the market-based valuation of the parent (offspring) industry is lower than the median of the market valuation for all two-digit SIC industries, the parent (offspring) business is likely to be undervalued. When the market-based valuation for the parent (offspring) industry is higher than the median of the market valuation for all two-digit SIC industries, the parent (offspring) business is likely to be overvalued.

The first glamour spinoff proxy, GLAMMTB, is a dummy variable that equals one when the MTBV of assets ratio for the parent's industry is lower than the median of the MTBV of assets ratios for all two-digit SIC industries in the parent's country while the MTBV of assets ratio for the subsidiary industry is higher than the median of the MTBV of assets ratios for all two-digit SIC industries in the parent's country, and equals zero otherwise.

The second glamour spinoff proxy, GLAMRET, is a dummy variable that equals one when past-year stock return for the parent's industry is lower than the median of past-year stock returns for all two-digit SIC industries in the parent's country while past-year stock returns for the offspring's industry is higher than the median of past-year stock returns for all two-digit SIC industries in the parent's country, and equals zero otherwise.

The third glamour spinoff proxy, GLAMHT, is motivated by the high-tech bubble in the late 1990s. This dummy variable, or the high-tech spinoff variable, will equal one when the parent firm operates in a non-high-tech industry while the offspring is in the high-tech industry; and equals zero otherwise. The details of the classification of high-tech spinoffs are included in Appendix 6.1. The definitions for the above three glamour spinoff proxies are also given in Table 6.1.

6.3.3 Empirical Models to Test Investor Sentiment

The first two hypotheses about the investor sentiment predict a positive association between investor demand for corporate focus (subsidiary stocks) and the market reaction to spinoff announcements. To test these two hypotheses, I use a multiple regression model to analyse the impact of investor sentiments on spinoff announcement gains. The regression model is given below:

$$CARs = f\,(Investor\ Sentiment\ Proxy, Control\ Variables) \tag{6.1}$$

where CAR*s* are cumulative abnormal returns to a parent during the three-day spinoff announcement period.

There are seven control variables considered in the regression model (6.1) to explain the spinoff announcement effects. The first control variable (FOCUS) is corporate focus, which is a dummy variable that equals one when the post-spinoff parent and subsidiary firms do not share the same two-digit SIC code, and equals zero for otherwise. The SIC codes for sample firms are from Worldscope. Prior studies have found that the corporate focus variable is positively and significantly associated with spinoff announcement period returns and long-run returns to post-spinoff firms (Daley et al., 1997; Desai and Jain, 1999; Veld and Veld-Merkoulova, 2004).

The second control variable (INFASYM) is an information asymmetry variable, proxied by the residual volatility in daily stock returns for parent firms in the year prior to the spinoff announcement date. Specifically, the residual standard deviation variable captures the firm-specific uncertainty that remains after removing the total market-wide uncertainty. Krishnaswami and Subramaniam (1999) argue that this variable captures the information asymmetry between the investors and managers as regards the firm-specific information about the pre-spinoff parent. This information asymmetry proxy is predicted to be positively associated with the spinoff value creation.

The third control variable (GROWTH) is a parent's growth options in its investment opportunity set, measured as its MTBV of assets ratio at the end of month prior to spinoff announcement date. Following Faccio, McConnell and Stolin (2006), the MTBV of assets ratio is computed as the market capitalisation plus book value of preferred stocks and book value of debt divided by the sum of book values of equity, preferred stocks and debt[27].

The third variable is also motivated by the information asymmetry argument. Krishnaswami and Subramaniam (1999) document evidence that high-growth firms have a high likelihood of engaging in a spinoff to increase their information transparency because high-growth firms with information asymmetry problems cannot obtain sufficient external capital to finance their positive NPV projects. A conjecture following this information-based argument is that high-growth firms will create more shareholder values from undertaking spinoffs than low-growth firms. The reason is that a spinoff can partially resolve underinvestment problems for the former as argued in Myers and Majluf (1984) by improving the information environment of post-spinoff firms. Thus I predict a positive association between GROWTH and spinoff value effects.

The fourth control variable (ROA) is a parent's return on assets in the year prior to the spinoff announcement date, which is measured as the earnings before interest, tax, depreciation and amortisation (EBITDA) divided by the total assets of the firm. This variable is also related to the information asymmetry argument. Nanda and Narayanan (1999) put forward that liquidity-constrained firms have strong incentives to undertake spinoffs in order to mitigate the information asymmetry problem, thus facilitating post-spinoff firms' future access to external finance. Therefore, firms with higher internal cash

[27] For the measurement of GROWTH variable, I also require a more than four-month gap between the most recent financial-year end on which accounting data are used and the spinoff announcement date to avoid the looking-ahead bias.

flows are less likely to undertake spinoffs (Krishnaswami and Subramaniam (1999) because they benefit less from spinoffs. Hence I expect a negative relationship between ROA and spinoff value effects.

The fifth control variable (RELSIZ) is the relative size of a spinoff. Prior studies find that the spinoff announcement returns are higher when the proportion of spun-off assets is larger (see, e.g. Hite and Owers, 1983; Miles and Rosenfeld, 1983; Krishnaswami and Subramaniam, 1999; Veld and Veld-Merkoulova, 2004). Chemmanur and Yan (2004) propose a corporate control model to explain the transaction effect. According to their model, a spinoff creates shareholder value because post-spinoff firms are smaller than the pre-spinoff parent and thus post-spinoff firms are more likely to be acquired following the spinoff transaction. To control the transaction size effect, I use the market value of an offspring relative to the sum of the market capitalisations of parent and offspring on the spinoff completion date[28]. When a parent spins off more than one offspring at the same time, I calculate the relative size as the sum of all offspring's market values divided by the sum of parent and all offspring's market values on the spinoff completion date. It is predicted that the larger the relative size of a spinoff, the higher the shareholder value created from the spinoff.

The sixth control variable (ANTIDIR) is an anti-director index that measures the effectiveness of a country's legal system to protect shareholder rights and control potential managerial opportunism, which is proposed in La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998). This anti-director index ranges from zero to six, where the lower score refers to a weak protection of shareholder rights. This variable is motivated by a growing literature on the country-level corporate governance system. It is often argued that managers in Anglo-Saxon countries are more focused on shareholder value creation than managers in continental countries (e.g. see Denis and McConnell, 2003; La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1999 and 2000). Likewise, spinoff decisions made by managers in a country with better shareholder protection are more

[28] I measure the relative size variable on the spinoff completion date because it is the first date on which the market capitalisation data for an offspring is available.

likely to be shareholder-value-oriented than those made by managers in a country with poorer shareholder protection. This anti-director index is thus predicted to be positively related to the shareholder value creation from corporate spinoffs.

Finally, I use a dummy variable (HOTTIME) to indicate whether a spinoff is announced in hot periods or in cold periods. As illustrated in Table 5.1 in Chapter 5, the number of spinoff transactions is noticeably higher during the period 1996-2001 than that of other periods[29]. Therefore, the HOTTIME variable equals one when a spinoff is announced between 1996 and 2001, and equals zero otherwise. I use this dummy variable to control for potential effects of spinoff decisions that may be purely time-driven. The definitions for the above-mentioned control variables are also given in Table 6.1.

6.3.4 Empirical Models to Test Glamour Spinoffs

The catering theory of spinoff predicts that glamour spinoffs evoke more favourable announcement reactions than other types of spinoff but offspring firms following glamour spinoffs underperform offspring firms following other types of spinoff. Therefore, the short run market reaction to glamour spinoffs and the long run market reaction to glamour spinoffs will be of opposite signs. I use two regression models to measure the value consequences of glamour spinoffs. The first regression model is to measure the short run market reaction to glamour spinoffs, which is given below:

$$CARs = f\,(Glamour\ Spinoff\ \ Proxy, Control\,Variables) \qquad (6.2)$$

where CAR*s* are cumulative abnormal returns to spinoff announcements. In this study, I focus on CAR*s* for the three-day (-1, +1) announcement window, where day0 is the event day. The control variables considered in regression model (6.2) are those used in regression model (6.1) to measure the impact of investor sentiment on the spinoff announcement gains.

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[29] This hot period of spinoffs is largely overlapping with the European merger wave in the period 1995-2001 as identified in Sudarsanam (2003, Chapter 2). This time-varying pattern of spinoff activity implies that, like mergers and acquisitions, spinoffs may cluster in time.

The second regression model is to measure the long run market reaction to glamour spinoffs, which is offered below:

$$BHARs = f(Glamour\ Spinoff\ Proxy, Control\ Variables) \quad (6.3)$$

where *BHARs* are long-run size- and book-to-market-adjusted buy-and-hold abnormal returns to post-spinoff firms. In the subsequent analyses, I report regression results based on three-year *BHARs* to post-spinoff firms, where the three-year event window starts from the spinoff completion date. For post-spinoff parent firms, the control variables considered in Equation (6.3) are those used in Equations (6.1) and (6.2). For post-spinoff offspring firms, the control variables considered in Equation (6.3) are FOCUS, INFASYM, RELSIZ, ANTIDIR and HOTTIME. The variables GROWTH and ROA are not used because these two variables are operating characteristic variables of parents rather than those of offspring firms.

6.3.5 Summary of Explanatory Variables

Table 6.2 reports the summary statistics of explanatory variables. Panel A of Table 6.2 gives summary descriptive statistics of continuous explanatory variables for parents. The data for FPMTB suggest that the markets generally value diversified firms slightly higher than focused firms prior to spinoff announcement dates. In contrast, the data for FPRET indicate that the recent stock performance for focused firms is in line with that for diversified firms before spinoff announcements. An offspring's industry generally has a high market valuation and good past-year performance since the variable SUBMTB has a mean value higher than 1 and the mean of the variable SUBRET is positive. The information asymmetry variable has a mean of 0.02 and a median of 0.02, which are somewhat lower than results of earlier US studies. For example, in Krishnaswami and Subramaniam (1999), the mean and the median of residual standard deviations for their spinoff parents are 0.08 and 0.03, respectively. However, this is not surprising given that Veld and Veld-Merkoulova (2004) find that European spinoff parents do not seem to suffer serious information asymmetry problems.

European spinoff parents generally operate well before spinoff announcements since the mean value of GROWTH is 2.63 and the mean ROA is 0.10. Further, the data show that spinoff transactions are large-scale restructurings since the relative size variable has a mean (median) of 0.30 (0.24). This evidence indicates that, on average, a European parent divests one third of its assets through a spinoff.

[Insert Table 6.2 about here, see page 130]

Panel B of Table 6.2 illustrates that about 20% of the sample spinoffs can be classified as glamour spinoffs. The proportions of glamour spinoffs based on the definitions for GLAMMTB, GLAMRET, and GLAMHT are 25%, 21%, and 17%, respectively. A significant proportion of high-tech spinoff in my sample is in line with my catering theory argument, which suggests that a number of spinoff transactions could be driven by the investor demand for high-tech stocks during the 1990s. As indicated by the mean of the variable HOTTIME, about 58% of spinoff transactions are announced in the period between 1996 and 2001.

Panels C and D of Table 6.2 provide summary statistics for the continuous and dummy explanatory variables for offspring, separately. The data pattern of Panels C - D is qualitatively similar to that of Panels A - B in Table 6.2.

6.4 Investor Sentiment and Spinoff Announcement Returns

I examine the relationship between investor sentiments and the market reaction to spinoff announcements. According to my hypotheses H3 and H4 in section 6.2, the relationship between investor sentiments and the market reaction to spinoff announcements should be significantly positive. Table 6.3 reports the regression results for the empirical tests. As illustrated in Table 6.3, investor sentiment proxies are highly significant in explaining the announcement returns to spinoffs.

[Insert Table 6.3 about here, see page 132]

Models in Panel A of Table 6.3 each employ one of the four investor sentiment proxies in multiple regressions that explain the spinoff announcement returns. In model 1, the coefficient for FPMTB is 5.83, which is statistically significant at the 5% level (t-statistic = 2.21). In model 2, the coefficient for FPRET is 79.76[30], which is statistically significant at the 5% level (t-statistic = 2.24). Clearly, investor demand for corporate focus has a significant and positive impact on the market reaction to spinoff announcements. In model 3, the coefficient for SUBMTB is 0.67, which is statistically significant at the5% level (t-statistic = 2.30). In model 4, the coefficient for SUBRET is 44.24, which is also significant at the 5% level (t-statistic = 2.07). Likewise, investor demand for the subsidiary stocks positively affects the market reaction to spinoff announcements.

For models 1 - 4, control variables such as FOCUS and RELSIZ have significant and positive coefficients as argued in prior studies. The proxies for information problems, INFASYM, GROWTH, and ROA, are generally insignificant for all regression models. The anti-director index also has low power in explaining the spinoff announcement returns. Finally, the coefficient of HOTTIME variable is positive but insignificant across different regression models. Given the relatively strong explanatory power of investor sentiment proxies in regressions, I conclude that investor sentiment is an additional factor that explains the value gains to spinoffs.

In Panel B of Table 6.3, I consider both focus premium and glamour stock proxies in each multiple regression. The general conclusions remain unchanged. The coefficients for both the focus premium and glamour stock proxies are highly significant for different regression models. The adjusted R-squared for regression models 5 - 8 are generally not less than 0.20. Therefore, my regression results support hypotheses H3 and H4 by confirming that investor demand for corporate focus and for glamour stocks jointly determine spinoff announcement returns.

[30] The large coefficient of 79.76 for FPRET is because that the difference of past-year stock returns between focused and diversified firms is very small, as indicated in the summary statistics of explanatory variables in Table 3.

6.5 Catering to Investor Demand and Spinoff Value Effects

This section analyses the value effects of spinoffs that are undertaken to cater to investor demand for glamour stocks, which are related to hypotheses H5 and H6 proposed in Section 6.2

6.5.1 Short Run Market Reaction

Hypothesis H5 proposes that spinoffs which cater to investor demand for glamour stocks are better perceived by markets than other types of spinoff. To test this hypothesis, I conduct univariate analysis to examine whether glamour spinoffs have higher announcement returns than other types of spinoffs. Table 6.4 presents the cumulative abnormal announcement returns to completed spinoffs by sub-samples based on glamour spinoff proxies.

[Insert Table 6.4 about here, see page 134]

As shown in Table 6.4, glamour spinoffs have significantly higher announcement returns than other types of spinoff. For the glamour spinoff proxy GLAMMTB, glamour spinoffs have a mean (median) three-day CAR*s* of 8.24% (4.74%) while other types of spinoffs have a mean (median) three-day CAR*s* of 3.69% (1.88%). The mean (median) difference of CAR*s* between glamour spinoffs and other spinoffs is significant at the 5% (1%) level (t-statistic = 2.38 and z-statistic = 3.03). The results remain similar when other glamour spinoff proxies are used. Therefore, the univariate analysis results support the hypothesis H5 that spinoffs that cater to investor demand for glamour stocks earn higher announcement returns than other spinoffs.

To further test the value impact of glamour spinoffs, I regress CAR*s* to spinoffs on glamour spinoff proxies. The regression model is regression model (6.2) given in Section 6.3.4. The regression results are presented in Table 6.5.

[Insert Table 6.5 about here, see page 135]

For the three regression models in Table 6.5, coefficients for glamour spinoff proxies are highly significant across three models. The coefficient for GLAMMTB is 3.16, which is significant at the 10% level (t-statistic = 1.80). The coefficient for GLAMRET is 3.41, which is significant at the 5% level (t-statistic = 2.61). The coefficient for GLAMHT is 5.83, which is significant at the 5% level (t-statistic = 2.45). Thus, in general, my regression results support the prediction of H5 that spinoffs which cater to investor demand for glamour stocks have more favourable announcement reactions than other spinoffs.

6.5.2 Long Run Market Reaction

Hypothesis H6 argues that offspring from a spinoff which caters to investor demand for glamour stocks have a lower long-run performance than that of other types of spinoff. To test this prediction, I compare long-run abnormal stock returns to offspring firms following glamour spinoffs and those to offspring firms following other types of spinoff. The univariate analysis results are reported in Table 6.6.

[Insert Table 6.6 about here, see page 136]

As shown in Table 6.6, offspring firms following glamour spinoffs underperform those following other types of spinoffs in the long term. The relative underperformance of offspring from glamour spinoffs is statistically significant for different definitions of glamour spinoffs and for different return measurement periods. For instance, offspring firms with relatively high industry MTBV of assets ratios prior to spinoff announcement dates have a mean (median) three-year BHARs of -0.37 (-0.25), which is significant at the 5% level. In contrast, other offspring firms have a mean (median) three-year BHARs of 0.47 (0.28), which is also significant at the 5% level. Both the mean and the median difference of three-year BHARs between these two groups are significant at the 1% level (t-statistic = -3.79 and z –statistic = -3.20). This evidence supports hypothesis H6 that an offspring from a spinoff which caters to investor demand for glamour stocks underperforms other offspring in the long run.

I also run regression analysis to examine whether offspring from glamour spinoffs have lower long-run performance than other offspring. The dependent variable, long-run returns to offspring firms, is first measured against returns to the size and book-to-market control portfolios. The independent variables include FOCUS, INFASYM, RELSIZ, ANTIDIR and HOTTIME. Two control variables, GROWTH and ROA, are not employed in the regression because they are not directly related to the long-run performance of offspring firms.

Table 6.7 presents the regression results. According to Table 6.7, glamour spinoff proxies have significant and negative coefficients in all regression models. The coefficient for GLAMMTB is -0.79, which is significant at the 1% level (t-statistic = -3.25). The coefficient for GLAMRET is -0.90, which is significant at the 1% level (t-statistic = -4.14). Finally, the coefficient for GLAMHT is -0.76, which is also significant at the 1% level (t-statistic = -3.43). Since glamour spinoff proxies are dummy variables, the coefficients from regression models 1-3 indicate that offspring firms following catering-motivated spinoffs underperform those following other types of spinoffs by 76% or more over the three-year post-spinoff period.

[Insert Table 6.7 about here, see page 138]

Control proxies such as corporate focus, information asymmetry, and relative size are insignificant for all regression models. This finding suggests that stock markets may efficiently react to these value factors upon spinoff announcements. The control variable for country-level shareholder protection is insignificant for all regression models. Finally, the dummy variable to indicate the hot or cold periods of spinoff announcements has an insignificant coefficient in each regression model. Thus, the long-run returns to offspring firms cannot be explained by the country-specific or time-specific effects.

Taken together, the glamour spinoff proxies are the only independent variables having a significant coefficient in the regression models. The negative coefficients for glamour spinoff proxies suggest that offspring firms from spinoffs which cater to investor demand for glamour stocks significantly underperform other types of offspring firms.

6.6 Robustness Checks

This section mainly discusses whether my results for the catering theory are sensitive to variable construction, return measurement procedures, and sample country.

First, I consider whether my investor sentiment proxies are actually measuring the fundamental value drivers of a spinoff. In particular, independent variables SUBMTB and SUBRET may be alternative measures of the growth opportunity of an offspring firm. Thus the positive impact of these two variables on the spinoff announcement returns can be attributed to the rational expectation of stock markets that the offspring firm with high growth opportunity can create more values in the post-spinoff period.

I check this issue by regressing the CARs to spinoff announcements on three different offspring industry-based variables. The first industry-based variable is an alternative investor sentiment proxy, SUBPE, which is the value-weighted average of price-to-earnings ratios for all firms in the offspring's two-digit SIC industry. To make the price-to-earnings ratio meaningful, I remove all firms with negative earnings in calculating SUBPE. Since the price-to-earnings ratio is a popular valuation ratio, the variable SUBPE may also capture the investor demand for glamour stocks. Thus, the variable SUBPE is predicted to be positively associated with the spinoff announcement returns. The second and third variables are measures of investment opportunity of the offspring industry. The second variable, SUBCAPEX, is the value-weighted capital expenditure to total assets ratio for all firms in the offspring's two-digit SIC industry. The third variable, SUBREVINC, is the value-weighted past-year revenue increase rates for all firms in the offspring's two-digit SIC industry. If markets assess the desirability of a spinoff transaction based on the fundamental value driver of an offspring industry, the variables SUBCAPEX and SUBREVINC should have a significant and positive coefficient in the regression to explain spinoff announcement returns.

Then the three-day (-1, +1) CARs to parents are regressed on one of these industry-based variables with other control variables as reported in Table 6.1. Results (not shown) indicate that the variable SUBPE has a positive and significant coefficient of 0.07 in the regression (t-statistic = 2.24). However, neither SUBCAPEX nor SUBREVINC has a significant coefficient in the regression models. Therefore, my investor sentiment proxies do not seem to be alternative measures of fundamental value drivers of a spinoff.

Another concern is that return measurement errors may affect my empirical results. I use the world market model suggested in Park (2004) to re-estimate the spinoff announcement returns and find that the relationship between investor sentiment proxies and the spinoff announcement returns still holds when the return methodology is changed. Similarly, the glamour spinoff proxies still have significant and positive coefficients in regressions with the re-estimated spinoff announcement returns.

The measurement of long-run returns is very controversial since the current literature has no consensus on the return measurement (e.g. see Ang and Zhang, 2004; Fama, 1998; Loughran and Ritter, 1995; Mitchell and Stafford, 2000). To ensure the robustness of my results, I also use the industry- and size-adjusted BHARs to examine the long run performance of post-spinoff firms. Then, based on Equation (6.3) in section 6.3.4, I regress the alternative long-run abnormal returns to offspring firms on glamour spinoff proxies to examine whether regression results are sensitive to the return methodology used. Control variables are FOCUS, INFASYM, RELSIZ, ANTIDIR and HOTTIME. The regression results are reported in Panel A of Table 6.8.

[Insert Table 6.8 about here, see page 139]

In general, offspring firms following spinoffs that cater to investor demands for glamour stocks have lower long-run industry- and size-adjusted BHARs than those following other types of spinoff. The coefficients for two out of three glamour spinoff proxies are significant in the regression models. The variable GLAMMTB has a negative coefficient of -0.68, which is significant at the 1% level (t-statistic = -2.69). The variable GLAMRET also has a coefficient of -0.98, which is significant at the 1% level (t-statistic = -4.69). Thus, this evidence lends support to the catering theory of spinoff that offspring firms following spinoffs which cater to investor demand for glamour stocks underperform those following other types of spinoff.

On the other hand, the variable GLAMHT has an insignificant coefficient of -0.21 in the regression model 3. The insignificance of GLAMHT in the regression may be due to the fact that the whole high-tech industry experienced return reversal as the high-tech bubble burst in the early 2000. Therefore, the relative underperformance of offspring firms in the high-tech industry may not be significant.

I also consider abnormal accounting returns of post-spinoff firms as an alternative measure of the long-run performance of post-spinoff firms. Following Barber and Lyon (1996), I use two benchmark-adjusted accounting returns, industry median-adjusted return on assets ratio and industry- and size-adjusted return on assets ratio. These two approaches are described in Section 5.5.

Based on Equation (6.3) in section 6.3.4, the three-year abnormal accounting returns to offspring are regressed on glamour spinoff proxies. Control variables are FOCUS, INFASYM, RELSIZ, ANTIDIR and HOTTIME. The regression results for the three-year industry median-adjusted ROAs and those for the three-year industry- and size-adjusted ROAs are reported in Panel B and Panel C of Table 6.8, respectively.

Our results in Panels B - C indicate that Equation (6.3) has a good explanatory power in explaining the variation of long-run accounting performance of offspring since the adjusted R-squared for regression model varies between 15% and 28%. Further, the coefficients of GLAMMTB and GLAMHT are significantly negative for models 4 – 9. In contrast, the coefficient of GLAMRET is insignificant for models 4 – 9. However, the variable GLAMRET has a predicted negative sign in the regression models 4 – 9. Thus, my results with different measures of long-run performance of post-spinoff offspring also suggest that offspring firms following spinoffs which cater to investor demand for glamour stocks underperform those following other types of spinoff in the long run.

Although I document evidence that offspring firms following catering-motivated spinoffs underperform others in the long run, a possible explanation is that some European stock markets may be inexperienced with spinoff transactions and thus make mistakes in the initial assessment of those transactions.[31] Therefore, the evidence on catering theory of spinoffs may not obtain for samples of spinoffs in a country with well-developed stock markets, such as the UK. I address this concern by analysing the determinants of long-run returns to post-spinoff offspring firms in the UK. Specifically the model based on Equation (6.3) in section 6.3.4 is run for the UK sub-sample of offspring firms. Control variables are FOCUS, INFASYM, RELSIZ and HOTTIME. The variable ANTIDIR is not used because this variable has the same value for all UK offspring firms. The regression results are reported in Panels D - G of Table 6.8. Dependent variables are three-year size and book-to-market-adjusted BHARs to UK offspring, three-year industry- and size-adjusted BHARs to UK offspring, three-year industry median-adjusted ROAs to UK offspring, and three-year industry- and size-adjusted ROAs to UK offspring. These are for regression models in Panel D, Panel E, Panel F and Panel G, respectively.

As indicated in Panel D of Table 6.8, the glamour spinoff proxies GLAMMTB and GLAMRET have significant and negative coefficients in regression models 10 -12, which are consistent with the results in Table 6.7. The coefficient of glamour spinoff proxy GLAMHT is insignificant in the regression but it has a predicted negative sign. Similar conclusions can be reached based on the results in Panel E of Table 6.8. Again, the results in Panel F and Panel G are generally similar to those in Panel B and Panel C. Hence, in general, my robustness check results for the UK sub-sample show that investor sentiment still plays a role in the market reaction to spinoff announcements even for a well-developed stock market such as the UK stock market.

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[31] Based on the spinoff transaction data in SDC, many continental European countries do not have spinoff transactions prior to the 1990s.

Finally, I consider whether my results are purely driven by the high-tech bubble in the late 1990s. To this end, I remove the high-tech spinoffs announced in the late 1990s, i.e. within the period 1996 and 2000. Then I design a new glamour spinoff variable, GLAM, which equals one when either GLAMMTB or GLAMRET equals one and equals zero otherwise. Following Hypotheses 5 and 6, this new glamour spinoff variable GLAM should have a significant and positive impact on the spinoff announcement returns while having a significant and negative impact on the long-run performance of post-spinoff firms.

In Panel A of Table 6.9, I regress the three-day CARs to parents on the variable GLAM and control variables as defined in Table 6.1. Consistent with Hypothesis 5, the variable GLAM has a coefficient of 2.74, which is significant at the 10% level. The regression model has an adjusted R-squared of 5%, which is significant at the 7% level. Panel A of Table 6.9 also reports the regression coefficients of long-run abnormal stock returns to offspring on the variable GLAM. The coefficient of GLAM is significantly negative when the dependent variable is either three-year size- and book-to-market-adjusted BHARs or three-year industry- and size-adjusted BHARs.

[Insert Table 6.9 about here, see page 141]

In Panel B of Table 6.9, I regress the three-year abnormal accounting returns to offspring on the variable GLAM and control variables. Consistent with Hypothesis 6, the variable GLAM has a negative coefficient in the regression models. When the dependent variable is three-year industry median-adjusted ROAs to offspring, the coefficient of GLAM is -0.06, which is significant at the 5% level. When the dependent variable is thee-year industry- and size-adjusted ROAs to offspring, the coefficient of GLAM is -0.02 but is insignificant at conventional levels. This significant result may be attributable to the smaller sample size.

It is interesting to know how parents following catering spinoffs perform worse (or better) than parents following other types of spinoff in the long run. In Table 6.10, I regress the long-run size- and book-to-market-adjusted BHARs to parents on the glamour spinoff proxies. None of the glamour spinoff proxies can explain the long-run BHARs to parents. Control variables have no explanatory power either. The whole regression models have very low R-squared. Thus, this finding suggests that European stock markets are efficient in valuing post-spinoff parents.

[Insert Table 6.10 about here, see page 143]

6.7 Summary

Existing literature argues that corporate spinoffs are value-enhancing restructuring transactions. However, past empirical analysis only focuses on one side of the spinoff transaction: the divestiture of a subsidiary. Corporate spinoffs are joint events combining the divestiture and the equity listing of a subsidiary. Less attention has been paid to how stock markets react to the equity listing of a subsidiary. In addition, extant studies have not explored whether the investor sentiments can affect the market reaction to spinoff announcements and whether some spinoffs are undertaken for non-efficiency-related reasons.

This study contributes to the existing literature on corporate divestiture in two ways. First, it provides empirical evidence that investor sentiments affect the market reaction to spinoff announcements. In particular, investor demand for corporate focus and glamour stocks is positively affecting the announcement returns to spinoffs. My study presents new evidence supporting this behavioural argument that markets are not always efficient. Investors have an unrealistic demand for non-fundamental factors and such demand affects the market valuation of corporate events.

Second, I propose and test a catering theory of the managerial decision of spinoff. The catering theory argues that rational managers may respond to the prevailing strong investor demand for glamour stocks, and then spin off a subsidiary with glamour status to boost short-run share prices. Further, the long-term performance of offspring following the catering-motivated spinoffs will be lower than that of other types of spinoff.

My empirical analysis results support the catering theory. I find that spinoffs which are undertaken to cater to investor demand for glamour stocks have better announcement returns than other spinoffs. However, offspring from spinoffs that cater to investor demand for glamour stocks have lower long-run stock returns than offspring from other spinoffs. This evidence indicates that investors' overoptimistic beliefs of offspring from catering-motivated spinoffs eventually turn out be unfounded.

On a cautionary note, the catering theory of corporate spinoffs only applies to certain types of spinoff and is not a complete story of corporate spinoffs. Corporate spinoffs may be motivated to reduce agency conflicts associated with conglomerates, divest underperforming divisions, improve the efficiency of stock-based compensation, and for other reasons (for detailed discussions on other spinoff rationales, see Sudarsanam, 2003, Chapter 11 and Weston, Mitchell and Mulherin 2005, Chapter 11). However, the catering theory complements other existing theories of corporate divestitures to depict a more complete picture of spinoff value effects.

It is also worth mentioning that the glamour spinoff proxies used in this study are not perfect measures of managerial motives to exploit misevaluations. Future research should design better proxies to measure the managerial response to market inefficiency.

My results for the long-run performance of post-spinoff firms are different from those reported in earlier US studies. This difference may be attributed to the institutional difference between the US and Europe. First, the US has a more active hostile takeover market than Europe as documented in Sudarsanam (2003, chapter 2). Thus, according to the corporate control rationale of spinoffs as proposed in Chemmanur and Yan (2004), post-spinoff firms following European spinoffs will generally experience less effective market discipline and deliver lower long-run returns than those following US spinoffs. Second, managers in the US firms generally have more intensive stock-based compensation than those in European firms (e.g. see Conyon and Murphy, 2000).

Therefore, following the arguments of Jensen and Murphy (1990) and Coles, Daniel and Naveen (2006), managers in the US are more likely to conduct spinoffs to maximise shareholder wealth than those in Europe. Ahn and Walker (2006) have presented evidence that the spinoff decision is positively related to the CEO compensation. For those reasons, it is possible that my catering theory of spinoffs may not be applicable to the US spinoffs. Future research testing the predictions of catering theory with the US spinoff sample will be useful.

Finally, the behavioural explanation of the managerial catering incentive to spin off can be equally applied to other cases of managerial decisions, such as mergers and acquisitions. The test of the association between investor appetite for corporate focus (and glamour stocks) and the market reaction to other managerial decisions may produce more fruitful results that could deepen my understanding of managerial decisions from a behavioural perspective.

Table 6.1 Definitions for explanatory variables

Variables	Definition
Panel A: Investor sentiment proxies	
FPMTB	The difference in the natural logarithm of value-weighted average market-to-book value (MTBV) of assets between focused firms and diversified firms in the country where parents are listed. The variable is measured at the month end prior the spinoff announcement date. The weight is the book value of assets. Market value of total assets is the sum of the market value of equity and the book value of total debts. Diversified (Focused) firms are defined as listed firms that have (no) segments operating in different two-digit SIC industries. The product segment data are from Worldscope.
FPRET	The difference in the value-weighted average past-year stock returns between focused firms and diversified firms in the country where parents are listed. The variable is measured at the month end prior to the spinoff announcement date. The weight is the market capitalisation. For definitions of diversified and focused firms, see the definition of FPMTB.
SUBMTB	The value-weighted average MTBV of assets ratios for all firms in an offspring's two-digit SIC industry. The weight is the market capitalisation.
SUBRET	The value-weighted past-year returns to all firms in an offspring's two-digit SIC industry. The weight is the market capitalisation.
Panel B: Glamour spinoff proxies	
GLAMMTB	A dummy variable that equals one when the MTBV of assets ratio of a parent's industry is lower than the median of MTBV of assets ratios for all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of MTBV of assets ratios for all industries, and equals zero otherwise.
GLAMRET	A dummy variable that equals one when past-year stock return to a parent's industry is lower than the median of past-year stock returns to all industries while past-year stock returns to an offspring's industry is higher than the median of past-year returns for all industries, and equals zero otherwise.
GLAMHT	A dummy variable that equals one when a non-high-tech parent spins off a high-tech offspring, and equals zero otherwise. For details of high-tech spinoff classification, see Appendix.

Table 6.1 (continued)

Variables	Definition
Panel C: Control variables	
FOCUS	A dummy variable that equals one when parent and offspring operate in different two-digit SIC industries, and equals zero otherwise.
INFASYM	The dispersion in the market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement.
GROWTH	The parent’s growth options in its investment opportunity set, measured as its MTBV of assets ratio at the end of month prior to spinoff announcement date.
ROA	The parent’s return on assets in the year prior to the spinoff announcement date, measured as its earnings before interest, tax, depreciation and amortisation (EBITDA) divided by its total assets.
RELSIZ	Market value of an offspring divided by the sum of the market capitalisations of parent and offspring on the spinoff completion date. When a parent spins off multiple offspring firms on the same date, the relative size is total market values of all offspring firms divided by the sum of market capitalisations of parent and all offspring firms on the spinoff completion date.
ANTIDIR	An index to measure the strength of a country’s legal system to protect minority shareholders developed by La Porta et al. (1998), which ranges from zero to six, where the lower score refers to a weak protection of shareholder rights.
HOTTIME	A dummy variable that equals one when a spinoff is announced between 1996 and 2001, and equals zero otherwise.

Table 6.2 Summary descriptive statistics for explanatory variables

This table reports summary descriptive statistics for explanatory variables. FPMTB = difference in the natural logarithms of value-weighted average MTBV of assets between focused firms and diversified firms in the parent listing country. FPRET = difference in the value-weighted average past-year stock returns between focused firms and diversified firms in the parent listing country. SUBMTB = value-weighted average MTBV of assets ratios for all firms in an offspring's two-digit SIC industry. SUBRET = value-weighted past-year returns to all firms in an offspring's two-digit SIC industry. GLAMMTB = 1 when the MTBV of assets ratio of a parent's industry is lower than the median of all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of industries, = 0 otherwise. GLAMRET =1 when past-year stock return to a parent's industry is lower than the median of all industries while past-year stock returns to an offspring's industry is higher than the median of all industries, = 0 otherwise. GLAMHT = 1 when a non-high-tech parent spins off a high-tech offspring, = 0 otherwise. FOCUS = 1 when parent and offspring operate in different industries at the two-digit SIC level, = 0 otherwise. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. GROWTH = parent's MTBV of assets ratio at the end of month prior to spinoff announcement date. ROA = parent's EBITDA divided by its total assets. RELSIZ = market value of an offspring (market values of all offspring when multiple subsidiaries are spun off) relative to the sum of the market values of the parent and (all) offspring on the spinoff completion date. ANTIDIR = index of the effectiveness of a country's legal system to protect shareholder rights (La Porta et al., 1998). HOTTIME = 1 when a spinoff is announced between 1996 and 2001, = 0 otherwise.

Variable	**Mean**	**Median**	**No. of obs.**
Panel A: Continuous variables for parent firms			
FPMTB	-0.11	-0.13	157
FPRET	0.00	0.00	157
SUBMTB	1.97	1.39	157
SUBRET	0.02	0.02	157
INFASYM	0.02	0.02	157
GROWTH	2.63	1.75	157
ROA	0.10	0.11	157
RELSIZ	0.30	0.24	157
ANTIDIR	3.60	4.00	157

Table 6.2 (continued)

Variable	Mean	Median	No. of obs.
Panel B: Dummy variables for parent firms			
GLAMMTB	0.25		157
GLAMRET	0.21		157
GLAMHT	0.17		157
FOCUS	0.74		157
HOTTIME	0.58		157
Panel C: Continuous variables for offspring firms			
INFASYM	0.02	0.02	170
RELSIZ	0.32	0.24	170
ANTIDIR	3.65	4.00	170
Panel D: Dummy variables for offspring firms			
GLAMMTB	0.23		170
GLAMRET	0.20		170
GLAMHT	0.16		170
FOCUS	0.73		170
HOTTIME	0.66		170

Table 6.3 Regression of announcement period CARs on investor sentiment proxies

Regression coefficients for announcement period (-1, 1) CARs for the 157 completed spinoffs from January 1987 to December 2005. FPMTB = difference in the natural logarithms of value-weighted average MTBV of assets between focused firms and diversified firms in the parent listing country. FPRET = difference in the value-weighted average past-year stock returns between focused firms and diversified firms in the parent listing country. SUBMTB = value-weighted average MTBV of assets ratios for all firms in an offspring's two-digit SIC industry. SUBRET = value-weighted past-year returns to all firms in an offspring's two-digit SIC industry. FOCUS = 1 when parent and offspring operate in different industries at the two-digit SIC level, = 0 otherwise. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. GROWTH = parent's MTBV of assets ratio at the end of month prior to spinoff announcement date. ROA = parent's EBITDA divided by its total assets. RELSIZ = market value of an offspring (market values of all offspring when multiple subsidiaries are spun off) relative to the sum of the market values of the parent and (all) offspring on the spinoff completion date. ANTIDIR = index of the effectiveness of a country's legal system to protect shareholder rights (La Porta et al., 1998). HOTTIME = 1 when a spinoff is announced between 1996 and 2001, = 0 otherwise. White heteroskedasticity-adjusted t-statistics are in parentheses. [a], [b], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Panel A: Regression models with one investor sentiment variable

Variable	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Intercept	-6.86[b]	(-2.39)	-6..74[b]	(-2.27)	-7.07[b]	(-2.50)	-7.38[a]	(-2.65)
FPMTB	5.83[b]	(2.21)						
FPRET			79.76[b]	(2.24)				
SUBMTB					0.67[b]	(2.30)		
SUBRET							44.24[b]	(2.07)
FOCUS	4.16[a]	(3.18)	3.85[a]	(2.93)	3.88[a]	(2.88)	3.63[a]	(2.72)
INFASYM	129.27	(1.52)	114.17	(1.26)	110.72	(1.27)	124.20	(1.46)
GROWTH	0.19	(1.13)	0.20	(1.23)	0.14	(0.81)	0.10	(0.56)
ROA	6.03	(1.02)	6.59	(1.16)	4.48	(0.75)	3.73	(0.60)
RELSIZ	14.11[a]	(2.94)	14.02[a]	(2.97)	13.42[a]	(2.64)	14.35[a]	(3.11)
ANTIDIR	0.10	(0.18)	-0.10	(-0.20)	-0.13	(-0.27)	-0.05	(-0.09)
HOTTIME	1.31	(0.93)	1.50	(1.06)	1.68	(1.24)	1.87	(1.40)
No. of obs.	157		157		157		157	
Adjusted R^2	0.20		0.19		0.19		0.19	
F statistic	5.72		5.63		5.70		5.70	
Sig. level	<0.001		<0.001		<0.001		<0.001	

Table 6.3 (Continued)

Panel B: Regression models with both focus premium and glamour stock variables								
Variable	**Model 5**		**Model 6**		**Model 7**		**Model 8**	
Intercept	-6.78[b]	(-2.35)	-6.98[b]	(-2.44)	-6.72[b]	(-2.27)	-6.89[b]	(-2.33)
FPMTB	4.45[c]	(1.84)	4.92[c]	(1.95)				
FPRET					56.63	(1.62)	65.55[c]	(1.90)
SUBMTB	0.50[c]	(1.78)			0.51[c]	(1.69)		
SUBRET			36.96[b]	(1.80)			37.55[c]	(1.78)
FOCUS	3.96[a]	(2.96)	3.73[a]	(2.86)	3.73[a]	(2.80)	3.46[a]	(2.63)
INFASYM	113.51	(1.29)	122.48	(1.42)	102.63	(1.12)	110.04	(1.21)
GROWTH	0.16	(0.96)	0.13	(0.73)	0.17	(1.04)	0.14	(0.81)
ROA	4.97	(0.83)	4.23	(0.68)	5.34	(0.92)	4.66	(0.77)
RELSIZ	13.17[b]	(2.57)	13.75[a]	(2.88)	13.13[b]	(2.59)	13.68[a]	(2.90)
ANTIDIR	0.05	(0.10)	0.14	(0.27)	-0.10	(-0.20)	-0.02	(-0.04)
HOTTIME	1.14	(0.81)	1.19	(0.85)	1.32	(0.93)	1.37	(0.97)
No. of obs.	157		157		157		157	
Adjusted R^2	0.20		0.20		0.20		0.20	
F statistic	5.30		5.39		5.22		5.31	
Sig. level	<0.001		<0.001		<0.001		<0.001	

Table 6.4 Announcement period CARs by glamour spinoff status

This table compares 3-day (-1, +1) CARs for glamour sub-samples of 157 spinoff announcements from January 1987 to December 2005. GLAMMTB = 1 when the MTBV of assets ratio of a parent's industry is lower than the median of all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of industries, = 0 otherwise. GLAMRET =1 when past-year stock return to the a parent's industry is lower than the median of all industries while past-year stock returns to an offspring's industry is higher than the median of all industries, = 0 otherwise. GLAMHT = 1 when a non-high-tech parent spins off a high-tech offspring, = 0 otherwise. In parentheses are the t-statistics (mean) or Wilcoxon test z-statistics (median). All tests are based on two-tailed tests. [a], [b]indicate the significance level at the 1% and 5% level, respectively.

Variable	**Parent relative to offspring less glamorous (1)**		**Parent relative to offspring same or more glamorous (2)**		**Group difference (1-2)**	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
GLAMMTB	8.24[a]	4.74[a]	3.69[a]	1.88[a]	4.54[b]	2.86[a]
	(4.82)	(4.93)	(4.30)	(4.84)	(2.38)	(3.03)
No. of obs.	39		118			
GLAMRET	9.34[a]	4.56[a]	3.62[a]	1.80[a]	5.71[b]	2.76[a]
	(4.05)	(4.26)	(4.81)	(5.24)	(2.36)	(2.82)
No. of obs.	33		124			
GLAMHT	13.37[a]	10.23[a]	3.13[a]	1.94[a]	10.24[a]	8.29[a]
	(4.74)	(4.05)	(4.66)	(5.38)	(3.53)	(3.92)
No. of obs.	26		131			

Table 6.5 Regression of announcement period CARs on the glamour spinoff proxies

Regression coefficients for announcement period (-1, 1) CARs for the 157 completed spinoffs from January 1987 to December 2005. GLAMMTB = 1 when the MTBV of assets ratio of a parent's industry is lower than the median of all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of industries, = 0 otherwise. GLAMRET =1 when past-year stock return to a parent's industry is lower than the median of all industries while past-year stock returns to an offspring's industry is higher than the median of all industries, = 0 otherwise. GLAMHT = 1 when a non-high-tech parent spins off a high-tech offspring, = 0 otherwise. FOCUS = 1 when parent and offspring operate in different industries at the two-digit SIC level, = 0 otherwise. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. GROWTH = parent's MTBV of assets ratio at the end of month prior to spinoff announcement date. ROA = parent's EBITDA divided by its total assets. RELSIZ = market value of an offspring (market values of all offspring when multiple subsidiaries are spun off) relative to the sum of the market values of the parent and (all) offspring on the spinoff completion date. ANTIDIR = index of the effectiveness of a country's legal system to protect shareholder rights (La Porta et al., 1998). HOTTIME = 1 when a spinoff is announced between 1996 and 2001, = 0 otherwise. White heteroskedasticity-adjusted t-statistics are in parentheses. [a], [b], [c] indicates the 1%, 5%, and 10% significance level, respectively.

Variable	Model 1		Model 2		Model 3	
Intercept	-7.37[a]	(-2.65)	-7.44[a]	(-2.61)	-5.42[c]	(-1.90)
GLAMMTB	3.16[c]	(1.80)				
GLAMRET			3.41[c]	(1.70)		
GLAMHT					5.83[b]	(2.45)
FOCUS	3.21[b]	(2.26)	3.27[b]	(2.46)	3.13[b]	(2.41)
INFASYM	147.14[c]	(1.73)	140.60[c]	(1.67)	98.14	(1.19)
GROWTH	0.17	(1.02)	0.14	(0.80)	0.02	(0.16)
ROA	6.69	(1.15)	6.76	(1.21)	4.47	(0.86)
RELSIZ	14.38[a]	(3.11)	13.86[a]	(3.23)	12.09[a]	(2.65)
ANTIDIR	-0.17	(-0.35)	-0.06	(-0.12)	-0.04	(-0.08)
HOTTIME	1.78	(1.36)	1.91	(1.41)	1.46	(1.14)
No. of Obs.	157		157		157	
Adjusted R^2	0.21		0.19		0.21	
F statistic	5.67		5.69		6.29	
Sig. level	<0.001		<0.001		<0.001	

Table 6.6 Long-run BHARs to offspring by glamour spinoff status

This table compares size- and book-to-market adjusted BHARs for sub-samples of 142 offspring firms from January 1987 to December 2002. GLAMMTB = 1 when the MTBV of assets ratio of a parent's industry is lower than the median of all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of industries, = 0 otherwise. GLAMRET =1 when past-year stock return to a parent's industry is lower than the median of all industries while past-year stock returns to an offspring's industry is higher than the median of all industries, = 0 otherwise. GLAMHT = 1 when a non-high-tech parent spins off a high-tech offspring, = 0 otherwise. The mean is tested with the t-statistic adjusted for cross-sectional dependence following Mitchell and Stafford (2000). In parentheses are the t-statistics (mean) or Wilcoxon test z-statistics (median). All tests are based on two-tailed tests. [a], [b], [c] indicate the significance level at the 1%, 5% and 10%, respectively.

	Parent relative to offspring less glamorous (1)		**Parent relative to offspring same or more glamorous (2)**		**Group difference (1-2)**	
Interval	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
			Panel A: Dummy variable is GLAMMTB			
(0, +1 year)	-0.09	-0.22	0.15	0.05[c]	-0.24[b]	-0.27[a]
	(-0.82)	(-1.64)	(0.63)	(1.66)	(-2.13)	(-2.59)
(0, +2 year)	-0.26	-0.27[b]	0.39	0.22[a]	-0.65[a]	-0.49[a]
	(-1.37)	(-2.34)	(1.37)	(3.12)	(-3.52)	(-3.49)
(0, +3 year)	-0.37	-0.25[b]	0.47	0.28[a]	-0.83[a]	-0.53[a]
	(-1.41)	(-2.49)	(1.34)	(2.97)	(-3.79)	(-3.47)
No. of obs.	35		107			
			Panel B: Dummy variable is GLAMRET			
(0, +1 year)	-0.15	-0.22[c]	0.15	0.04	-0.30[a]	-0.26[b]
	(-0.97)	(-1.66)	(0.95)	(1.51)	(-2.80)	(-2.41)
(0, +2 year)	-0.39[a]	-0.33[a]	0.39	0.14[a]	-0.78[a]	-0.47[a]
	(-3.35)	(-3.01)	(1.37)	(3.29)	(-4.74)	(-4.10)
(0, +3 year)	-0.53[b]	-0.51[a]	0.47	0.26[a]	-1.00[a]	-0.77[a]
	(-2.21)	(-2.87)	(1.38)	(3.11)	(-4.63)	(-3.96)
No. of obs.	30		112			

Table 6.6 (continued)

	Parent relative to offspring less glamorous (1)		Parent relative to offspring same or more glamorous (2)		Group difference (1-2)	
Interval	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Panel C: Dummy variable is GLAMHT						
(0, +1 year)	-0.29[b]	-0.25[a]	0.17	0.10[b]	-0.46[a]	-0.35[a]
	(-2.01)	(-3.24)	(1.15)	(2.13)	(-4.70)	(-4.00)
(0, +2 year)	-0.27	-0.29[b]	0.34	0.11[a]	-0.60[a]	-0.40[a]
	(-0.96)	(-2.32)	(1.26)	(2.83)	(-2.93)	(-3.23)
(0, +3 year)	-0.45	-0.38[b]	0.42	0.26[a]	-0.87[a]	-0.64[a]
	(-1.63)	(-2.45)	(1.31)	(2.66)	(-3.79)	(-3.20)
No. of obs.	26		116			

Table 6.7 Regression of 3-year size- and book-to-market-adjusted BHARs to offspring on glamour spinoff proxies

Regression coefficients for 3-year size- and book-to-market adjusted BHARs for 142 offspring firms from January 1987 to December 2002. GLAMMTB = 1 when the MTBV of assets ratio of a parent's industry is lower than the median of all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of industries, = 0 otherwise. GLAMRET =1 when past-year stock return to the a parent's industry is lower than the median of all industries while past-year stock returns to an offspring's industry is higher than the median of all industries, = 0 otherwise. GLAMHT = 1 when a non-high-tech parent spins off a high-tech offspring, = 0 otherwise. FOCUS = 1 when parent and offspring operate in different industries at the two-digit SIC level, = 0 otherwise. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. RELSIZ = market value of an offspring (market values of all offspring when multiple subsidiaries are spun off) relative to the sum of the market values of the parent and (all) offspring on the spinoff completion date. ANTIDIR = index of the effectiveness of a country's legal system to protect shareholder rights (La Porta et al., 1998). HOTTIME = 1 when a spinoff is announced between 1996 and 2001, = 0 otherwise. White heteroskedasticity-adjusted t-statistics are in parentheses. [a], [b] indicates the 1% and 5% significance level, respectively.

Variable	Model 1		Model 2		Model 3	
Intercept	1.19	(1.64)	1.15	(1.62)	1.03	(1.45)
GLAMMTB	-0.79[a]	(-3.25)				
GLAMRET			-0.90[a]	(-4.14)		
GLAMHT					-0.76[a]	(-3.43)
FOCUS	-0.31	(-0.93)	-0.32	(-0.98)	-0.43	(-1.36)
INFASYM	-8.28	(-1.24)	-7.00	(-1.03)	-0.21	(-0.03)
RELSIZ	-0.32	(-0.66)	-0.10	(-0.21)	0.01	(0.03)
ANTIDIR	0.004	(0.05)	-0.02	(-0.19)	-0.01	(-0.14)
HOTTIME	-0.30	(-0.65)	-0.26	(-0.59)	-0.33	(-0.70)
No. of Obs.	142		142		142	
Adjusted R^2	0.05		0.06		0.03	
F statistic	2.18		2.44		1.81	
Sig. level	0.05		0.03		0.10	

Table 6.8 Robustness regression of long-run performance of offspring on glamour spinoff proxies

Regression coefficients for long-run performance of 142 offspring firms from January 1987 to December 2002. GLAMMTB = 1 when the MTBV of assets ratio of a parent's industry is lower than the median of all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of industries, = 0 otherwise. GLAMRET =1 when past-year stock return to the a parent's industry is lower than the median of all industries while past-year stock returns to an offspring's industry is higher than the median of all industries, = 0 otherwise. GLAMHT = 1 when a non-high-tech parent spins off a high-tech offspring, = 0 otherwise. FOCUS = 1 when parent and offspring operate in different industries at the two-digit SIC level, = 0 otherwise. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. RELSIZ = market value of an offspring (market values of all offspring when multiple subsidiaries are spun off) relative to the sum of the market values of the parent and (all) offspring on the spinoff completion date. ANTIDIR = index of the effectiveness of a country's legal system to protect shareholder rights (La Porta et al., 1998). HOTTIME = 1 when a spinoff is announced between 1996 and 2001, = 0 otherwise. Panel A reports the regression results of 3-year industry- and size-adjusted BHARs to all offspring firms on glamour spinoff proxies. Panel B (C) reports the regression results of 3-year industry median-adjusted ROAs (industry- and size-adjusted ROAs) of all offspring firms on glamour spinoff proxies. Panel D (E) reports the regression results of 3-year size- and book-to-market-adjusted BHARs (industry- and size-adjusted BHARs) to UK offspring firms on glamour spinoff proxies. Panel F (G) reports the regression results of 3-year industry median-adjusted ROAs (industry- and size-adjusted ROAs) of UK offspring firms on glamour spinoff proxies. Control variables for regressions in Panels A, B, and C are FOCUS, INFASYM, RELSIZ, ANTIDIR and HOTTIME while those for regressions in Panel D, E, F and G are FOCUS, INFASYM, RELSIZ and HOTTIME. Coefficients for control variables are suppressed to save space. Coefficients for control variables are generally insignificant at conventional levels except those for INFASYM and RELSIZ. Coefficient for INFASYM is significantly negative in models 4, 5, 6, 10, 11, 16, 17, and 18. Coefficient for RELSIZ is significantly positive in models 4, 5, and 6. White heteroskedasticity-adjusted t-statistics are in parentheses. [a], [b], [c] indicates the 1%, 5%, and 10% significance level, respectively.

Model	**GLAMMTB**		**GLAMRET**		**GLAMHT**		**Adj. R^2**	**No. of Obs.**
Panel A: Regression of 3-year industry- and size-adjusted BHARs to all offspring								
Model 1	-0.68[a]	(-2.69)					0.04	142
Model 2			-0.98[a]	(-4.69)			0.07	142
Model 3					-0.21	(-0.83)	0.01	142
Panel B: Regression of 3-year industry median-adjusted ROAs to all offspring								
Model 4	-0.09[b]	(-2.57)					0.25	140
Model 5			-0.05	(-1.09)			0.23	140
Model 6					-0.16[a]	(-2.74)	0.28	140

Table 6.8 (continued)

Panel C: Regression of 3-year industry- and size-adjusted ROAs to all offspring								
Model 7	-0.05[c]	(-1.69)					0.16	137
Model 8			-0.02	(-0.03)			0.15	137
Model 9					-0.16[a]	(-2.91)	0.20	137
Panel D: Regression of 3-year size- and book-to-market-adjusted BHARs to UK offspring								
Model 10	-0.88[a]	(-3.64)					0.15	67
Model 11			-0.65[a]	(-2.43)			0.08	67
Model 12					-0.43[c]	(-1.66)	0.05	67
Panel E: Regression of 3-year industry- and size-adjusted BHARs to UK offspring								
Model 13	-0.99[a]	(-3.04)					0.12	67
Model 14			-1.08[a]	(-3.78)			0.12	67
Model 15					-0.16	(-0.37)	0.02	67
Panel F: Regression of 3-year industry median-adjusted ROAs to UK offspring								
Model 16	-0.16[b]	(-2.55)					0.34	67
Model 17			-0.03	(-0.42)			0.28	67
Model 18					-0.28[a]	(-3.17)	0.41	67
Panel G: Regression of 3-year industry- and size-adjusted ROAs to UK offspring								
Model 19	-0.10[c]	(-1.76)					0.22	67
Model 20			0.01	(0.14)			0.21	67
Model 21					-0.27[a]	(-2.83)	0.29	67

Table 6.9 Robustness regression of spinoff performance for sub-sample without high-tech spinoffs in the late 1990s

Regression coefficients for wealth effects of completed spinoffs from January 1987 to December 2005, excluding high-tech spinoffs in the late 1990s. GLAMMTB = 1 when the MTBV of assets ratio of a parent's industry is lower than the median of all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of industries, = 0 otherwise. GLAMRET =1 when past-year stock return to the parent's industry is lower than the median of all industries while past-year stock returns to an offspring's industry is higher than the median of all industries, = 0 otherwise. GLAM = 1 when either GLAMMTB =1 or GLAMRET = 1, = 0 otherwise. FOCUS = 1 when parent and offspring operate in different industries at the two-digit SIC level, = 0 otherwise. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. GROWTH = parent's MTBV of assets ratio at the end of month prior to spinoff announcement date. ROA = parent's EBITDA divided by its total assets. RELSIZ = market value of an offspring (market values of all offspring when multiple subsidiaries are spun off) relative to the sum of the market values of the parent and (all) offspring on the spinoff completion date. ANTIDIR = index of the effectiveness of a country's legal system to protect shareholder rights (La Porta et al., 1998). HOTTIME = 1 when a spinoff is announced between 1996 and 2001, = 0 otherwise. White heteroskedasticity-adjusted t-statistics are in parentheses. [a], [b], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Panel A: Dependent variable is stock returns						
Variable	**3-day (-1, +1) CARs to parents**		**3-year size- and book-to-market-adjusted BHARs to offspring**		**3-year industry- and size-adjusted BHARs to offspring**	
Intercept	-0.96	(-0.38)	1.11	(1.46)	1.21[b]	(1.72)
GLAM	2.74[c]	(1.66)	-0.94[a]	(-3.51)	-1.05[a]	(-3.53)
FOCUS	1.71	(1.31)	-0.04	(-0.13)	0.14	(0.42)
INFASYM	-50.89	(-0.72)	3.46	(0.29)	-3.35	(-0.28)
GROWTH	-0.17	(-0.80)				
ROA	-1.53	(-0.30)				
RELSIZ	7.84[b]	(1.99)	-0.33	(-0.60)	-1.11[c]	(-1.91)
ANTIDIR	0.44	(1.04)	-0.06	(-0.62)	-0.001	(-0.01)
HOTTIME	0.39	(0.30)	-0.19	(-0.43)	-0.40	(-0.95)
No. of Obs.	139		123		123	
Adjusted R^2	0.05		0.04		0.07	
F statistic	1.85		1.79		2.57	
Sig. level	0.07		0.11		0.03	

Table 6.9 (continued)

Panel B: Dependent variable is accounting returns				
Variable	**3-year industry median-adjusted ROAs to offspring**		**3-year industry- and size-adjusted ROAs to offspring**	
Intercept	-0.03	(-0.54)	-0.09	(-1.53)
GLAM	-0.06[b]	(-2.13)	-0.02	(-0.81)
FOCUS	0.02	(0.46)	-0.02	(-0.48)
INFASYM	-3.45[b]	(-1.98)	0.22	(0.18)
RELSIZ	0.15[b]	(2.30)	0.14[c]	(1.95)
ANTIDIR	0.01	(1.25)	0.02[b]	(1.99)
HOTTIME	0.05	(1.26)	0.02	(0.77)
No. of Obs.	123		120	
Adjusted R^2	0.08		0.03	
F statistic	2.86		1.65	
Sig. level	0.01		0.14	

Table 6.10 Regression of 3-year size- and book-to-market-adjusted BHARs to parents on glamour spinoff proxies

Regression coefficients for 3-year size- and book-to-market adjusted BHARs for 129 parent firms from January 1987 to December 2002. GLAMMTB = 1 when the MTBV of assets ratio of a parent's industry is lower than the median of all industries while the MTBV of assets ratio of an offspring's industry is higher than the median of industries, = 0 otherwise. GLAMRET =1 when past-year stock return to the a parent's industry is lower than the median of all industries while past-year stock returns to an offspring's industry is higher than the median of all industries, = 0 otherwise. GLAMHT = 1 when a non-high-tech parent spins off a high-tech offspring, = 0 otherwise. FOCUS = 1 when parent and offspring operate in different industries at the two-digit SIC level, = 0 otherwise. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. GROWTH = parent's MTBV of assets ratio at the end of month prior to spinoff announcement date. ROA = parent's EBITDA divided by its total assets. RELSIZ = market value of an offspring (market values of all offspring when multiple subsidiaries are spun off) relative to the sum of the market values of the parent and (all) offspring on the spinoff completion date. ANTIDIR = index of the effectiveness of a country's legal system to protect shareholder rights (La Porta et al., 1998). HOTTIME = 1 when a spinoff is announced between 1996 and 2001, = 0 otherwise. White heteroskedasticity-adjusted t-statistics are in parentheses. None of the coefficients are significant at conventional levels.

Variable	**Model 1**		**Model 2**		**Model 3**	
Intercept	-0.03	(-0.08)	-0.02	(-0.06)	-0.06	(-0.13)
GLAMMTB	-0.36	(-1.16)				
GLAMRET			-0.17	(-0.59)		
GLAMHT					-0.07	(-0.27)
FOCUS	0.30	(1.16)	0.23	(0.93)	0.19	(0.84)
INFASYM	-12.89	(-1.51)	-11.69	(-1.47)	-10.99	(-1.61)
GROWTH	-0.01	(-0.40)	-0.01	(-0.36)	-0.01	(-0.37)
ROA	-1.02	(-1.14)	-0.96	(-1.06)	-0.88	(-1.00)
RELSIZ	0.15	(0.28)	0.18	(0.33)	0.18	(0.30)
ANTIDIR	0.04	(0.45)	0.04	(0.38)	0.04	(0.41)
HOTTIME	0.18	(0.72)	0.15	(0.61)	0.14	(0.59)
No. of Obs.	129		129		129	
Adjusted R^2	-0.03		-0.04		-0.04	
F statistic	0.54		0.39		0.36	
Sig. level	0.82		0.93		0.94	

Appendix 6.1 Classification of High-tech Spinoffs

To classify whether a non-high-tech parent spins off a high-tech offspring, I use three different classification approaches to identify the high-tech status of parent and subsidiary firm. First, I rely on the spinoff transaction details reported in SDC M&A database to classify spinoffs of a high-tech subsidiary. SDC sometimes reports the high-tech status of divested subsidiary and divesting parent. Earlier studies have used the SDC definition to classify high-tech acquisitions (e.g. Kohers and Kohers, 2001; Gao and Sudarsanam, 2005). When the offspring industry is classified as a high-tech industry while the parent industry is not according to the SDC definition of high-tech industry, I classify such spinoff as a high-tech spinoff.

Second, I use four-digit standard industry classification (SIC) codes to classify the high-tech subsidiary and non-high-tech parent. The classification scheme follows the high-tech industry classification approach of Kasznik and Lev (1995), with minor adjustments, in a study examining disclosure quality. They define communications industries as regulated industries rather than high-tech industries to examine the disclosure quality difference between regulated industries and non-regulated industries. As communications industries are classified as high-tech industries in SDC, I include the SIC codes of communications industries in the high-tech SIC code list. I collect SIC codes for subsidiary and parent firms from Worldscope and Thomson Research. The SIC codes for high-tech industries with a brief description are as follows:

Drugs: 2830-2836
Computers: 3570-3577
Electronics: 3600-3699
Communications: 4811-4899
Computer-related services: 7370-7379
Research and development: 8730-8734

When the offspring industry is classified as a high-tech industry while the parent industry is not according to the above high-tech SIC code list, I classify such a spinoff as a high-tech spinoff.

Third, I identify the high-tech status of parent and subsidiary firm based on the press reports of spinoff transaction. For each spinoff in my sample, I search the newspaper database, Factiva, to obtain news reports about the operational details of the parent and subsidiary firm. When the subsidiary is featured in the Press as one operating in the high-tech industry or in the internet-based business while the parent is not, I define such a spinoff as a high-tech spinoff where a non-high-tech parent is divesting a high-tech subsidiary. This approach has helped us identify some spinoffs of high-tech businesses which would be defined as spinoffs of non-high-tech businesses following the first two classification methods. For example, Culver Holdings PLC, a British insurance broker company, announced the spinoff of World Travel Holdings in December 1999. The former two classification approaches define World Travel Holdings as a non-high-tech travel agency firm. However, World Travel Holdings was actually a leading internet-based travel service firm in the UK. This feature was highlighted in the press reports about the spinoff. For example, the press quoted the comments of Chairman of Culver, Richard Read, on the spinoff as follows:

> "Our plans for the development and subsequent spin-off of worldtraveldirect.com are, I believe, another example of Culver seeking to generate value for my shareholders … I have assembled a strong Board to take the worldtraveldirect.com business forward and with the important acquisitions of US based travel portal, powerflyer.com, and IML, adding on-line access to one of the UK's largest databases of negotiated airfares, worldtraveldirect.com is very well placed in this exciting growth market." (‘CULVER: Announcement of finance raising and demerger’, M2 Presswire, December 29th, 1999)

Another example is the spinoff of CDB Web Tech Investments by an Italian real estate firm, AEDES, in 2000. Although CDB Web Tech Investments was classified as an investment holding firm using the former two approaches, it was actually focusing on the investments on the high-tech industry and such specialisation was also indicated in the news reports about the spinoff. The original statement of AEDES on this spinoff was quoted in the Press as follows:

"The new company will make financial investments directly or through venture capital funds, private equity funds and technology hedge funds, in mainly American companies operating in the Internet, telecommunications and technology sector." ('Aedes spins off new high-tech investment unit', Reuters News, November 5th, 1999)

When the offspring industry is classified as a high-tech industry while the parent industry is not according to the press report, I classify such a spinoff as a high-tech spinoff.

High-tech spinoffs of my sample includes all high-tech spinoffs identified by any of these three classification approaches and the final list is given below.

Table 6A1 The list of European high-tech spinoffs between January 1987 and December 2005

AnnDate	EffDate	Parent Firm	Subsidiary Firm	Nation
22-Nov-88	8-Dec-88	SALTIRE	AMSTRAD	UK
30-Jul-92	28-May-93	IMPERIAL CHM.INDS.	ASTRAZENECA	UK
16-Oct-95	24-Nov-95	BURFORD HDG.	CHORION	UK
14-Dec-95	14-May-96	HAFSLUND	NYCOMED	NW
29-Dec-95	14-May-96	KINNEVIK IND.	TELE2	SD
13-Mar-96	30-May-96	J&W	BFE BENIMA FERATOR ENGR.	SD
22-Mar-96	16-Apr-96	HEATH (CE)	REBUS GROUP	UK
22-Oct-97	18-May-98	GETINGE	LIFCO	SD
04-Jun-98	24-Jul-98	BTG	TOROTRAK	UK
01-Feb-99	1-Oct-99	ASPO GROUP	ASPOCOMP GROUP	FN
25-Feb-99	27-Oct-99	COLRUYT	DOLMEN COMPUTERS	BG
10-Aug-99	29-Oct-99	ALUSUISSE	LONZA GROUP	SW
01-Nov-99	11-Jan-00	UNIVERSE GROUP	RETAIL DECISIONS	UK
05-Nov-99	17-Mar-00	AEDES	CDB WEB TECH	IT
23-Dec-99	19-Sep-00	CULVER HOLDINGS	WORLD TRAVEL HOLDINGS	UK
05-Jan-00	30-Mar-00	IMS GROUP	TEAMTBLK MEDIA	UK
22-Feb-00	6-Apr-00	FISH	QUADRANET	UK
09-Mar-00	1-Nov-00	FINVEST	EQ HOLDING	FN
09-Mar-00	1-Nov-00	FINVEST	EVOX RIFA GROUP	FN
18-Apr-00	18-Aug-00	MODERN TIMES GP.MTG	METRO INTL.SDB	SD
01-Sep-00	13-Nov-00	BARCO NEW	BARCONET	BG
05-Oct-00	2-Apr-01	KYRO	TECNOMEN CORP.	FN
22-Nov-00	5-Feb-01	L GARDNER GP.	NOBLE INVESTMENTS (UK)	UK
24-Nov-00	11-Dec-00	PARK ROW GROUP	ILX GROUP	UK
04-Jan-01	25-Feb-02	PILAT TECH.INTL. (ISE)	PILAT MEDIA GLOBAL	UK
06-Feb-01	3-Sep-01	BERGMAN & BEVING	LAGERCRANTZ	SD
29-Oct-03	17-Mar-04	TOUCH GROUP	MONEYBOX	UK

Note: Countries are coded as follows: BG for Belgium, FN for Finland, IT for Italy, NW for Norway, SD for Sweden, SW for Switzerland, and UK for United Kingdom.

Chapter 7 Corporate Governance and Spinoff Value Effects

7.1 Introduction

The literature review in Chapter 2 shows that shareholders benefit from corporate spinoffs. These gains are often attributable to a correction of value-destroying diversification and an increase in corporate focus (for related discussion see section 2.2). Although diversification may be the symptom that spinoffs are conducted to cure, in section 4.2.3 I argue that the root problem could be poor internal control mechanisms that allow managers to pursuer their own objectives prior to spinoffs. In this chapter, I investigate whether the gains from spinoffs reflect the mitigation of agency conflicts that lead to costly diversification or other suboptimal decisions. Specifically, I examine the ownership structure, board structure, capital structure, analyst coverage, product market competition, market for corporate control and the legal system, and relate these measures of internal and external controls to the shareholder gains from spinoffs.

Corporate spinoffs are large-scale restructurings with substantial re-organisation costs.[32] Hence the decision to spin off will only be made when firms can create significant value by reducing agency costs. Similarly, firms may not conduct spinoffs if the benefits of agency costs are less than the spinoff costs. Thus, the first governance-based hypothesis is given below:

H7: Spinoff parents have weaker corporate governance than non-spinoff control firms prior to the spinoff announcements.

Under the governance-based view, when the firm announces that it will spin off assets, its weak corporate governance signals the potential for large gains from removing negative synergies that arise from the prior mistaken strategy. Managers of firms with weak

[32] There are several sources of spinoff costs, including duplication of administrative functions in post-spinoff firms, maintaining separate accounting and finance staffs for post-spinoff parent and offspring, and re-establishing product market and shareholder relationship for offspring. The spinoff costs are non-trivial. For instance, Parrino (1997) demonstrates that these transaction costs and operating inefficiency of the 1993 Marriott spinoff result in a decline of the total value of the firm by at least US$40.7 million.

corporate governance would allow negative synergies to accumulate, thus creating the potential for large gains when changes are finally made. Allen et al. (1995) show a positive association between the announcement spinoffs and value losses from prior mistaken acquisitions of the subsequently spun-off assets. Therefore, I offer the second governance-based hypothesis below:

H8: Spinoff parents with weak corporate governance earn higher abnormal stock returns during the spinoff announcement period than those with strong corporate governance.

The corporate governance literature discussed in section 4.2.3 has shown that shareholder value enhancing decisions are more likely to be enacted when the firm has a strong corporate governance structure. Conversely, a firm with weak corporate governance is likely to make a sub-optimal spinoff decision even a spinoff is generally value enhancing. Parrino (1997) analyses the 1993 Marriott spinoff and finds that Marriott's controlling family shareholder conducts the spinoff to maintain its control over the firm even though the spinoff results in a substantial loss in the total value of the firm.[33] Therefore, the relationship between spinoff announcement effects and the strength of corporate governance structure may be positive. In other words, manages of firms with strong corporate governance are more likely to conduct spinoffs to maximise shareholder value than managers of firms with weak corporate governance.

Although there is no clear-cut relation between spinoff announcement gains and the strength of corporate governance of pre-spinoff parents, the governance-based view predicts a positive association between the long-run spinoff performance and an improvement in corporate governance of post-spinoff firms. When post-spinoff firms improve internal corporate governance structure voluntarily or due to discipline imposed by external control mechanism, the agency problems of post-spinoff firms will be

[33] Parrino (1997) argues that the Marriott family benefits from the value-destroying spinoff because it reduced the likelihood that the Marriott family would lose control of the entire firm. Marriott substantially increases the leverage of the parent, which has limited growth options compared with offspring. Thus, Marriott keep control of the high-growth offspring and can aggressively pursue growth opportunities in offspring' businesses without risking dilution of its ownership position.

mitigated more significantly and hence the performance of post-spinoff firms will be enhanced. Thus, the third prediction of the governance-based view is offered below:

H9: Post-spinoff firms with an improvement in corporate governance have better long-run performance than those without an enhancement in corporate governance.

The rest of the chapter proceeds as follows. The variable construction and empirical models are discussed in Section 7.2. The association between the magnitude of agency problems of spinoff parents and the spinoff decision is investigated in Section 7.3. Section 7.4 analyses the relationship between the short-run market reaction to spinoff announcements and the strength of governance structure of spinoff parents. Section 7.5 explores whether the changes of corporate governance structure following spinoffs determine the long-run spinoff performance. Section 7.6 compares the spinoff performance between family firms and non-family firms. Section 7.7 offers conclusions.

7.2 Variable Construction and Test Methodology

This section sets out the variable construction and the empirical models to test the above-mentioned governance-based hypotheses.

7.2.1 Sample Characteristics

This chapter analyses a sample of European spinoffs. The sample selection procedure is the same as that introduced in section 5.2. Table 7.1 reports the descriptive statistics of operating characteristics of sample firms involved in spinoffs. The sample firms' characteristics considered include market capitalisation (MV), market-to-book value of assets (MTBV), return on assets (ROA), leverage ratio (LEV), segment number (SEGNO), and the proportion of assets divested (DIVSIZ).

[Insert Table 7.1 about here, see page 170]

The definitions of these characteristics are given as follows. MV is the market value of equity at the month end prior to the spinoff announcement for the pre-spinoff parent or at the spinoff completion date for both post-spinoff parent and offspring. MV is denoted in millions of 2005 US dollars. MTBV is measured as the market value of equity plus book value of preferred stocks and book value of debt divided by the sum of book values of equity, preferred stocks and debt following Faccio et al. (2006). ROA is the earnings before interest, tax, depreciation, and amortisation divided by the book value of total assets in the beginning of the year. LEV is total debt divided by total assets. SEGNO is the number of business segments. DIVSIZ is the total assets of offspring divided by the sum of total assets of post-spinoff parent and offspring. The accounting data are taken from the latest available annual reports prior to the spinoff announcement for the pre-spinoff parent and from the first available annual reports following the spinoff completion for both the post-spinoff parent and offspring.

The descriptive statistics of characteristics are reported in Table 7.1 as follows. Panel A gives the data of all pre-spinoff parents. Panel B reports the data for all post-spinoff parents. The data for all offspring are presented in Panel C. I also split sample firms into two groups, firms involved with UK spinoffs and firms involved with non-UK spinoffs. The sample split is used because nearly half of spinoff transactions in my sample are taking place in the UK. There are 72 parents (76 subsidiaries) involved with UK spinoffs and 85 parents (94 subsidiaries) involved with non-UK spinoff. The descriptive statistics for UK pre-spinoff parents, UK post-spinoff parents and UK offspring are reported in Panels D, E, and F, respectively. The descriptive statistics for non-UK pre-spinoffs, non-UK post-spinoff parents and non-UK offspring are reported in Panels G, H, and I, respectively.

Table 7.2 reports the difference in characteristics between sub-samples of firms involved in spinoffs. First, I test the difference in characteristics between pre-spinoff parents and post-spinoff parents and the difference in characteristics between post-spinoff parents and offspring. The test results are reported in Panel A and Panel B. Then I do such tests for the UK sub-sample and the results are presented in Panel C and Panel D. Similarly, I conduct tests for the non-UK sub-sample and give the results in Panel E and Panel F.

Lastly I examine the difference in characteristics between UK pre-spinoff parents and non-UK pre-spinoff parents, the difference in characteristics between UK post-spinoff parents and non-UK post-spinoff parents, and the difference in characteristics between UK offspring and non-UK offspring. The tests results are shown in Panel G, Panel H, and Panel I. Since the sample firms' market capitalisations are not symmetrically distributed, I use the natural logarithm of market capitalisation to test the difference in market capitalisations between sub-samples.

[Insert Table 7.2 about here, see page 172]

Since my sample is not large, I mainly discuss the test results for the median difference between sub-samples in order to avoid biased statistical inferences. Panels A - C in Table 7.1 indicate that European spinoff firms are large firms in terms of market capitalisation. The average market value for European spinoff parents is US$ 5,326 million while the median market value is only US$ 1,117 million. The substantial difference between the mean market capitalisation and the median market capitalisation suggests that my sample includes a few very large spinoff parents. Similarly, there is a significant difference in MTBV between pre-spinoff parents and post-spinoff parents. The standard deviation of MTBV for the pre-spinoff parent sample is also quite big. A further examination shows that this is due to some technology firms with very MTBV in the sample.[34] The proportion of assets divested by parents through spinoffs is nontrivial. On average, about 32% of the total assets of pre-spinoff parents are spun off. This evidence suggests that European spinoffs are very large-scale corporate restructurings.

There is some evidence that post-spinoff parents are valued more highly than pre-spinoff parents, as indicated in Panel A of Table 7.2. The median MTBV for the post-spinoff parents is 1.75 while the median MTBV for the pre-spinoff parents is 1.40, where the median difference of 0.11 is significant at the 5% level (z-statistic = 2.03). The MTBV for post-spinoff parents is generally higher than that for offspring. The median MTBV for

[34] For instance, IMS Group Plc, an integrated telephony service provider, announced the spinoff Teamtalk in January 2000. The MTBV ratio of IMS Group PLC was 8.09 prior to the spinoff announcement.

post-spinoff parents is 1.75 while the median MTBV for offspring is 1.36. Panel B of Table 7.2 shows that the median difference of MTBV between post-spinoff parents and offspring is statistically significant at the 10% level (z statistic = 1.86). However, the accounting performance measured by ROA for post-spinoff parents is similar to that for offspring. The mean (median) ROA for the post-spinoff parents is 0.11 (0.12) while the mean (median) ROA for the offspring is 0.11 (0.10). The difference in ROA between post-spinoff parents and offspring is statistically insignificant.

As shown in Panels B and C of Table 7.1, the mean (median) leverage ratio of post-spinoff parents is 0.27 (0.24) and the mean leverage ratio of offspring is 0.30 (0.24). Both the mean and median differences in leverage ratios between post-spinoff parents and offspring are insignificant, as indicated in Panel B of Table 7.2. Panel B of Table 7.2 further demonstrates that usually one business segment is divested through a spinoff. The median difference in segment number between pre-spinoff parents and post-spinoff parents is 1, which is significant at the 1% level (z-statistic = 3.22). Post-spinoff parents generally have a more complex organisational structure than offspring since the median difference in segment number between post-spinoff parents and offspring is 1 and statistically significant at the 1% level (z-statistic = 2.63).

Based on the above analysis, parents in my sample seem to divest subsidiaries with poor growth prospectus rather than divest underperforming subsidiaries. There is an insignificant change in the leverage ratio between pre-spinoff parents and post-spinoff parents. In addition, the leverage ratios for post-spinoff parents and offspring are comparable. Therefore, parents in my sample do not appear to transfer wealth from debtholders to shareholders since there is no asymmetric re-allocation of debts across post-spinoff firms. A final impression is that European spinoffs are refocusing transactions since the mean (median) number of business segments for spinoff parents drops from 3.77 (4.00) to 3.13 (3.00) following spinoffs.

Panels D- F of Table 7.1 and Panels C-D of Table 7.2 indicate that the data pattern of UK sub-sample is consistent with that of the whole sample. Again, results in Panels G-I of

Table 7.1 and Panels E-F of Table 7.2 show that the conclusions in the preceding paragraph based on the whole sample are generally applicable to the non-UK sub-sample.

In Panels G-I of Table 7.2, I examine the difference in characteristics between firms in the UK sub-sample and those in the non-UK sub-sample. Several conclusions can be drawn based on the results in Table 7.2. First, non-UK parents are generally larger and have a more complex organisational structure than UK parents. The median difference in market capitalisation between UK and non-UK pre-spinoff parents is statistically significant (z-statistic = -1.78). The median difference in segment number between UK and non-UK pre-spinoff parents is significant at the 10% level (z-statistic = -2.97). Second, UK pre-spinoff parents have slightly better operating performance than non-UK pre-spinoff parents as the difference in ROA is 0.02 and significant at the 10% level (z-statistic = 1.77). The proportion of divested assets of UK spinoffs is significant larger than that of non-UK spinoffs since the median difference in DIVSIZ is highly significant (z-statistic = 2.97).

The results also show that UK post-spinoff parents have higher market valuation and are more focused than non-UK post-spinoff parents. The median difference in MTBV between UK post-spinoff parents and non-UK post-spinoff parents is 1.01, which is significant at the 1% level (z-statistic = 4.62). The median difference in SEGNO between UK post-spinoff parents and non-UK post-spinoff parents is -1, which is also significant at the 1% level (z-statistic = -3.70). Similar conclusions can be drawn for UK offspring and non-UK offspring.

7.2.2 Empirical Design

Hypothesis H7 states that the agency problems of spinoff parents are more severe than non-spinoff control firms. In order to test this hypothesis, I need a sample of non-spinoff control firms. To select a control firm for a spinoff parent, I first identify a sample of firms that operate in the same 2-digit SIC industry as the spinoff parent and are not involved in a spinoff in the three-year period prior to the parent's spinoff announcement.

From these non-spinoff industry peers, I identify the control firm as the firm whose market capitalisation is closest to that of the spinoff parent prior to the spinoff announcement.

I measure the magnitude of agency conflicts based on the strength of a firm's corporate governance system. Extant literature has argued that corporate governance can mitigate the agency costs and improve firm values (Denis and McConnell, 2003; Fama and Jensen, 1983; Jensen, 1993; Jensen and Meckling, 1976; Shleifer and Vishny, 1997). Following this argument, there should be a negative association between the extent of agency conflicts for a firm and the strength of the firm's corporate governance system. Hence I define firms with high agency costs as those with a weak corporate governance structure.

There are different types of corporate governance mechanisms available for owners to monitor controllers, including corporate board, executive share ownership, executive compensation, large shareholders, lenders, financial analysts, takeover markets, product market competition, and the legal system (for general review articles, see Becht, Bolton and Roell, 2002; Denis and McConnell, 2003; Gillan, 2006; Shleifer and Vishny, 1997). For testing H7, the corporate governance mechanisms considered include corporate board, director ownership, institutional blockholders, lenders, and financial analysts. I do not consider executive compensation because I do not have quality data for sample firms' executive compensation[35] and the inference based on the poor data might be biased. I do not consider takeover markets, product markets and the legal system because these mechanisms are identical for both pre-spinoff parents and non-spinoff control firms. Table 7.3 gives the definitions of corporate governance variables used in this Chapter.

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[35] I collected the executive compensation data from sample firms' annual reports which are downloaded from Thomson research. Because many continental European sample firms do not have English version annual reports for the sample period, I compiled the executive compensation data based on the word matching between these firms' non-English-version reports and their subsequent English-version reports. Further, many sample firms' annual reports only report the average exercise price of stock options or the average expiry period of stock option. Thus, it is difficult for me to compute the exact amount of stock-based compensation for sample firms. I then use the average value for the compensation calculation. Results based on my executive compensation data indicate that the level of executive compensation is not related to the spinoff value effects.

[Insert Table 7.3 about here, see page 174]

The strength of board monitoring is measured with the board independence. Fama and Jensen (1983) argue that independent directors can monitor the management more effectively. I measure the board independence, BODIND, as the ratio of independent directors on the board. The assumption is that the monitoring strength increases with the ratio of independent directors on the board. There are two different board systems for our sample firms, a single-tier or unitary board system and a two-tier or binary board system. I focus on the board when a sample firm is of a unitary board system and the supervisory board when a sample firm is of a binary board system. I examine the independence of the supervisory board only because by definition the management board in a two-tier board system consists of exclusively executives and the supervisory board exercises the monitoring function.

The board member data are from annual reports, supplemented by the data from press news searched through Factiva. For both spinoff parent and non-spinoff control firms, their board member data are taken from the last annual report prior to the spinoff announcement date. Following Anderson and Reeb (2003), I use a three-tier categorization of board members: independent directors, affiliate directors and insider directors. Directors employed by the firm, retired from the firm, or who are immediate family members of the controlling family shareholders are insider directors. Immediate family board members are identified when a board director has the same last name as the controlling family shareholder. Affiliate directors are directors with potential or existing business relationships with the firm but are not full-time employees. Consultants, lawyers, financiers, and investment bankers are examples of affiliate directors. Independent directors are individuals whose only business relationship to the firm is their directorship. A cautionary note should be made. Because this board classification is based on my own assessment and the limited information sources which I have access to, the classification results inevitably contain personal biases.

Board ownership, BODOWN, is an important mechanism to align the incentives of directors and shareholders (Morck et al., 1988; McConnell and Servaes, 1990). I collect the board ownership data from annual reports and Worldscope. Similarly, I focus on the board when a sample firm is of a unitary board system and the supervisory board when a sample firm is of a binary board system. The rationale of this variable is the incentive of a firm's board members to monitor the manager increases with their equity ownership in the firm.

Large shareholders have interests and expertise in monitoring self-interested managers (Shleifer and Vishny, 1986). McConnell and Servaes (1990) find a positive association between firm performance and the level of institutional ownership. Therefore, I use the equity ownership of a firm's institutional blockholders, INSTOWN, to measure the monitoring strength of institutional blockholders. An institutional blockholder is defined as one holding more than 3% of the total number of outstanding shares of the sample firm and having no affiliation with the controlling family shareholders.[36] The rationale for this variable is that the incentive of institutional blockholders to monitor managers is higher when their equity ownership is larger. The institutional equity ownership data are taken from annual reports. When the annual report does not disclose substantial ownership data above the 3% level, I search press news in Factiva about ownership data of the sample firm during the spinoff period to obtain the desired data.

Debt has an agency monitoring role (Jensen, 1986). Lasfer, Sudarsanam and Taffler (1996) document evidence on the positive impact of lender monitoring on the market reaction to asset sales. I measure the monitoring strength of lenders, LEV, as the total debt divided by the total assets. The rationale for this variable is the incentive of debtholders to monitor a firm increases with the stake of debtholders on the firm.

Security analysts are an important information intermediary between investors and firms.

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[36] The UK sample firms report the substantial equity interests at the 3% level. Continental European firms report the equity ownership at different levels. In general, the equity holding disclosure for most continental European sample firms is somewhat better than that for UK sample firms. For example, Swedish sample firms disclose the equity holding for the largest ten shareholders and the disclosure level is often at a level of lower than 1%.

Chung and Jo (1996) and Doukas, Kim and Pantzalis (2004) find that analyst following exerts a significant and positive impact on a firms' market value. I measure the strength of analyst monitoring for a firm, ACOV, as the number of following analysts. The assumption is that the monitoring strength of analysts increases with the number of analysts. The analyst data is supplied by the Institutional Brokers Estimate System (*IBES*).

Hypothesis H8 proposes a cross-sectional negative relationship between the strength of corporate governance of pre-spinoff parents and spinoff announcement returns. The spinoff announcement effects are measured as the cumulative abnormal returns (CARs) during the three-day announcement period. The computation of CARs is based on the market model and the computation procedure is introduced in section 5.3.

To test H8, I examine the following corporate governance mechanisms of pre-spinoff parents: director ownership, institutional blockholders, lenders, financial analysts, takeover markets, product markets, and the legal system. BODIND is not considered here because there are two different types of board systems in the sample and a cross-sectional test based on BODIND will give meaningless results.

The monitoring strength of takeover markets, INDACQ, is measured as the number of industry peers acquired in the spinoff parent's two-digit SIC industry over the three-year period prior to the spinoff announcement. I use this proxy to capture the intensity of mergers and acquisitions in the parent's industry in the recent period. The rationale for this variable is that a firm's managers face higher takeover pressure and will work harder to avoid potential takeovers when the industry takeover activity is more intensive. Industry acquisition activities more than three years before the spinoff announcement may be irrelevant to the spinoff decision. Another reason for me to use the three-year window is due to the data limitation. The SDC M&A database have the detailed continental European acquisition data from 1984. Since my sample period starts from 1987, a selection of a longer window will result in a removal of some sample observations. As my sample is not large, the loss of sample observations will result in a lower explanatory power of my empirical tests.

Managers have to work hard to enhance firm performance when the industry competition is intensive (Hermalin, 1992). A recent theoretical paper by De Bettignies and Baggs (2006) demonstrates that product market competition directly lowers the shareholders' marginal cost of inducing managerial efforts. I use the industry Herfindahl index, INDCOMP, to measure the monitoring strength of product markets. The Herfindahl Index is obtained by squaring the market-share of all firms in the two-digit SIC industry of the pre-spinoff parent, and then summing those squares. The rationale of this variable is that the managerial efforts to maximise shareholder wealth will increase with the intensity of product market competition. Since INDCOMP measures the extent of industry ownership concentration, there should be a negative association between the product market monitoring and INDCOMP.

I use the anti-director index introduced in Chapter 6, ANTIDIR, to measure the effectiveness of a country's legal system to protect shareholder rights and control potential managerial opportunism, which is proposed in La Porta et al. (1998). This anti-director index ranges from zero to six, where the lower score refers to a weak protection of shareholder rights. There is a growing literature arguing that the country-level corporate governance system is an important corporate governance mechanism to mitigate agency costs (e.g. see Denis and McConnell 2003; La Porta, Lopez-de-Silanes, Shleifer and Vishny 2000). The assumption is that managers in a country with strong shareholder protection are more likely to make decisions to benefit shareholders than those in a country with weak shareholder protection.

So far I consider seven corporate governance variables for testing H8, i.e. BODOWN, INSTOWN, LEV, ACOV, INDACQ, INDCOMP, and ANTIDIR. Because the analyst coverage varies substantially across sample firms, I use the natural logarithm of analyst coverage to normalise this variable. Specifically, the analyst coverage is measured as Log(1+ACOV).[37] These variables are positively associated with the strength of a firm's corresponding governance mechanism. According to H8, the spinoff announcement

[37] I use Log (1+ACOV) rather than Log (ACOV) because some sample firms have no analyst following.

returns should be negatively associated with the corporate governance strength variables except for INDCOMP. For INDCOMP, the relationship should be positive since INDCOMP measures the degree of industry concentration.

In addition, I consider the family ownership variable, FAMILY, to indicate the monitoring impact of controlling family shareholders on the spinoff value effects. I define a firm as a family firm when the firm's largest shareholder is a family shareholder and the family equity holding is more than 10% of the firm's equity. The variable, FAMILY, is a dummy variable that equals one when a firm is a family firm, and equals zero otherwise. Owning 10% of a firm's equity is usually sufficient for a large shareholder to effectively control the firm's operation. The same definition has been used in Faccio and Lang (2002). The family shareholder and its equity stake are identified with a firm's latest annual report prior to the spinoff announcement date. When the annual report does not disclose the exact ownership of a controlling family shareholder, I search press news in Factiva for ownership data about the sample firm to obtain the desired data.

There are conflicting views on the value impact of family shareholders (Burkart et al., 2003). On the one hand, family control implies the costs of a concentrated ownership. I call this argument as the family expropriation hypothesis. First, family shareholders may use their control to extract private benefits at the expense of other shareholders. Second, families may be excessively interested in maintaining control over the company event in the presence of potentially value-enhancing acquirers. Third, family shareholders may appoint their children or relatives as key employees (e.g. CEO) even though they may not qualify. On the other hand, families have incentives to monitor the management and the presence of family shareholders is argued to positively affect the firm performance (Anderson and Reed, 2003; Villalonga and Amit, 2006). I refer this argument to the family monitoring hypothesis. The family expropriation hypothesis predicts a positive impact of controlling family shareholders on the spinoff performance while the family monitoring hypothesis conjectures a negative relationship between the presence of controlling family shareholders and the spinoff value creation.[38] Thus, there is no clear cut prediction with regard to the impact of family shareholders on the spinoff value effects.

Therefore, I present the following empirical model to test H8.

$$Spinoff\ Announcement\, Effects = f(BODOWN, INSTOWN, LEV, \\ Log(1 + ACOV), INDACQ, INDCOMP, ANTIDIR, FAMILY, Control\, Variables) \quad (7.1)$$

where the control variables are FOCUS, INFASYM, GROWTH, ROA, RELSIZ and HOTTIME. The variable construction for control variables is given in section 6.3.3. The definitions of control variables are also given in Table 7.3.

Hypothesis H9 predicts a positive relationship between the improvement in corporate governance in post-spinoff firms and the long-run spinoff performance. The long-run spinoff performance is measured as the long-run stock returns and the long-run accounting returns for post-spinoff firms. Specifically, I use the three-year size- and book-to-market-adjusted buy-and-hold returns (size/BEME BHARs) and the three-year industry- and size-adjusted buy-and-hold returns (ind/size BHARs). I do not consider the calendar time regression and calendar time portfolio approaches because of the limited sample size. These calendar-time based approaches require a construction of event-firm portfolios on a monthly basis and the number of event firms for each calendar month should be more than 10 in order to draw unbiased conclusions (Mitchell and Stafford, 2000). Since my sample is quite small and the sample period is quite long, it is unfeasible for me to use these calendar-time based approaches to compare the performance between sub-groups of sample firms. I do not consider the long-run accounting performance of post-spinoff firms because I will examine the impact of takeover bids on the long-run spinoff performance for testing H9 and the accounting performance of post-spinoff firms acquired within the three-year post-spinoff period will not be publicly available. Thus, by focusing on the accounting performance, I either lose the observation if the firm is

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[38] The signalling effect makes the prediction event more difficult. Under the family expropriation hypothesis, there may be a positive association between the presence of a controlling family shareholder and the spinoff announcement returns because family controlled spinoff firms have allowed large negative synergies to accumulate and the stock markets expect large gains from spinoffs.

acquired in the first year following the spinoff or under-estimate the accounting performance if the firm acquired in the first year following the spinoff has not reported the full-year accounting performance.

To test H9, I need to measure the changes of corporate governance around spinoffs. I measure the change in board independence, ΔBODIND, as the difference in BODIND between post-spinoff parent (offspring) and pre-spinoff parent. I measure the change in board ownership, ΔBODOWN, as the difference in BODIND between post-spinoff parent(offspring) and pre-spinoff parent. The change in institutional blockholder ownership, ΔINSTOWN, is defined as the difference in INSTOWN between post-spinoff parent(offspring) and pre-spinoff parent. The change in the analyst coverage, ΔLog(1+ACOV), is calculated as the difference in Log(1+ACOV) between post-spinoff parent(offspring) and pre-spinoff parent. I do not consider changes in the leverage ratio because the debt distribution across post-spinoff firms is often influenced by debtholders and the reallocation decision is more related to the asset structure of post-spinoff firms than to the governance-based consideration (Dittmar, 2004; Mehrotra, Mikkelson and Partch, 2003).

I do not consider changes in INDACQ, INDCOMP, and ANTIDIR because there is no reason to expect these external corporate governance mechanisms to change following spinoffs. Therefore, I use the INDCOMP measured at the spinoff completion date and ANTIDIR for post-spinoff firms to indicate the strength of external governance mechanisms for post-spinoff firms. These two variables should be positively related to the long-run performance of post-spinoff firms.

I consider two additional variables for testing H9. The first variable is the takeover bid for post-spinoff firms, ACQBID, which equals one when the post-spinoff firm receives a takeover bid in the three-year post-spinoff period, and equals zero otherwise. The presence of takeover bid indicates the presence of an effective market control and is positively related to the long-run spinoff performance (Chemmanur and Yan, 2004). The second variable is the family ownership variable, FAMILY. Since the short-run market reaction to spinoffs of family firms can be explained by both the family monitoring hypothesis and the family expropriation hypothesis, the long-run spinoff performance of family firms thus provides more unambiguous evidence for the value impact of controlling family shareholders. If the long-run spinoff performance of family firms is significantly lower than that of non-family firms, it will suggest that family firms make suboptimal spinoff decisions, which will be consistent with the prediction of the family expropriation hypothesis. Conversely, if the long-run spinoff performance of family firms is significantly higher than that of non-family firms, it will suggest that family firms make better spinoff decisions, which will be consistent with the prediction of the family monitoring hypothesis.

To test H9, I use the following empirical model:

$$\begin{aligned} &Long-run\,Spinoff\ Performance = f(\Delta BODIND, \Delta BODOWN, \Delta INSTOWN, \\ &\Delta Log(1+ACOV), ACQBID, INDCOMP, ANTIDIR, FAMILY, Control\,Variables) \end{aligned} \tag{7.2}$$

where the control variables are FOCUS, INFASYM, GROWTH, ROA, RELSIZ and HOTTIME for post-spinoff parents and the control variables are FOCUS, INFASYM, RELSIZ and HOTTIME for offspring. The variable construction for control variables is given in section 6.3.3. I do not use GROWTH and ROA for offspring because these two variables are operating characteristics of pre-spinoff parents and are irrelevant to the performance of offspring. The definitions of control variables are given in Table 6.1.

Table 7.4 reports the summary statistics of explanatory variables used in subsequent empirical tests. Panel A of Table 7 reports the corporate governance data for pre-spinoff parents. The mean and median of BODIND for pre-spinoff parents are 0.40. However, since half sample firms are of binary board system, the board independence ratio for firms with a unitary board system will certainly be less than 0.40. Therefore, it suggests that pre-spinoff parents do not have a majority independent board. There is a substantial difference in BODOWN across pre-spinoff firms since the mean of BODOWN is 10.81 while the median of BODOWN is just 1.26. This implies that many pre-spinoff parents do not have significant board ownership. The mean INSTOWN for my pre-spinoff parent sample is 16.40 and the median is 10.01. It seems that INSTOWN does not differ substantially across sample firms. Since the spinoff parents are often large firms, the values of INSTOWN indicate that many institutional blockholders have equity holdings in spinoff parents. The leverage ratios of pre-spinoff parents have a mean of 0.26 and a median of 0.24. Further, pre-spinoff parents have quite a few following analysts. The mean ACOV is 12.38 and the median is 9.00. Industry acquisition activity and product market competition seems to be reasonable. The median INDACQ is 0.10, indicating that about 10% of industry firms are acquired in the three-year period prior to the spinoff announcement. The median of INDCOMP is 0.24, implying that the pre-spinoff parent's industry is not highly concentrated and the industry product market competition is quite high. The anti-director ration has a mean value of 4.00 and a median value of 3.66. A final note about the corporate governance of pre-spinoff parents is that 34% of pre-spinoff parents are family firms. The significant proportion of family firms in the sample indicates that I should consider the impact of the existence of family firms in subsequent analysis.

Panels B - D of Table 7.4 suggest that the corporate governance structure of post-spinoff firms is generally similar as that of pre-spinoff firms. The differences in most corporate governance variables are insignificant at the 10% level. However, the difference in institutional ownership between post-spinoff firms and pre-spinoff firms is highly significant at the 1% level. This indicates that post-spinoff firms attract more institutional investors than pre-spinoff firms. Finally, the difference in the analyst coverage between offspring and pre-spinoff parents is negative and significant at the 1% level. This is not surprising since offspring are generally much smaller than pre-spinoff parents and will have less analyst following than pre-spinoff parents (Hong et al., 2000).

[Insert Table 7.4 about here, see page 175]

Table 7.5 reports the correlations across explanatory variables. Panel A reports the correlation across explanatory variables for pre-spinoff parents. Panel B reports the data for post-spinoff parents and panel C reports the data for offspring. Results show that there are significant correlations between several variables. For pre-spinoff parents, FAMILY is positively significantly related to BODOWN. This suggests that some controlling family members are likely to be board directors and thus the board ownership for family firms is high. The relationship between FAMILY and INSTOWN is -0.33, which is also significant at the 1% level. This indicates that institutional blockholders are less likely to invest in family firms than in non-family firms. Similarly, family firms attract fewer analysts than non-family firms since the correlation between FAMILY and Log(1+ACOV) is -0.28, which is significant at the 1% level. ANTIDIR is negatively associated with Log(1+ACOV) and with INDCOMP, where the correlation is significant at the 1% level. Explanatory variables for post-spinoff parents and those for offspring generally are not highly correlated.

[Insert Table 7.5 about here, see page 177]

7.3 Corporate Governance and the Spinoff Decision

The corporate governance structure of spinoff parents and non-spinoff control firms are reported in Table 7.6. The ratio of independent directors on board is significantly lower for spinoff parents than for non-spinoff control firms. The mean (median) board independence ratio for spinoff firms is 0.40 (0.40) while the mean (median) board independence ratio for control firms is 0.51 (0.50). Both the mean difference and the median difference are significant at 1% level (t-statistic = -7.37 and z-statistic = -6.59). Fama and Jensen (1983) argue that corporate board should consist of a majority of independent directors. Therefore, the independent director on board ratio of 0.40 for pre-spinoff parents suggests that the board monitoring in pre-spinoff parents may be weak.

[Insert Table 7.6 about here, see page 179]

The board ownership of pre-spinoff parents is comparable with that of control firms. Both the mean difference and the median difference are insignificant at the 10% level. However, the mean (median) difference in institutional ownership between parents and control firms is -10.26 (-12.09), which is statistically significant at the 1% level (t-statistic = -4.80 and z-statistic = -4.50). The substantial difference in institutional ownership between parents and control firms indicates that the institutional monitoring in parents is generally weak.

The leverage ratio of parents is generally similar to that of control firms. The difference is statistically insignificant at the 10% level. Similarly, the number of analysts following parents is comparable with that for control firms. The data indicate that the analyst coverage for parents is slightly higher than that for control firms since the median difference in analyst coverage is positive and significant at the 10% level.

Collectively, the results in Table 7.6 show that pre-spinoff parents generally have weaker corporate governance than non-spinoff control firms. The mean board independence ratio for pre-spinoff parents is less than that for non-spinoff control firms by 11%. Similarly, the mean institutional ownership for pre-spinoff parents is less than that for non-spinoff control firms by 10%. Thus, my evidence supports H7 that the corporate governance structure of pre-spinoff parents is generally weaker than that of non-spinoff control firms. This evidence further implies that agency conflicts in pre-spinoff parents will be more severe than those in non-spinoff control firms.

I also run a logit regression to analyse the impact of corporate governance structure on the spinoff decision. The dependent variable is a dummy variable that equals one when a firm is spinoff parent and equals zero when a firm is non-spinoff control firm. The corporate governance variables used include BODOWN, INSTOWN, LEV, Log(1+ACOV), and FAMILY. I do not consider BODIND because my sample includes firms with a unitary board system and those with a binary board system. Thus BODIND is not directly comparable when firms are of different board systems. Further, I do not consider INDACQ, INDCOMP, and ANTIDIR because these variables are of the same value for spinoff parents and non-spinoff control firms. There are four control variables in the logit regression. The first control variable is the number of business segments (SEGNO), which captures a firm's organisational complexity. The second control variable is residual stock return (INFASYM), which measures a firm's information asymmetry level. The third control variable is MTBV of assets ration, which measures a firm's growth potential. The fourth control variable is cash-flow return on assets, which estimates a firm's liquidity constraints. These control variables have been used in Berger and Ofek (1999) and Krishnaswami and Subramaniam (1999) to explain the refocusing and spinoff decision, respectively. Regression results are reported in Table 7.7.

[Insert Table 7.7 about here, see page 181]

As results in Table 7.7 indicate, the strength of corporate governance is negatively related to the spinoff likelihood. The coefficients for INSTOWN, and Log(1+ACOV) are negative and significant at the 1% level. The coefficient for BODOWN is also negative although insignificant. The coefficients for LEV and FAMILY are positive and significant at the 5% level. The positive coefficient for LEV may indicate that firms have to conduct spinoffs to seek external finance given that they cannot access additional bank debts due to the high leverage ratio. The positive coefficient for FAMILY is consistent with the family expropriation hypothesis that agency problems for family firms are more severe than those for non-family firms. Control variables SEGNO and ROA have predicted positive sign and are significant.

7.4 Corporate Governance and Spinoff Announcement Effects

To test hypotheses H8, I regress the three-day (-1, +1) CARs to spinoff parents on the corporate governance variables of pre-spinoff parents. The empirical model used is equation (7.1). The regression results are given in Table 7.8.

[Insert Table 7.8 about here, see page 182]

Although the empirical model has a reasonable explanatory power to explain spinoff announcement effects, none of corporate governance variables is significant at the 10% level. The only variables that are significant are FOCUS and RELSIZ. Therefore, I have no evidence to support H8. However, almost all corporate governance variables have a predicted negative sign in the regression, which is consistent with the argument of H8 that markets expect more value creation from spinoffs of firms with weak corporate governance and severe agency problems.

7.5 Corporate Governance and Long-run Spinoff Performance

To examine the relationship between the improvement in corporate governance following spinoffs and the long-run spinoff performance, I regress post-spinoff abnormal stock returns on these proxies for changes in corporate governance following spinoffs. The long-run returns to post-spinoff firms are measured at the three-year interval. The empirical model used is equation (7.2). The test results are provided in Table 7.9.

[Insert Table 7.9 about here, see page 183]

The first message conveyed from the regressions is that the increase of board independence in post-spinoff firms is significantly related to the long-run spinoff performance. The coefficient of ΔBODIND in model 1 is 3.18 in model 1, which is significant at the 5% level (t-statistic = 2.06). ΔBODIND is insignificant in model 2 but has a predicted positive sign in the regression. For both model 3 and model 4, ΔBODIND have a positive coefficient and is statistically significant at the 1% level.

The second impression from reading the regression results is that the market for corporate control is positively affecting the long-run spinoff performance. The coefficient for ACQBID is positive and significant across these four regression models. In addition, the magnitude of the impact of ACQBID is significant. Generally speaking, if a post-spinoff firm receives a takeover bid in the post-spinoff period, its long-run stock returns will increase by at least 56% (the lower bound of coefficients for ACQBID in these four models). Finally, the presence of a controlling family shareholder is negatively related to the long-run performance of post-spinoff parents. The coefficient for FAMILY is -0.44 in model 1, which is significant at the 5% level (t-statistic = -2.48). The coefficient for FAMILY is -0.67 in model 2, which is significant at the 1% level (t-statistic = -3.42). However, the presence of a controlling family shareholder is unrelated to the long-run performance of offspring.

Changes in other corporate governance mechanisms are generally positively related to the long-run spinoff performance although they are not significant at the conventional level. An interesting finding is that the long-run spinoff performance is negatively associated with the strength of legal system, which is contrary to the argument that managers in a country with strong shareholder protection are more likely to make shareholder-friendly decisions than those in a country with weak shareholder protection. However, a similar finding is documented in Veld and Veld-Merkoulova (2004), who also examine the long-run stock performance of European spinoffs. Thus, whether a legal system is effective in monitoring managerial behaviour is unclear from my evidence.

The explanatory powers of these four regression models are generally good except for model 4. The adjusted R-squared for models 1-3 range from 8% to 12% and these three models are significant at the 3% level. Taken together, I provide supporting evidence for H9 that an improvement in corporate governance is positively related to the long-run spinoff performance. In particular, the increased in board independence and the takeover threats have a positive and significant impact on the long-run performance of post-spinoff firms. However, I find that post-spinoff parent firms with a controlling family shareholder significantly underperform those without a controlling family shareholder in the long run. This evidence indicates that the family shareholders may conduct spinoffs for non-value-maximising reasons, which is consistent with the argument of the family expropriation hypothesis. I examine the spinoff rationale of family firms in the next section.

7.6 The Spinoff of Family Firms

In this section, I compare the spinoff performance between family firms and non-family firms. I also examine the changes of equity holding for the family shareholder around the spinoff. To facilitate the comparison, I select non-family firms with at least one blockholder and examine the changes in equity holding of these firms' largest shareholder around spinoffs. The comparison results are reported in Table 7.10.

[Insert Table 7.10 about here, see page 184]

Panel A in Table 7.10 examines the difference in spinoff announcement returns between family firms and non-family firms. The mean difference in the three-day CARs between family firms and non-family firms is 3.65%, which is significant at the 10% level (t-statistic = 1.93). The median difference in the three-day CARs between family firms and non-family firms is 1.27%, which is significant at the 5% level (z-statistic = 2.49). Thus, results indicate that family firms generally have better announcement effects than non-family firms. However, the overall outperformance of family firms during the announcement period may be temporary.

Panels B – C in Table 7.10 examine the long-run performance of family firms and non-family firms. In general, family firms underperform non-family firms. Post-spinoff parent firms controlled by family shareholders have significantly lower long-run abnormal returns than post-spinoff parent firms without a controlling family shareholder. The offspring controlled by family shareholders also underperform the offspring without a controlling family shareholder in the long run. Thus, the comparison results suggest that the initial positive market reaction to spinoffs of family firms may be unfounded. A tempting explanation is that family shareholders make suboptimal spinoff decisions to maximise their personal interests.

I further explore this issue by inspecting the equity holding changes around spinoffs. Results in Panel D show that family shareholders generally reduce their share holdings in post-spinoff firms although the reduction is statistically insignificant. However, the largest shareholders in non-family firms generally increase their equity holdings in post-spinoff firms. In particular, those non-family blockholders significantly increase their shareholding in post-spinoff parents (t-statistic = 2.37 and z-statistic = 2.69).

Allen (2001) argues that managers have private information of the prospect of post-spinoff firms and their stock trading behaviour predicts the long-run spinoff performance. My evidence is consistent with his finding. It seems that family shareholders have private information of the long-run spinoff performance and they reduce the equity holdings in post-spinoff firms. It is worthwhile noting that those family shareholders still retain substantial control over the post-spinoff firms although they reduce the equity holdings. Thus, I conclude that family shareholders may use the spinoff to reshuffle their wealth portfolios by selling shares of post-spinoff parents, where the sales proceeds may be used in other firms (projects) under their control. Such portfolio-rebalance consideration for a spinoff does not aim to maximise shareholder value of post-spinoff firms and hence the long-run spinoff performance will be relatively poor.

7.7 Summary

This chapter proposes and tests the governance-based model for spinoff value effects, which argues that spinoffs create shareholder value by enhancing corporate governance and mitigating agency costs in post-spinoff firms. From a sample of 170 European spinoffs completed during the period from 1987 to 2005, I present some evidence supporting the governance-based hypotheses. First, I find that spinoff parents are likely to have weaker corporate governance than non-spinoff control firms. Therefore, agency problems in spinoff parents seem to be more severe than those in non-spinoff control firms. Second, I find the strength of corporate governance for spinoff parents is generally negatively associated with the spinoff announcement period abnormal returns although the relationship is insignificant. Third, I find that post-spinoff firms with increased board independence or facing takeover threats earn significantly higher long-run abnormal returns than those without such activities. Finally, I document evidence that family-controlled parent firms have significantly lower performance than non-family-controlled parent firms. Therefore, my evidence indicates that the gains from spinoffs reflect the lessening of agency conflicts.

However, my conclusions may be limited to the sample of European firms involved in spinoffs. The conclusion that corporate refocusing gains stem from reduction of agency costs may not hold for a large sample of cross-sectional firms. Further, the board independence variable used in this study may be biased because it is based on my subjective assessment of director profiles. Future research examining this issue with better data source to measure the strength of corporate governance will be valuable.

Table 7.1 Descriptive statistics for characteristics of sample firms involved in spinoffs

This table reports descriptive statistics of characteristics of sample firms. Panel A reports the data for all pre-spinoff parents. Panel B reports the data for all post-spinoff parents. Panel C reports the data for all offspring. Panel D reports the data for UK pre-spinoff parents. Panel E reports the data for UK post-spinoff parents. Panel F reports the data for UK offspring. Panel G reports the data for non-UK pre-spinoff parents. Panel G reports the data for non-UK post-spinoff parents. Panel H reports the data for non-UK offspring. MV is the market value of equity at the month end prior to the spinoff announcement for the pre-spinoff parent or at the spinoff completion date for both post-spinoff parent and offspring. MV is denoted in millions of 2005 US dollars. MTBV is measured as the market value of equity plus book value of preferred stocks and book value of debt divided by the sum of book values of equity, preferred stocks and debt following Faccio et al. (2006). ROA is the earnings before interest, tax, depreciation, and amortisation divided by the book value of total assets in the beginning of the year. LEV is total debt divided by total assets. SEGNO is the number of business segments. DIVSIZ is the total assets of offspring divided by the sum of total assets of post-spinoff parent and offspring. The accounting data are taken from the latest available annual reports prior to the spinoff announcement for the pre-spinoff parent and from the first available annual reports following the spinoff completion for both the post-spinoff parent and offspring.

Variable	Mean	Median	Std. Dev.	No. of Obs.
Panel A: All pre-spinoff parents				
MV	5326.00	1116.96	12006.76	157
MTBV	2.84	1.40	6.28	157
ROA	0.10	0.11	0.13	157
LEV	0.26	0.24	0.18	157
SEGNO	3.77	4.00	1.82	157
DIVSIZ	0.32	0.28	0.21	157
Panel B: All post-spinoff parents				
MV	5267.21	873.82	12283.25	157
MTBV	2.63	1.75	3.42	157
ROA	0.11	0.12	0.15	157
LEV	0.27	0.24	0.19	157
SEGNO	3.13	3.00	1.67	157
Panel C: All offspring				
MV	1220.82	291.95	2588.64	170
MTBV	2.26	1.36	2.25	170
ROA	0.11	0.10	0.22	157
LEV	0.30	0.24	0.28	170
SEGNO	2.35	2.00	1.43	170

Table 7.1 (continued)

Variable	Mean	Median	Std. Dev.	No. of Obs.
Panel D: UK pre-spinoff parents				
MV	4708.21	759.28	9840.63	72
MTBV	4.11	1.67	9.00	72
ROA	0.11	0.13	0.14	72
LEV	0.24	0.22	0.18	72
SEGNO	3.31	3.00	1.69	72
DIVSIZ	0.36	0.33	0.19	72
Panel E: UK post-spinoff parents				
MV	4104.34	790.87	7873.75	72
MTBV	3.61	2.29	4.66	72
ROA	0.11	0.12	0.19	72
LEV	0.25	0.23	0.17	72
SEGNO	2.61	2.00	1.52	72
Panel F: UK offspring				
MV	1330.03	227.80	2948.34	76
MTBV	2.69	1.82	2.48	76
ROA	0.13	0.11	0.28	73
LEV	0.29	0.22	0.34	76
SEGNO	1.99	1.00	1.31	76
Panel G: Non-UK pre-spinoff parents				
MV	5849.30	1294.56	13611.57	85
MTBV	1.75	1.23	1.52	85
ROA	0.09	0.10	0.12	85
LEV	0.28	0.27	0.18	85
SEGNO	4.16	4.00	1.84	85
DIVSIZ	0.28	0.21	0.22	85
Panel H: Non-UK post-spinoff parents				
MV	6252.22	884.25	15021.98	85
MTBV	1.80	1.28	1.34	85
ROA	0.12	0.13	0.11	85
LEV	0.28	0.25	0.21	85
SEGNO	3.56	3.00	1.68	85
Panel I: Non-UK offspring				
MV	1132.52	298.27	2269.20	94
MTBV	1.92	1.23	1.99	94
ROA	0.09	0.09	0.14	84
LEV	0.31	0.25	0.22	94
SEGNO	2.64	3.00	1.47	94

Table 7.2 Difference in characteristics between sub-samples of firms involved in spinoffs

This table reports the difference in characteristics between sub-samples of firms involved in spinoffs. Panel A reports the difference in characteristics between all pre-spinoff parents and all post-spinoff parents. Panel B reports the difference in characteristics between all post-spinoff parents and all offspring. Panel C (E) reports the difference in characteristics between (non-) UK pre-spinoff parents and (non-) UK post-spinoff parents. Panel D (F) reports the difference in characteristics between (non-) UK post-spinoff parents and (non-) UK offspring. Panel G reports the difference in characteristics between UK pre-spinoff parents and non-UK pre-spinoff parents. Panel H (I) reports the difference in characteristics between UK post-spinoff parents (UK offspring) and non-UK post-spinoff parents (non-UK offspring). LogMV = the natural logarithm of market value of equity at the month end prior to the spinoff announcement for the pre-spinoff parent or at the spinoff completion date for both post-spinoff parent and offspring. MV is denoted in millions of 2005 US dollars. MTBV = the market value of equity plus book value of preferred stocks and book value of debt divided by the sum of book values of equity, preferred stocks and debt following Faccio et al. (2006). ROA = the earnings before interest, tax, depreciation, and amortisation divided by the book value of total assets in the beginning of the year. LEV= total debt divided by total assets. SEGNO =the number of business segments. DIVSIZ = the total assets of offspring divided by the sum of total assets of post-spinoff parent and offspring. The accounting data are taken from the latest available annual reports prior to the spinoff announcement for the pre-spinoff parent and from the first available annual reports following the spinoff completion for post-spinoff firm. The mean difference is tested with t-statistic and the median difference is tested with Wilcoxon z statistic. [a], [b,], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	Mean Diff.	t-statistic	Median Diff.	z-statistic
Panel A: All pre-spinoff parents vs. all post-spinoff parents				
LogMV	0.05	0.42	-0.00	-0.45
MTBV	0.20	0.36	-0.11[b]	-2.03
ROA	-0.01	-0.84	-0.01	-1.24
LEV	-0.00	-0.10	0.00	0.01
SEGNO	0.64[a]	3.26	1.00[a]	3.22
Panel B: All post-spinoff parents vs. all offspring				
LogMV	0.51[a]	4.87	0.48[a]	4.57
MTBV	0.37	1.14	0.38[c]	1.86
ROA	0.01	0.27	0.02	1.30
LEV	-0.03	-1.21	0.00	0.31
SEGNO	0.78[a]	4.52	1.00[a]	4.38
Panel C: UK pre-spinoff parents vs. UK post-spinoff parents				
MV	0.00	0.03	-0.02	0.00
MTBV	0.50	0.42	-0.61[b]	-2.58
ROA	0.00	-0.04	0.01	0.14
LEV	-0.01	-0.24	-0.01	-0.46
SEGNO	0.69[b]	2.59	1.00[a]	2.63
Panel D: UK post-spinoff parents vs. UK offspring				
LogMV	0.46[a]	2.67	0.54[a]	2.65
MTBV	0.92	1.49	0.47[c]	1.74
ROA	-0.02	-0.55	0.01	0.19
LEV	-0.04	-0.80	0.01	0.50
SEGNO	0.62[a]	2.67	1.00[a]	2.85

Table 7.2 (Continued)

Variable	Mean Diff.	t-statistic	Median Diff.	z-statistic
Panel E: Non-UK pre-spinoff parents vs. non-UK post-spinoff parents				
LogMV	0.08	0.62	0.17	0.63
MTBV	-0.05	-0.22	-0.05	-0.42
ROA	-0.02	-1.33	-0.02	-1.64
LEV	0.00	0.07	0.02	0.36
SEGNO	0.60[b]	2.22	1.00[b]	2.08
Panel F: Non-UK post-spinoff parents vs. non-UK offspring				
LogMV	0.56	4.36	0.47[a]	3.84
MTBV	-0.12	-0.47	0.05	0.64
ROA	0.03	1.53	0.03[c]	1.68
LEV	-0.03	-0.90	0.00	0.77
SEGNO	0.93[a]	3.91	0.00[a]	3.61
Panel G: UK pre-spinoff parents vs. non-UK pre-spinoff parents				
LogMV	-0.33[b]	-2.08	-0.23[c]	-1.78
MTBV	2.36[b]	2.20	0.44[a]	2.75
ROA	0.01	0.59	0.02[c]	1.77
LEV	-0.04	-1.33	-0.05	-1.46
SEGNO	-0.86[a]	-3.05	-1.00[a]	-2.97
DIVSIZ	0.08[b]	2.30	0.13[a]	2.97
Panel H: UK post-spinoff parents vs. non-UK post-spinoff parents				
LogMV	-0.26	-1.57	-0.05	-1.19
MTBV	1.81[a]	3.19	1.01[a]	4.62
ROA	-0.01	-0.40	-0.01	-0.22
LEV	-0.03	-0.97	-0.02	-0.67
SEGNO	-0.95[a]	-3.74	-1.00[a]	-3.70
Panel I: UK offspring vs. non-UK offspring				
LogMV	-0.15	-1.05	-0.12	-0.97
MTBV	0.77[a]	2.20	0.58[a]	2.44
ROA	0.04	1.13	0.01	1.17
LEV	-0.02	-0.52	-0.03[c]	-1.89
SEGNO	-0.65[a]	-3.05	-2.00[a]	-3.10

Table 7.3 Definitions for explanatory variables

Variables	Definition
BODIND	The number of independent directors divided by the total number of directors, where independent directors are directors whose only business relationship with a firm is the directorship.
BODOWN	The percentage of equity ownership of board members in a firm.
INSTOWN	The percentage of equity ownership of institutional blockholders in a firm, where the blockholder is defined as a large shareholder holding more than 3% of equity in a firm.
LEV	The total debt divided by the total assets.
ACOV	The number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms.
INDACQ	The number of industry firms acquired in the two-digit SIC industry of a firm over the three-year period prior to the spinoff announcement.
INDCOMP	A firm's industry Herfindahl index, which is measured as the sum of squared market shares of all firms in the sample firm's two-digit SIC industry.
ANTIDIR	An index to measure the strength of a country's legal system to protect minority shareholders developed by La Porta et al. (1998), which ranges from zero to six, where the lower score refers to a weak protection of shareholder rights.
FAMILY	A dummy variable that equals one when a firm's large shareholder is a family shareholder and the family shareholder's equity holding is more than 10%.
ΔBODIND	The difference in BODIND between a post-spinoff firm and its pre-spinoff parent.
ΔBODOWN	The difference in BODOWN between a post-spinoff firm and its pre-spinoff parent.
ΔINSTOWN	The difference in INSTOWN between a post-spinoff firm and its pre-spinoff parent.
ΔLog(1+ACOV)	The difference in Log(1+ACOV) between a post-spinoff firm and its pre-spinoff parent.
ACQBID	A dummy variable that equals one when a post-spinoff firm receives a takeover bid over the three-year post-spinoff period, and equals zero otherwise.

Table 7.4 Summary descriptive statistics for explanatory variables

This table reports the summary descriptive statistics for explanatory variables. BODIND = the number of independent directors divided by the total number of directors, where independent directors are directors whose only business relationship with a firm is the directorship. BODOWN = the percentage of equity ownership of board members in a firm. INSTOWN = the percentage of equity ownership of institutional blockholders in a firm, where the blockholder is defined as a large shareholder holding more than 3% of equity in a firm. LEV = the total debt divided by the total assets. ACOV = the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. INDACQ = the number of industry firms acquired in the two-digit SIC industry of a firm over the three-year period prior to the spinoff announcement. INDCOMP = the sum of squared market shares of all firms in a firm's two-digit SIC industry. ANTIDIR = an index to measure the strength of a country's legal system to protect minority shareholders developed by La Porta et al. (1998). FAMILY = 1 when a firm's largest shareholder is a family shareholder and the family shareholder's equity holding is more than 10%, = 0 otherwise. ΔBODIND = the difference in BODIND between a post-spinoff firm and its pre-spinoff parent. ΔBODOWN = the difference in BODOWN between a post-spinoff firm and its pre-spinoff parent. ΔINSTOWN = the difference in INSTOWN between a post-spinoff firm and its pre-spinoff parent. ΔLog(1+ACOV) = the difference in Log(1+ACOV) between a post-spinoff firm and its pre-spinoff parent. ACQBID =1 when a post-spinoff firm receives a takeover bid over the three-year post-spinoff period, = 0 otherwise. In parentheses are the t-statistic (mean) or Wilcoxon test z-statistic (median). [a] indicates the 1% significance level.

Panel A: Pre-spinoff parents				
Variable	**Mean**	**Median**	**Std.dev.**	**No. of obs.**
BODIND	0.40	0.40	0.18	157
BODOWN	10.81	1.26	16.65	157
INSTOWN	16.40	10.01	17.68	157
LEV	0.26	0.24	0.18	157
ACOV	12.38	9.00	12.32	157
INDACQ	0.12	0.10	0.11	157
INDCOMP	0.33	0.24	0.28	157
ANTIDIR	3.66	4.00	1.51	157
FAMILY	0.34	0.00	0.48	157
Panel B: Post-spinoff parents				
Variable	**Mean**	**Median**	**Std.dev.**	**No. of obs.**
BODIND	0.40	0.40	0.19	157
BODOWN	11.10	1.24	17.11	157
INSTOWN	19.40	15.60	18.60	157
LEV	0.27	0.24	0.19	157
ACOV	11.83	7.00	12.22	157
INDACQ	0.12	0.12	0.11	157
INDCOMP	0.33	0.24	0.27	157
ANTIDIR	3.66	4.00	1.51	157
FAMILY	0.34	0.00	0.48	157

Table 7.4 (continued)

Panel C: Offspring				
Variable	**Mean**	**Median**	**Std.dev.**	**No. of obs.**
BODIND	0.42	0.40	0.20	170
BODOWN	10.66	0.74	17.41	170
INSTOWN	20.12	16.96	18.37	170
LEV	0.30	0.24	0.28	170
ACOV	5.54	2.00	7.17	170
INDACQ	0.13	0.11	0.13	170
INDCOMP	0.36	0.24	0.30	170
ANTIDIR	3.65	4.00	1.49	170
FAMILY	0.34	0.00	0.48	170

Panel D: Post-spinoff parents vs. pre-spinoff parents				
Variable	**Mean Diff.**	**Median Diff.**	**t-statistic**	**z-statistic**
BODIND	0.00	0.00	0.35	0.00
BODOWN	0.29	-0.02	0.30	-0.54
INSTOWN	3.00[a]	5.59[a]	3.50	3.61
LEV	0.00	0.00	0.10	0.14
ACOV	-0.55	-2.00	-1.15	-1.12
INDACQ	0.01	0.02	1.64	1.31
INDCOMP	0.00	0.00	-0.02	1.36

Panel E: Offspring vs. pre-spinoff parents				
Variable	**Mean Diff.**	**Median Diff.**	**t-statistic**	**z-statistic**
BODIND	0.01	0.00	0.80	-1.02
BODOWN	-0.06	-0.52	-0.05	-0.79
INSTOWN	3.43[a]	6.95[a]	2.80	3.40
LEV	0.04	0.00	1.80	-1.22
ACOV	-6.79[a]	-7.00[a]	-9.50	-8.86
INDACQ	0.02	0.01	1.41	1.45
INDCOMP	0.02	0.00	0.96	1.09

Table 7.5 Correlations across explanatory variables

This table presents the Pearson correlations across explanatory variables for firms involved in spinoffs. Panel A reports the correlations across explanatory variables for pre-spinoff parents. Panel B reports the correlations across explanatory variables for post-spinoff parents. Panel C reports the correlations across explanatory variables for offspring. BODIND = the number of independent directors divided by the total number of directors, where independent directors are directors whose only business relationship with a firm is the directorship. BODOWN = the percentage of equity ownership of board members in a firm. INSTOWN = the percentage of equity ownership of institutional blockholders in a firm, where the blockholder is defined as a large shareholder holding more than 3% of equity in a firm. LEV = the total debt divided by the total assets. ACOV is the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. INDACQ = the number of industry firms acquired in the two-digit SIC industry of a firm over the three-year period prior to the spinoff announcement. INDCOMP = the sum of squared market shares of all firms in a firm's two-digit SIC industry. ANTIDIR = an index to measure the strength of a country's legal system to protect minority shareholders developed by La Porta et al. (1998). FAMILY = 1 when a firm's largest shareholder is a family shareholder and the family shareholder's equity holding is more than 10%, = 0 otherwise. ΔBODIND = the difference in BODIND between a post-spinoff firm and its pre-spinoff parent. ΔBODOWN = the difference in BODOWN between a post-spinoff firm and its pre-spinoff parent. ΔINSTOWN = the difference in INSTOWN between a post-spinoff firm and its pre-spinoff parent. ΔLog(1+ACOV) = the difference in Log(1+ACOV) between a post-spinoff firm and its pre-spinoff parent. ACQBID =1 when a post-spinoff firm receives a takeover bid over the three-year post-spinoff period, = 0 otherwise. [a], [b], [c] indicates the significance level at 1%, 5% and 10% level, respectively.

Panel A: Pre-spinoff parents

	BODOWN	INSTOWN	LEV	Log(1+ACOV)	INDACQ	INDCOMP	ANTIDIR
INSTOWN	-0.29[a]						
LEV	-0.01	0.01					
Log(1+ACOV)	-0.41[a]	-0.01	0.04				
INDACQ	-0.03	-0.03	-0.05	-0.03			
INDCOMP	0.01	-0.07	-0.04	0.22[a]	-0.15[c]		
ANTIDIR	-0.18[b]	0.06	-0.03	-0.28[a]	0.11	-0.34[a]	
FAMILY	0.59[a]	-0.33[a]	0.08	-0.28[a]	0.03	-0.09	-0.14[c]

Panel B: Post-spinoff parents

	ΔBODIND	ΔBODOWN	ΔINSTOWN	ΔLog(1+ACOV)	ACQBID	INDCOMP	ANTIDIR
ΔBODOWN	-0.07						
ΔINSTOWN	0.06	-0.11					
ΔLog(1+ACOV)	0.03	0.00	0.08				
ACQBID	0.08	0.13	0.01	-0.24[a]			
INDCOMP	0.02	0.12	-0.08	0.01	-0.12		
ANTIDIR	0.05	0.06	0.17[b]	0.09	0.05	-0.33[a]	
FAMILY	-0.05	-0.17[b]	0.04	0.00	-0.18[b]	-0.11	-0.14

Table 7.5 (continued)

Panel C: Offspring							
	ΔBODIND	ΔBODOWN	ΔINSTOWN	ΔLog(1+ACOV)	ACQBID	INDCOMP	ANTIDIR
ΔBODOWN	-0.03						
ΔINSTOWN	0.00	-0.15[b]					
ΔLog(1+ACOV)	-0.00	-0.06	0.03				
ACQBID	-0.07	-0.00	0.19[b]	-0.22[a]			
INDCOMP	0.04	0.08	-0.18[b]	-0.11	-0.06		
ANTIDIR	0.11	0.08	0.06	0.18[b]	0.12	-0.30[a]	
FAMILY	-0.08	-0.12	0.04	0.03	-0.08	0.01	-0.11

Table 7.6 Corporate governance structure of spinoff parents and non-spinoff control firms

This table reports summary descriptive statistics of corporate governance structure for spinoff parents and non-spinoff control firms. BODIND = the number of independent directors divided by the total number of directors, where independent directors are directors whose only business relationship with a firm is the directorship. BODOWN = the percentage of equity ownership of board members in a firm. INSTOWN = the percentage of equity ownership of institutional blockholders in a firm, where the blockholder is defined as a large shareholder holding more than 3% of equity in a firm. LEV = the total debt divided by the total assets. ACOV = the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. For the difference in corporate governance variables between spinoff firms and control firms, t-statistic (mean) or Wilcoxon test z-statistic (median) is reported in parentheses in the columns of Group Difference (1-2). [a] indicates the 1% significance level.

	Spinoff firms (1)		**Control firms (2)**		**Group difference (1 -2)**	
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
BODIND	0.40	0.40	0.51	0.50	-0.11[a]	-0.10[a]
					(-7.37)	(-6.59)
BODOWN	10.81	1.26	9.95	0.47	0.86	0.79
					(0.58)	(-1.26)
INSTOWN	16.40	10.01	26.65	22.10	-10.26[a]	-12.09[a]
					(-4.80)	(-4.50)
LEV	0.26	0.24	0.24	0.22	0.02	0.02
					(1.13)	(-1.00)
ACOV	12.38	9.00	11.31	7.00	1.07	2.00[a]
					(1.37)	(1.79)

Table 7.7 Logit regression of spinoff likelihood on corporate governance proxies

Logit regression coefficients for spinoff likelihood for spinoff parents and non-spinoff control firms. Dependent variable is 1 when the firm is spinoff parent and is 0 when the firm is non-spinoff control firm. BODOWN = the percentage of equity ownership of board members in a firm. INSTOWN = the percentage of equity ownership of institutional blockholders in a firm, where the blockholder is defined as a large shareholder holding more than 3% of equity in a firm. LEV = the total debt divided by the total assets. ACOV = the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. FAMILY =1 when a firm's largest shareholder is a family shareholder and the family shareholder's equity holding is more than 10%, = 0 otherwise. SEGNO = number of business segments in the year preceding spinoff announcement date. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. GROWTH = MTBV of assets ratio at the end of month prior to spinoff announcement date. ROA = EBITDA divided by its total assets. [a], [b] indicates the significance at the 1% and 5%, respectively.

Variable	**Coeff.**	**Sig.**
Intercept	0.49	0.64
BODOWN	-0.01	0.54
INSTOWN	-0.06[a]	0.00
LEV	2.94[b]	0.04
Log(1+ACOV)	-11.39[a]	0.00
FAMILY	1.40[b]	0.05
SEGNO	0.72[a]	0.00
INFASYM	-4.16	0.79
GROWTH	0.10	0.38
ROA	2.99[b]	0.04
No. of obs.	157	
-2 Log Likelihood	114.95	
R^2 Cox Snell	0.64	
R^2 Nagelkerke	0.85	

Table 7.8 Regression of announcement period (-1, 1) CARs on the corporate governance structure of spinoff parents

Regression coefficients for announcement period (-1, 1) cumulative abnormal returns for the 157 completed spinoffs by 144 European companies from January 1987 to December 2005. BODOWN = the percentage of equity ownership of board members in a firm. INSTOWN = the percentage of equity ownership of institutional blockholders in a firm, where the blockholder is defined as a large shareholder holding more than 3% of equity in a firm. LEV = the total debt divided by the total assets. ACOV = the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. INDACQ = the number of industry firms acquired in the two-digit SIC industry of a firm over the three-year period prior to the spinoff announcement. INDCOMP= the sum of squared market shares of all firms in a firm's two-digit SIC industry. ANTIDIR = an index to measure the strength of a country's legal system to protect minority shareholders developed by La Porta et al. (1998). FAMILY =1 when a firm's largest shareholder is a family shareholder and the family shareholder's equity holding is more than 10%, = 0 otherwise. FOCUS = 1 when parent and offspring operate in different industries at the two-digit SIC level, = 0 otherwise. INFASYM = dispersion in market-adjusted daily stock returns to a parent in the 250-day trading period prior to the spinoff announcement. GROWTH = parent's MTBV of assets ratio at the end of month prior to spinoff announcement date. ROA = parent's EBITDA divided by its total assets. RELSIZ = market value of an offspring (market values of all offspring when multiple subsidiaries are spun off) relative to the sum of the market values of the parent and (all) offspring on the spinoff completion date. HOTTIME = 1 when a spinoff is announced between 1996 and 2001, = 0 otherwise. White heteroskedasticity-consistent t-statistic is reported in parentheses. [a], [b], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	**Coeff.**	**t-stat.**
Intercept	-6.23	(-1.16)
BODOWN	-0.03	(-0.46)
INSTOWN	-0.05	(-1.41)
LEV	0.43	(0.09)
Log(1+ACOV)	-0.77	(-0.46)
INDACQ	4.88	(0.64)
INDCOMP	0.22	(0.07)
ANTIDIR	-0.18	(-0.30)
FAMILY	1.35	(0.67)
FOCUS	4.23[a]	(3.15)
INFASYM	124.18	(1.43)
GROWTH	0.17	(1.03)
ROA	6.92	(1.10)
RELSIZ	13.80[a]	(3.19)
HOTTIME	2.00	(1.58)
No. of obs.	157	
Adjusted R^2	0.16	
F statistic	3.11	
Sig. level	<0.001	

Table 7.9 Regression of the long-run spinoff performance on the changes of corporate governance

Regression coefficients for the long-run spinoff performance on the changes of corporate governance around spinoffs. BODIND = the number of independent directors divided by the total number of directors, where independent directors are directors whose only business relationship with a firm is the directorship. ΔBODIND = the difference in BODIND between a post-spinoff firm and its pre-spinoff parent. BODOWN = the percentage of equity ownership of board members in a firm. ΔBODOWN = the difference in BODOWN between a post-spinoff firm and its pre-spinoff parent. INSTOWN = the percentage of equity ownership of institutional blockholders in a firm, where the blockholder is defined as a large shareholder holding more than 3% of equity in a firm. ΔINSTOWN = the difference in INSTOWN between a post-spinoff firm and its pre-spinoff parent. ACOV is the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. ΔLog(1+ACOV) = the difference in Log(1+ACOV) between a post-spinoff firm and its pre-spinoff parent. ACQBID =1 when a post-spinoff firm receives a takeover bid over the three-year post-spinoff period, = 0 otherwise. INDCOMP = the sum of squared market shares of all firms in a firm's two-digit SIC industry. ANTIDIR = an index to measure the strength of a country's legal system to protect minority shareholders developed by La Porta et al. (1998). FAMILY = 1 when a firm's largest shareholder is a family shareholder and the family shareholder's equity holding is more than 10%, = 0 otherwise. White heteroskedasticity-consistent t-statistic is reported in parentheses. [a], [b], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	Dep. Var. = 3-year size/BEME BHARs to parents (1)		Dep. Var. = 3-year ind/siz BHARs to parents (2)		Dep. Var. = 3-year size/BEME BHARs to offspring (3)		Dep. Var. = 3-year ind/siz BHARs to offspring (4)	
Intercept	0.33	(0.87)	0.33	(0.71)	1.08	(1.45)	1.09[c]	(1.97)
ΔBODIND	3.18[b]	(2.06)	2.26	(1.34)	2.09[a]	(3.84)	1.45[a]	(2.65)
ΔBODOWN	0.01	(0.83)	0.02	(1.28)	0.01	(1.27)	0.01	(1.35)
ΔINSTOWN	0.00	(0.56)	0.01	(0.83)	0.01	(1.44)	0.00	(0.52)
ΔLog(1+ACOV)	0.40	(1.08)	0.59	(1.43)	-0.26	(-0.72)	0.08	(0.26)
ACQBID	0.77[b]	(2.52)	0.67[b]	(2.01)	0.56[c]	(1.81)	0.65[b]	(1.99)
INDCOMP	-0.32	(-0.97)	-0.95[b]	(-1.99)	-0.19	(-0.48)	-0.09	(-0.21)
ANTIDIR	-0.08	(-1.12)	-0.09	(-1.10)	-0.10	(-0.98)	-0.07	(-0.84)
FAMILY	-0.44[b]	(-2.48)	-0.67[a]	(-3.42)	-0.20	(-0.67)	0.05	(0.16)
FOCUS	0.04	(0.24)	0.38[c]	(1.83)	-0.69[b]	(-2.22)	-0.44	(-1.45)
INFASYM	-4.63	(-0.75)	0.13	(0.02)	4.78	(0.59)	4.13	(0.47)
GROWTH	0.04[c]	(1.75)	0.04[b]	(2.56)				
ROA	-0.56	(-0.71)	-1.79[a]	(-2.63)				
RELSIZ	0.48	(0.91)	1.12[c]	(1.96)	0.07	(0.15)	-0.50	(-1.07)
HOTTIME	-0.11	(0.55)	-0.20	(-0.86)	-0.31	(-0.65)	-0.48	(-1.08)
No. of obs.	127		127		138		138	
Adjusted R^2	0.12		0.12		0.08		0.03	
F statistic	2.27		2.22		2.00		1.37	
Sig. level	0.01		0.01		0.03		0.19	

Table 7.10 Comparisons of performance and ownership structure between family and non-family firms

This table compares the long-run spinoff performance and equity ownership between family and non-family firms. Panel A reports the comparison for spinoff announcement effects. Panel B reports the comparison for long-run stock performance of post-spinoff parents. Panel C reports the comparison for long-run stock performance of offspring. Panel D reports the comparison for changes of equity ownership of a firm's largest shareholders around the spinoff. For the difference in variables between sub-groups, t-statistic (mean) or Wilcoxon test z-statistic (median) is reported in parentheses in the columns of Group Difference (1-2). [a], [b], [c] indicates the significance level at 1%, 5% and 10% level, respectively.

	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
Panel A: Spinoff announcement returns to pre-spinoff parents						
	Family firms (1)		**Non-family firms (2)**		**Group difference (1 -2)**	
3-day CARs	7.22	3.24	3.58	1.97	3.65[c]	1.27[b]
No. of obs.		54		103	(1.93)	(2.49)
Panel B: Long-run performance of post-spinoff parents						
	Family firms (1)		**Non-family firms (2)**		**Group difference (1 -2)**	
3-year size/BEME BHARs	-0.36	-0.27	0.20	0.02	-0.56[a]	-0.20[a]
No. of obs.		42		87	(-2.78)	(-2.61)
3-year ind/size BHARs	-0.33	-0.36	0.26	0.14	-0.59[a]	-0.50[a]
No. of obs.		42		87	(-2.62)	(-2.83)
Panel C: Long-run performance of offspring						
	Family firms (1)		**Non-family firms (2)**		**Group difference (1 -2)**	
3-year size/BEME BHARs	0.01	-0.12	0.38	0.32	-0.37	-0.44[b]
No. of obs.		46		96	(-1.26)	(-2.49)
3-year ind/size BHARs	0.05	0.00	0.27	0.24	-0.15	-0.23
No. of obs.		46		96	(-0.50)	(-1.25)
Panel D: Equity ownership of a firm's largest blockholder						
	Pre-spinoff (1)		**Post-spinoff (2)**		**Group difference (1 -2)**	
Family-controlled parents	28.46	25.05	27.53	21.82	0.93	3.23
No. of obs.		54		54	(0.78)	(0.23)
Non-family-controlled parents	19.63	13.30	22.31	18.30	-2.68[b]	-6.00[a]
No. of obs.		97		97	(-2.37)	(-2.69)
Family-controlled offspring	28.46	25.05	24.96	20.50	2.07	4.50
No. of obs.		54		54	(1.14)	(0.17)
Non-family controlled offspring	19.63	13.30	21.63	16.30	-1.53	-3.30
No. of obs.		109		109	(-1.27)	(-0.77)

Chapter 8 Information Asymmetry and Spinoff Value Effects

8.1 Introduction

Section 2.3.2 shows that there are mixed views about the informational benefits of a spinoff. Further, prior empirical studies have reported mixed evidence on the information asymmetry hypothesis. For example, Krishnaswami and Subramaniam (1999) find that the information asymmetry proxies such as analyst forecast errors are improved following a spinoff, while Huson and MacKinnon (2003) observe that the information asymmetry level significantly increases subsequent to a spinoff based on the market microstructure data such as the bid-ask spread.

The objective of this chapter is to re-examine the information asymmetry hypothesis with a sample of European spinoffs. The empirical investigation focuses on three main predictions of the information asymmetry hypothesis.

The first prediction is that a spinoff is conducted to mitigate information asymmetry. This argument has two implications. Since a spinoff is involved with high transaction costs (Parrino, 1997), the spinoff decision will only be made when the spinoff benefits exceed the costs. Under the information asymmetry hypothesis, the spinoff decision will only be made when the information transparency benefits of a spinoff will be sufficiently large. Consequently, firms that choose to spin off a subsidiary should have more severe information asymmetry problems than firms that have similar operating characteristics but do not spin off a subsidiary. Thus, I provide the following hypothesis:

H10: The level of information asymmetry of pre-spinoff parents is significantly higher than that of non-spinoff control firms.

To test this hypothesis, I use four different proxies to measure the level of information asymmetry based on the analyst forecast data as well as the market microstructure data. The use of different information asymmetry proxies ensures the robustness of test results. The control firm for a spinoff parent is an industry- and size-matching firm that is not involved in a spinoff.

If the information asymmetry hypothesis holds, a spinoff should increase the information transparency level for post-spinoff parent. In other words, post-spinoff parents should have less severe information asymmetry problems than pre-spinoff parents. Thus the following hypothesis is proposed:

H11: The level of information asymmetry of post-spinoff parents is significantly lower than that of pre-spinoff parents.

The second prediction of the information asymmetry hypothesis is that spinoff value gains stem from the reduction of information asymmetry problem for spinoff parents following spinoffs. Hence, the third information-based hypothesis is given as follows:

H12: The spinoff value effects are positively associated with the level of information asymmetry of pre-spinoff parents.

To test H12, I first regress the short run market reaction to spinoff announcements on the information asymmetry proxies. As the extant literature suggests that market may initially underreact to corporate news (e.g. Daniel et al., 2002), I then examine whether the mitigation of information asymmetry can explain the long-run performance of post-spinoff firms. Specifically, I test whether the level of information asymmetry for pre-spinoff parents is related to the long-run spinoff performance and whether the change of information asymmetry around a spinoff is related to the long-run spinoff performance.

The third prediction of the information asymmetry hypothesis is that the source of information problems stem from the organisational complexity of the spinoff firm. Nanda and Narayanan (1999) contend that diversified firms tend to have market undervaluation problems because investors only observe their aggregated cash flows rather than divisional cash flows. Gilson et al. (2001) propose that diversified firms have severe information asymmetry problems because analysts have difficulty in understanding different businesses and spinoffs have informational benefits because focused post-spinoff firms attract financial analysts. The fourth information-based hypothesis is hence offered below:

H13: The level of information asymmetry of post-spinoff parent firms is significantly lower than that of pre-spinoff parent firms when a spinoff reduces the organisational complexity of pre-spinoff parents.

To test H13, I identify two sub-samples of spinoff parents that are likely to have significant informational benefits from spinoffs. The first sub-sample of firms is spinoff parents that reduce the number of business segments following spinoffs. The second sub-sample of firms includes firms that spin off lowly related subsidiaries. The rationale for this examination is that a firm is more complex and more difficult for outsiders to value is the divisions are unrelated. After obtaining these two sub-samples, I examine the changes in information asymmetry proxies around a spinoff for these two sub-sample parents.

The rest of this chapter proceeds as follows. Section 8.2 describes the test methods for the information asymmetry hypothesis, including the variable construction and empirical models. Section 8.3 examines whether spinoff parents suffer from information asymmetry problems. Section 8.4 investigates the relationship between the information problems of spinoff parents and the spinoff value gains. Section 8.5 explores the informational benefits of spinoffs by analysing sub-samples of spinoff parents that are likely to suffer severe information asymmetry problems. Section 8.6 provides results of robustness checks. Section 8.7 concludes this chapter.

8.2 Test Methodology

This section sets out the variable construction and empirical methodology to test the three main predictions of the information asymmetry hypothesis.

8.2.1 Information Asymmetry Proxies

There are alternative measures of information asymmetry proxies. Similar to Krishnaswami and Subramaniam (1999) and Veld and Veld-Merkoulova (2004), I calculate two measures of information asymmetry based on the analyst forecast data, i.e. the mean earnings forecast error[39] and the standard deviation of all analysts' forecast errors. Following Huson and MacKinnon (2003), I use two further different measures of information asymmetry based on the market microstructure data, the stock's residual standard deviation and its bid-ask spread. The definitions for these four different information asymmetry proxies are given in Table 8.1.

[Insert Table 8.1 about here, see page 207]

The first measure of information asymmetry, forecast error, is based on the analyst's earnings forecasts data provided by the Institutional Brokers Estimate System (*IBES*). The *IBES* reports a monthly mean, median, and standard deviation of the forecasts for each firm based on analysts' estimates that are submitted in that month. For each spinoff parent, I collect the mean earnings forecast for the current fiscal year made in the last month of the fiscal year prior to spinoff announcement. Then the information asymmetry level is defined as the ratio of the absolute difference between the mean forecast earnings and actual earnings per share to the price per share at the beginning of the last month of the fiscal year prior to spinoff announcement. Formally, forecast error, ERROR, is calculated as follows:

$$ERROR = [((\sum_{i=1}^{n} F\_EPS_i)/n) - A\_EPS]/P \qquad (8.1)$$

where F_EPS_i is the mean forecasted earnings per share by analyst i in the last month of the fiscal year, n is the total number of analysts following the spinoff parent, A_EPS_i is the actual earnings per share for the forecasted fiscal year, and P is the share price at the beginning of the last month of the fiscal year. Firms with higher levels of information asymmetry between the managers and outsiders about their cash flows and value are expected to have larger earnings forecast errors.

I focus on earnings forecast data for the last month of the fiscal year because Elton,

[39] Results with the median earnings forecast error remain qualitatively similar.

Gruber and Gultekin (1984) find that the forecast error of the last month is appropriate for measuring information asymmetry around a firm. Their evidence shows that nearly 84% of the forecast error in the final month can be attributed to misestimating firm-specific factors rather than to misestimation of economy-wide or industry-specific factors. Best, Hodges and Lin (2004) and Krishnaswami and Subramaniam (1999) use the same proxy to measure a firm's information asymmetry level.

The second measure of information asymmetry, forecast dispersion (DISP), is computed as the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year preceding the spin-off announcement. This represents the dispersion among analysts about a consensus of the earnings forecast. Similar to Veld and Veld-Merkoulova (2004), I normalise this standard deviation by dividing it by the stock price of the firm at the beginning of the month in which the standard deviation of forecasts is measured. Krishnaswami and Subramaniam (1999) contend that this measure indicates a lack of information about the firm for the analysts. Specifically, the standard deviation of all analysts' forecasts, DISP, is computed as follows:

$$DISP = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(F\_EPS_i - \overline{F\_EPS})^2} / P \tag{8.2}$$

where F_EPS_i is the forecasted earnings per share by analyst i in the last month of the fiscal year, n is the total number of analysts following the spinoff parent, $\overline{F\_EPS}$ is the average of all analysts' forecasted earnings per share in the last month of the fiscal year, and P is the share price at the beginning of the last month of the fiscal year.

The third measure of information asymmetry, residual standard deviation, is measured as the residual standard deviation of the market-adjusted daily stock returns on an annual basis. Specifically, the residual standard deviation, RESD, is computed as follows:

$$RESD = \sqrt{\frac{1}{250}\sum_{t=1}^{250}(\varepsilon_t - \bar{\varepsilon})^2} \tag{8.3}$$

$$\varepsilon_t = r_t - \alpha - \beta r_{mt}$$

Where ε_t is the difference actual stock return r_t and expected stock return on day t, the expected return is measured with a market model, $r_t = \alpha + \beta r_{mt} + \varepsilon_t$, for a 250-day trading period, r_{mt} is the return on the local market index (this chapter uses the total market return index for local country given in *Datastream*), and α and β are parameters of the estimated market model. As discussed in Chapter 3, if the stock market is efficient, the stock price should reflect all publicly available information and the market model should perfectly explain the stock returns.[40]

Krishnaswami and Subramaniam (1999) argue that the residual standard deviation captures the extent of information asymmetry of a stock. Information asymmetry about a firm is high when managers have a relatively large amount of value-relevant, firm-specific information that is not publicly known to the market. Investors have to bear some firm-specific uncertainty until this information is disclosed to the market. Assuming the investors and the managers are equally well-informed about the economy-wide factors influencing the firm's values, the residual volatility in the firm's stock returns can capture the information asymmetry between the investors and the managers about the firm-specific information.

The fourth measure of information asymmetry is the bid-ask spread, BIDASK, which is measured as the average of daily bid-ask spread during a 60-day trading period. The selection of 60-day window follows Huson and MacKinnon (2003). The daily bid-ask spread is defined as the difference between ask price and bid price divided by the midpoint price of that day, where the midpoint price is calculated as the average of the bid and ask price. Specifically, the bid-ask spread is calculated as follows:

$$BIDASK = \frac{1}{20}\sum_{t=1}^{20}\{|PA_t - PB_t|/[(PA_t + PB_t)/2]\} \tag{8.4}$$

where PA_t is the ask price on day t and PB_t is the bid price on day t. The bid-ask spread reflects the information asymmetry between market makers and informed traders and is used to protect the market maker (e.g. see Kim and Verrecchia, 1994; Gregoriou, Ioannidis, and Skerratt, 2005).

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[40] This argument implicitly assumes that the market model used is a well-specified asset pricing model.

For pre-spinoff parents and non-spinoff control firms, I measure ERROR and DISP based on the earnings forecast data for a firm in the last month of the fiscal year prior to the spinoff announcement date. RESD is gauged based on the stock data of the 250-day trading period before the spinoff announcement date while BIDASK is calculated based on the trading data of the 60-day trading period preceding the spinoff announcement date.

For post-spinoff parents, I measure ERROR and DISP based on the earnings forecast date for a firm in the last month the first fiscal year subsequent to the spinoff completion date. RESD is computed based on the stock data of the 250-day trading period following the spinoff completion date. When a post-spinoff firm has less than 250 trading days following the spinoff, I use the stock data of available trading days to estimate the market model.[41] BIDASK is calculated based on the trading data of the 60-day trading period following the spinoff completion date.

As argued in Habib et al. (1997), the improved information transparency following a spinoff should be positively associated with the spinoff value creation. To investigate this possibility, I also compute the changes in information asymmetry proxies around a spinoff, which are actually the value difference in information asymmetry proxy between post-spinoff parent and pre-spinoff parent. Specifically, ΔERROR measures the difference in ERROR between post-spinoff parents and pre-spinoff parents; ΔDISP measures the difference in DISP between post-spinoff parents and pre-spinoff parents; ΔRESD measures the difference in RESD between post-spinoff parents and pre-spinoff parents; and ΔBIDASK measures the difference in BIDASK between post-spinoff parents and pre-spinoff parents. The definitions for these variables are provided in Table 8.1.

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[41] In order to avoid an inaccurate estimation of residual standard deviation, I require that a post-spinoff firm must have at least 100 trading days of stock data in order to estimate the market model. This data requirement results in the loss of one sample firm that was acquired within the two-month period subsequent to the spinoff completion.

8.2.2 Tests for Information Asymmetry Problems of Spinoff Firms

Hypothesis H10 states that a spinoff is conducted to mitigate the information asymmetry problems. If this argument holds, the information asymmetry problem for a spinoff parent firm should be more serious than that for a non-spinoff control firm prior to the spinoff announcement date. I select an industry- and size-matching firm as a control firm for a spinoff parent. The selection procedure is the same as that used in section 7.2.2. After control firms are selected, I measure the information asymmetry proxies for both pre-spinoff parents and non-spinoff control firms. I then compare the information asymmetry proxies between pre-spinoff parents and non-spinoff control firms. Again, the information asymmetry proxies for pre-spinoff parents should be significantly higher than those for non-spinoff control firms according to the information asymmetry hypothesis.

In addition, H11 proposes that the information asymmetry problem for a spinoff parent firm should be less severe following a spinoff. I compute the information asymmetry proxies for post-spinoff parents and then compare the difference in information asymmetry proxies between pre-spinoff and post-spinoff parents. The information asymmetry proxies for pre-spinoff parents should be significantly higher than those for post-spinoff parents under H11.

8.2.3 Tests for Spinoff Gains from Transparency Improvements

Hypothesis H12 argues that (partial) spinoff value gains result from the reduction of information asymmetry through a spinoff (see section 2.3.2). I examine H12 by analysing three regression models to explain the spinoff value gains based on the information-based hypothesis.

The first empirical model predicts that the level of information asymmetry for pre-spinoff parents is positively related to the short run market reaction to spinoff announcements. The dependent variable is the CARs to parents over the three-day (-1, +1) announcement window as described in section 5.3. Control proxies are FOCUS, GROWTH, ROA, RELSIZ, ANTIDIR and HOTTIME, as defined in section 6.5. Formally, the testing model is given below:

$$CARs = f(Information\ Asymmetry\ Proxy, Control\ Proxies) \quad (8.5)$$

The second empirical model is similar to the first model except for the dependent variable. Extant literature has shown that initial market reaction to corporate news may be incomplete or biased (e.g. see Shleifer, 2000). I use the three-year buy-and-hold abnormal stock returns (BHARs) to post-spinoff parent/subsidiary combined firms as long-run market reaction to spinoff announcement. The three-year window period should be sufficient to allow for the complete market reaction to spinoff news. The three-year abnormal stock returns are measured against the returns to size- and book-to-market-adjusted control portfolios. The computation procedure is introduced in section 5.4. Control proxies are FOCUS, GROWTH, ROA, RELSIZ, ANTIDIR and HOTTIME, as defined in section 6.5. Formally, the second model is given below:

$$BHARs = f(Information\ Asymmetry\ Proxy, Control\ Proxies) \quad (8.6)$$

The third model is test whether the changes in information asymmetry proxies around spinoffs are related to spinoff value gains. This prediction is proposed in Habib et al. (1997). Similar to the second model, the spinoff value gains are measured as the three-year size- and book-to-market-adjusted BHARs to post-spinoff parent/subsidiary combined firms. The long-run return measurement procedure is introduced in section 5.4.1. I do not consider calendar-time based portfolio approaches to measure the value impact of information asymmetry variables because of the small sample size. The measurement of changes in information asymmetry proxies is described in section 6.2.1. Control proxies are FOCUS, GROWTH, ROA, RELSIZ, ANTIDIR and HOTTIME, as defined in Section 6.5. Formally, the third model is offered below:

$$BHARs = f(Change\ in\ Information\ Asymmetry\ Proxy, Control\ Proxies) \quad (8.7)$$

8.2.4 Further Tests for Information Asymmetry Problems

Because not all spinoffs are undertaken to mitigate the information asymmetry problem, a cross-sectional analysis of information problems for all spinoff firms may yield biased results against the information asymmetry hypothesis. Therefore, I conduct further analyses for sub-sample spinoff parents that are likely to have informational benefits from spinoffs.

A spinoff can create informational benefits through two different but non-exclusive approaches. On the one hand, a spinoff creates informational benefits by attracting new analysts to more focused post-spinoff firms (Gilson et al., 2001; Krishnaswami and Subramaniam, 1999). Gilson et al. find that the increase of analyst following after spinoffs is because post-spinoff firms become more focused and attract more analysts with industry-specific expertise. On the other hand, a spinoff creates informational benefits by separating different business segments and allowing investors to value those segments more accurately (Habib et al.,1997; Nanda and Narayanan, 1999). Therefore, the information asymmetry hypothesis predicts that the informational benefits for a spinoff will be higher when the pre-spinoff firm has a more complex organisational structure than when the pre-spinoff firm has a less complex organisational structure.

I test this prediction by examining the information problems for a sub-sample of parents with a complex organisational structure prior to spinoff announcements. I use two approaches to identify pre-spinoff parents with a complex organisational structure. The first approach identifies firms with a complex organisational structure as those reducing the number of business segments following spinoffs. The assumption for this approach is that a firm will reduce the operational scale when it is beyond the optimal level. Thus, a firm only makes the decision to reduce segment number by a spinoff when the firm feels that it has a complex and suboptimal organisational structure. The second approach identifies firms with a complex organisational structure as those separating divisions with a low stock return correlation. The rationale of this approach is that firms with a complex organisational structure are often those with unrelated businesses. I measure the relatedness between parent and offspring as the correlation between daily stock returns of parent and offspring in the first year subsequent to the spinoff completion. I then define those firms with a correlation in stock returns between parent and offspring lower than the median correlations in stock returns between parents and offspring for the whole sample.

I do not use the focusing status of a spinoff to identify a sub-sample of pre-spinoff parents with a complex organisational structure for two reasons. First, although parent and offspring may do not share the same two-digit SIC industry code, their business may be highly correlated or complementary. Gertner, Powers and Scharfstein (2002) find that the SIC classification is sometimes inaccurate in identifying focus-increasing spinoffs. For instance, the spinoff of Diamond Shamrock by Maxus Energy can be defined as a focus-increasing spinoff since these two companies are in different two-digit SIC industries. However, these companies are actually in related businesses: Maxus Energy is in petroleum exploration (SIC 1311), while Diamond Shamrock is in petroleum refining and marketing (SIC 2911). Second, the majority (74%) of my sample firms are conducting focus-increasing spinoffs. Therefore, the small size of non-focusing spinoffs renders statistical inferences from testing less meaningful.

For these two groups of spinoff parents, I examine whether pre-spinoff parents have higher level of information asymmetry proxies than non-spinoff control firms. I further investigate whether post-spinoff parents have lower level of information asymmetry proxies than non-spinoff control firms.

8.3 Information Asymmetry Problems for All Sample Spinoff Firms

Table 8.2 reports the comparative statistics of information asymmetry proxies for pre-spinoff parents and non-spinoff control firms for testing H10. This table shows the business segment number (SEGNO) and analyst coverage (ACOV) for pre-spinoff parents and non-spinoff control firms since these two variables are also related to the information asymmetry problems of a firm (Krishnaswami and Subramaniam, 1999). The definitions for these two variables are given in section 7.2.

[Insert Table 8.2 about here, see page 208]

There is weak evidence that spinoff parents have severe information asymmetry problems prior to spinoff announcements. ERROR for pre-spinoff parents has a mean of 0.06 while that for non-spinoff control firms has an average of 0.03. The mean difference in 0.03 is significant at the 10% level (t-statistic = 1.84). However, the median difference in ERROR between pre-spinoff parents and non-spinoff control firms is 0.002, which is not significant at conventional levels (z-statistic = 1.12). The mean (median) difference in DISP between pre-spinoff parents and non-spinoff control firms is 0.007 (0.002). The mean difference is insignificant (t-statistic = 1.16) while the median difference is significant at the 5% level (z-statistic = 2.12).

In contrast, there is no evidence that pre-spinoff parents suffer information problems relative to control firms when RESD and BIDASK are used. The mean (median) difference in RESD between pre-spinoff parents and non-spinoff control firms is insignificant at the 10% level. Similarly, there is an insignificant difference in BIDASK between pre-spinoff parents and non-spinoff control firms.

I then turn to the firm characteristics that may be related to information problems. Pre-spinoff parents have a more complex organisational structure than non-spinoff control firms. The mean (median) SEGNO for pre-spinoff parents is 3.77 (4.00) while the mean (median) number of segments for non-spinoff control firms is only 3.37 (3.00). Both the mean difference and median difference are significant at the 5% level (t-statistic = 2.13 and z-statistic = 2.34). The difference in operational complexity between pre-spinoff parents and non-spinoff control firms may explain the difference in the first two information asymmetry proxies between these two groups of firms. However, the ACOV between these two groups of firms is comparable. Moreover, the median difference in ACOV between pre-spinoff parents and non-spinoff control firms is 2.00, which is significant at the 10% level (z-statistic = 1.79). Therefore, the argument of Gilson et al. (2001) that diversified firms attract fewer analysts than focused firms because of organisational complexity does not apply to my spinoff sample.

Taken together, there is no strong evidence that pre-spinoff parents have more severe information asymmetry problems than non-spinoff control firms. This finding is contradictory to the evidence documented in Krishnaswami and Subramaniam (1999) that their spinoff sample firms suffer significant information problems. They show that both the mean and median difference in information asymmetry proxies between their spinoff sample firms and non-spinoff control firms are significant at the 5% or even at the 1% level.

I then examine whether spinoff parents have an improvement in the information asymmetry proxies following spinoffs as predicted by H11. Table 8.3 report the comparative statistics of information asymmetry proxies between pre-spinoff parents and post-spinoff parents. The statistics for SEGNO and ACOV are also reported in Table 8.3.

[Insert Table 8.3 about here, see page 209]

Results in Table 8.3 indicate that information asymmetry problems of spinoff parents become even worse following spinoffs. The mean difference in ERROR between pre-spinoff parents and post-spinoff parents is 0.02, which is insignificant at the 10% level (t-statistic = 0.84). However, the median difference in ERROR between pre-spinoff parents and post-spinoff parents is -0.004, which is significant at the 5% level (z-statistic = -2.09). Both the mean and median difference in DISP between pre-spinoff parents and post-spinoff parents are negative. In addition, the median difference (-0.003) is also significant at the 5% level (z-statistic = -2.32).

The information asymmetry proxies based on stock trading data report consistent results. Both the mean difference (-0.003) and median difference (-0.002) of RESD between pre-spinoff parents and post-spinoff parents are significant at the 5% level (t-statistic = -3.24 and z-statistic = -3.39). BIDASK for post-spinoff parents are generally larger than those for pre-spinoff parents. The mean difference of -0.007 is significant at the 5% level (t-statistic = -2.09) although the median difference of -0.001 is insignificant at conventional significance levels (z-statistic = -1.07)

The examination of operating characteristics between post-spinoff parents and pre-spinoff parents reveals that a spinoff reduces the organisational complexity as SEGNO significantly reduces following spinoffs (both the mean difference and median difference are significant at the 1% level). However, ACOV for spinoff parents does not increase subsequent to spinoffs. Actually, the mean and median number of analysts following spinoff parents slightly decrease subsequent to spinoffs (the mean difference is 0.55 while the median difference is 2.00).

I further run a logit regression to analyse whether the information asymmetry problems affect the spinoff decision. The dependent variable is a dummy variable that equals one when a firm is spinoff parent and equals zero when a firm is non-spinoff control firm. The information asymmetry variables used include ERROR, DISP, RESD and BIDASK. There are three control variables in the logit regression. The first control variable is the number of business segments (SEGNO), which captures a firm's organisational complexity. The second control variable is MTBV of assets ration, which measures a firm's growth potential. The third control variable is cash-flow return on assets, which estimates a firm's liquidity constraints. These control variables have been used in the logit regression for the spinoff decision in section 7.3. Regression results are reported in Table 8.4. As shown in Table 8.4, none of information asymmetry proxies is significant at the conventional levels. Further, the explanatory powers of logit regression models are very low, ranging from 0.01 to 0.05.

[Insert Table 8.4 about here, see page 210]

Thus, my results show that a spinoff does not resolve the information asymmetry problem. Moreover, there is evidence that information asymmetry problems for post-spinoff parents are even worse than those for pre-spinoff parents. My results are contradictory to the findings of Krishnaswami and Subramaniam (1999), who observe that the information asymmetry proxies for post-spinoff parents are generally lower than those for pre-spinoff parents.

There may be two different explanations for the different results on the information asymmetry hypothesis. On the one hand, the information asymmetry hypothesis does not explain the spinoff rationale. The previous findings supporting the information asymmetry hypothesis are then a product of chance. On the other hand, the information asymmetry hypothesis is only applicable for a sub-sample of firms suffering severe information asymmetry problems. Cross-sectional analysis for all types of spinoffs may fail to find evidence supporting the information asymmetry hypothesis. The significant results for the information asymmetry hypothesis documented in Krishnaswami and Subramaniam (1999) may indicate that their sample firms generally suffer information problems. In contrast, most of my spinoff samples are not motivated to mitigate information problems. I address this issue in section 8.5 by analysing sub-samples of spinoff parents that are likely to suffer very serious information asymmetry problems and have significant informational benefits from spinoffs.

8.4 Spinoff Value Gains and Information Asymmetry Problems

Table 8.5 reports the regression results for the model to explain the short-run market reaction to spinoff announcements. The short-run market reaction to spinoff announcements is measured as the three-day CARs to spinoff parents based on the market model, which are introduced in section 5.3. The regression model tested is the equation (8.5).

[Insert Table 8.5 about here, see page 211]

As shown in Table 8.5, coefficients for different information asymmetry proxies have expected positive signs but are insignificant in all regressions. Control proxies such as FOCUS and RELSIZ are highly significant in all regressions. Therefore, information asymmetry proxies do not have a significant power in explaining the spinoff announcement gains relative to corporate focus and relative size variables.

As indicated in section 3.3, stock markets may underreact to corporate news. Therefore, the informational benefits of spinoffs may not be fully reflected in the short-run market reaction to spinoffs but should be incorporated in the long-run market reaction to spinoffs.

To examine this possibility, I conduct further regressions including information asymmetry proxies to explain the long-run stock performance of post-spinoff firms. At first, I analyse the relationship between the level of information asymmetry for pre-spinoff parent firm and the long-run spinoff performance with the following regression model. The regression model tested is Equation (8.6).

Table 8.6 gives the regression results for the above model. In general, the regression models are not significant at conventional levels, suggesting that initial market reaction to the explanatory factors is generally efficient. However, the information asymmetry proxies have a negative sign in the regressions and are significant at the 5% level for three out of four regressions. This finding suggests that the higher the information asymmetry problem for a pre-spinoff parent firm, the lower the long-run abnormal stock returns to post-spinoff parent/subsidiary combined firms. This evidence is contradictory to the prediction of the information asymmetry hypothesis. However, it is consistent with the results in Table 8.5 that the information asymmetry problems for pre-spinoff parents generally become worse following spinoffs.

[Insert Table 8.6 about here, see page 212]

Then I analyse the relationship between the change of information asymmetry level for spinoff parents around spinoffs and the long-run spinoff performance with the following regression model. The regression model tested is Equation (8.7).

Regression results for the above model are presented in Table 8.7. Similar to regressions in Table 8.6, regressions in Table 8.7 are not significant at conventional levels. Changes in information asymmetry proxies sometimes have a positive sign in the regressions, which is also contradictory to the prediction of information asymmetry hypothesis. However, none of the changes in information asymmetry proxies is significant in the regressions. I conclude that spinoff value gains do not stem from the resolution of information asymmetry problems following spinoffs.

[Insert Table 8.7 about here, see page 213]

8.5 Information Asymmetry Problems for Sub-sample Spinoff Firms

Since not all spinoffs are conducted to mitigate the information asymmetry problems, the information asymmetry hypothesis may only be applicable to firms that suffer serious information asymmetry problems before spinoffs and will have significant informational benefits from spinoffs. I examine this possibility by analysing sub-samples of spinoff parents that are likely to suffer severe information asymmetry problems.

As discussed in section 8.2.4, I identify two groups of spinoff parents that are likely to have significant informational benefits from spinoffs. The first group is spinoff parents that reduce the business segment number following spinoffs. The second group is spinoff parents that divest a lowly related subsidiary through a spinoff. A spinoff of the lowly related subsidiary is defined as the spinoff transaction where the correlation between parent's one-year stock returns and offspring's one-year stock returns is lower than the median correlation value for the whole sample. Table 8.8 presents the comparative statistics of information asymmetry proxies for these two groups of pre-spinoff parents and their control firms. Panel A reports the comparative statistics for the spinoff parents that reduce the business segment subsequent to the spinoff completion dates. There is some evidence that those pre-spinoff parents have severe information asymmetry problems relative to their control firms. The mean (median) difference in ERROR between pre-spinoff parents and non-spinoff control firms is 0.09 (0.003), which is significant at the 5% (1%) level. The median difference in DISP between pre-spinoff parents and non-spinoff control firms is 0.004, which is also significant at the 5% level (z-statistic = 2.48). However, the mean difference in DISP between pre-spinoff parents and non-spinoff control firms is insignificant at the 10% level (t-statistic = 1.02). Either the mean or the median difference in RESD between pre-spinoff parents and non-spinoff control firms is insignificant at the 10% level. The same finding exists for BIDASK. The analyst coverage of control firms is significantly less than that of pre-spinoff parents, where the mean difference of 2.76 is significant at the 10% level and the median difference of 4.00 is significant at the 5% level.

[Insert Table 8.8 about here, see page 214]

In Panel B of Table 8.8, the comparative statistics of information asymmetry proxies are reported for the sub-sample of spinoff parents that divest a lowly related division through a spinoff. In general, the values of information asymmetry proxies for pre-spinoff parents are insignificantly different from those for non-spinoff control firms. The only exception is that the pre-spinoff parents have slightly higher ERROR than control firms since the mean difference in ERROR between parents and control firms is significant at the 10% level. Thus, there is no evidence that such spinoff parents have more severe information asymmetry problems than control firms. For a sample of spinoff parents that are likely to have significant informational benefits from spinoffs, I cannot find evidence that such firms have severe information problems prior to spinoffs.

I then examine whether these spinoff parents with significant expected informational benefits can improve their information transparency through spinoffs. Test results are reported in Table 8.9. Based on Panel A of Table 8.9, I find no evidence that spinoff parents reducing business segment numbers following spinoffs have an improvement in their information asymmetry proxies. There is no significant change for ERROR or DISP around the spinoff. However, RESD significantly increases for this sub-sample of spinoff parents following spinoffs. The mean (median) difference in RESD is -0.003 (-0.002), which is significant at the 1% level (the 1% level). The BIDASK for post-spinoff parents are generally larger than those for pre-spinoff parents although the difference is not significant at conventional levels. The number of analysts following post-spinoff parents is much fewer than that of analysts following pre-spinoff parents since the mean and median differences are highly significant at the 1% level.

[Insert Table 8.9 about here, see page 215]

Panel B of Table 8.9 presents the comparative statistics of information asymmetry proxies for the sub-sample of spinoff parents that divest a lowly related subsidiary through a spinoff. There is consistent evidence that post-spinoff firms have more severe information asymmetry problems than pre-spinoff parents since the median differences in ERROR, DISP and RESD are all negative and significant at the 10% level. In addition, the number of analysts following post-spinoff parents is significantly fewer than that of analysts following pre-spinoff parents.

To sum up, for sub-samples of spinoff parents that are likely to have significant informational benefits from spinoffs, I do not find evidence that those firms suffer severe information problems prior to spinoffs and that information transparency for those firms will improve following spinoffs. Therefore, my results suggest that the information asymmetry hypothesis does not explain the value effects of European spinoffs.

8.6 Robustness Checks

This section examines whether my results are sensitive to the stock return measurement methodology used. I first check whether the information asymmetry proxies for pre-spinoff parents can explain the spinoff announcement period abnormal returns based on alternative computation methods. I use the world market model introduced in section 5.3 to calculate the announcement abnormal returns. Then I regress the three-day announcement period abnormal returns on the information asymmetry proxies. The regression results are reported in Table 8.10. The computation procedure for abnormal announcement returns with the world market model is given in section 5.3. As shown in Table 8.10, there is some evidence that spinoff parents with a higher level of information asymmetry earn higher announcement period abnormal returns. The coefficient for DISP in model 2 is 16.49 and significant at the 10% level (t-statistic = 1.82). Similarly, the coefficient for RESD in model 3 is positive and statistically significant at the 10% level (t-statistic = 1.66). However, the other two information asymmetry proxies do not have significant explanatory power for spinoff announcement abnormal returns. Neither of the coefficients of these two proxies is significant at conventional levels.

[Insert Table 8.10 about here, see page 216]

Then I examine whether the level of information asymmetry for pre-spinoff parents can explain the variation of long-run spinoff performance with different benchmarks. I use the industry- and size-adjusted BHARs to post-spinoff parent/offspring combined firms as the long-run spinoff performance. The computation procedure for the abnormal returns to pro-forma combined firms is introduced in section 5.4.1. I then regress the long-run spinoff performance on the information asymmetry proxies for pre-spinoff parents. The regression results are reported in Table 8.11. The results in Table 8.11 do not support the information asymmetry hypothesis. Information asymmetry proxies have a negative coefficient in the regression models, which is contradictory to the prediction of H12. Furthermore, none of these models is significant at conventional levels and the adjusted R-squared are generally very small, ranging from -0.02 to 0.02.

[Insert Table 8.11 about here, see page 217]

Table 8.12 reports the regression of industry- and size-adjusted BHARs to parent/offspring portfolio on the changes in information asymmetry proxies. Again, there is no evidence that a decrease in information asymmetry proxies is positively related to the gains to spinoffs. Among four information asymmetry proxies, only ΔERROR has a positive and significant coefficient in the regression. However, model 1 testing the value impact of ΔERROR has very low R-squared. For other three information asymmetry proxies, the coefficients are insignificant at conventional levels. Therefore, the results suggest that the changes in information asymmetry proxies are not related to the long-run spinoff performance.

[Insert Table 8.12 about here, see page 218]

8.7 Summary

This chapter examines the information asymmetry hypothesis for spinoff value gains. There are contradictory views on the informational benefits of a spinoff. On the one hand, a spinoff is argued to have significant informational benefits by providing expanded financial disclosure for separately listed post-spinoff firms and by attracting financial analysts to more focused post-spinoff firms.

On the other hand, a spinoff is argued to have insignificant informational benefits for two reasons. First, forecasts for a diversified firm can be more accurate than those for a focused firm since forecast errors investors making for different divisions of a diversified firm can be offsetting. Second, post-spinoff firms may have worse information asymmetry problems because the liquidity of post-spinoff firms is reduced. Third, informed traders tend to trade stocks of post-spinoff firms by utilising their segment-specific information advantage and this will exacerbate the information asymmetry problems between informed traders and uninformed liquidity traders.

Therefore, my empirical analysis of a sample of European spinoffs provides no evidence on the information asymmetry hypothesis. First, spinoff parents do not seem to suffer information problems before spinoff announcements. Second, spinoff parents do not appear to have informational benefits from spinoffs. A further analysis of sub-sample firms that are likely to have significant informational benefits from spinoffs presents no evidence supporting the information asymmetry hypothesis.

However, my evidence may lend support to the argument of Goldman (2005) that a spinoff may exacerbate the information asymmetry problems by reducing the liquidity of post-spinoff firms. Under the view of Goldman, the market's incentives to collect information are positively associated with the liquidity of a stock. Since a firm with different businesses poses less information asymmetry problems for liquidity traders, the liquidity of a multi-segment firm is generally higher than that of a single-segment firm (Hadlock, Ryngaert, and Thomas, 2001). Thus, my results show that post-spinoff parent's analyst following reduces when a parent spins off an unrelated division and reduces its liquidity.

Therefore, my findings in this chapter suggest that shareholders and managers should carefully consider the value benefits of a spinoff if the spinoff decision is made to increase the information transparency. The informational benefits of a spinoff may not necessarily be realised since the stock liquidity benefits may be foregone following a spinoff.

Table 8.1 Definitions for explanatory variables

Variables	Definition
ERROR	The ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. For pre-spinoff parents and non-spinoff control firms, it is measured in the last month of the fiscal year preceding the spinoff announcement date. For post-spinoff parents, it is measured in the last month of the fiscal year immediately following the spinoff completion date.
DISP	The standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. For pre-spinoff parents and non-spinoff control firms, it is measured in the last month of the fiscal year preceding the spinoff announcement date. For post-spinoff parents, it is measured in the last month of the fiscal year immediately following the spinoff completion date.
RESD	The dispersion in the market-adjusted daily stock returns to a firm in a year. For pre-spinoff parents and non-spinoff control firms, it is measured over the 250-day trading period prior to the spinoff announcement date. For post-spinoff parents, it is measured over the 250-day trading period following the spinoff completion date.
BIDASK	The difference between ask price and bid price divided by the mid point. For pre-spinoff parents and non-spinoff control firms, BIDASK is measured as the average daily bid-ask spreads over the 60-day trading period prior to the spinoff announcement date. For post-spinoff parents, BIDASK is measured as the average daily bid-ask spreads over the 60-day trading period following the spinoff announcement date.
Δ ERROR	The difference in ERROR between post-spinoff parents and pre-spinoff parents.
Δ DISP	The difference in DISP between post-spinoff parents and pre-spinoff parents.
Δ RESD	The difference in RESD between post-spinoff parents and pre-spinoff parents.
Δ BIDASK	The difference in BIDASK between post-spinoff parents and pre-spinoff parents.

Table 8.2 Information asymmetry proxies of pre-spinoff parents and non-spinoff control firms

This table reports summary descriptive statistics of information asymmetry proxies and characteristics for pre-spinoff parent and non-spinoff control firms. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. SEGNO is the number of business segments. ACOV is the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. In parentheses is the t-statistic (mean) or Wilcoxon test z-statistic (median) for the difference in variables between pre-spinoff parents and non-spinoff control firms. [b], [c] indicates the significance at the 5% and 10% level, respectively.

	Spinoff firm (1)		Control firm (2)		Group difference (1 -2)	
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
ERROR	0.06	0.01	0.03	0.00	0.03[c]	0.00
No. of obs.		136		139	(1.84)	(1.12)
DISP	0.02	0.005	0.01	0.003	0.01	0.002[b]
No. of obs.		123		125	(1.16)	(2.12)
RESD	0.02	0.02	0.02	0.02	0.00	0.00
No. of obs.		157		157	(0.20)	(0.33)
BIDASK	0.03	0.01	0.03	0.01	0.00	0.000
No. of obs.		119		122	(0.13)	(0.17)
SEGNO	3.77	4.00	3.37	3.00	0.40[b]	1.00[b]
No. of obs.		157		157	(2.13)	(2.34)
ACOV	12.38	9.00	11.31	7.00	1.07	2.00[c]
No. of obs.		157		157	(1.37)	(1.79)

Table 8.3 Information asymmetry proxies of pre-spinoff parents and post-spinoff parents

This table reports summary descriptive statistics of information asymmetry proxies and characteristics for pre-spinoff parent and post-spinoff parents. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. SEGNO is the number of business segments. ACOV is the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. In parentheses is the t-statistic (mean) or Wilcoxon test z-statistic (median) for the difference in variables between pre-spinoff parents and post-spinoff parents. [a], [b] indicates the significance at the 1% and 5% level, respectively.

	Pre-spinoff (1)		Post-spinoff (2)		Group difference (1 -2)	
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
ERROR	0.06	0.006	0.04	0.010	0.02	-0.004[b]
No. of obs.		136		132	(0.84)	(-2.09)
DISP	0.02	0.005	0.02	0.008	-0.00	-0.003[b]
No. of obs.		123		121	(-1.11)	(-2.32)
RESD	0.022	0.019	0.024	0.021	-0.003[a]	-0.002[a]
No. of obs.		157		156	(-3.24)	(-3.39)
BIDASK	0.030	0.01	0.037	0.01	-0.007[b]	-0.00
No. of obs.		119		126	(-2.09)	(-1.07)
SEGNO	3.77	4.00	3.13	3.00	0.64[a]	1.00[a]
No. of obs.		157		157	(5.70)	(5.40)
ACOV	12.38	9.00	11.83	7.00	0.55	2.00
No. of obs.		157		157	(1.15)	(1.16)

Table 8.4 Logit regression of spinoff likelihood on information asymmetry proxies

Logit regression coefficients for spinoff likelihood for spinoff parents and non-spinoff control firms. Dependent variable is 1 when the firm is spinoff parent and is 0 when the firm is non-spinoff control firm. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. SEGNO is the number of business segments preceding the spinoff announcement date. GROWTH is the MTBV of assets ratio at the end of month prior to spinoff announcement date. ROA is the EBITDA divided by its total assets. The p-value is reported in parentheses. [a], [c] indicates the significance at the 1% and 10% level, respectively.

Variable	Model 1		Model 2		Model 3		Model 4	
Intercept	-0.49	(0.12)	-0.12	(0.73)	-0.52	(0.14)	-1.01[a]	(0.006)
ERROR	1.83	(0.12)						
DISP			4.40	(0.34)				
RESD					1.13	(0.90)		
BIDASK							3.04	(0.29)
SEGNO	0.08	(0.21)	0.06	(0.39)	0.11[c]	(0.06)	0.19[a]	(0.009)
GROWTH	0.03	(0.36)	0.03	(0.48)	0.03	(0.39)	0.06	(0.15)
ROA	0.13	(0.86)	-2.02	(0.12)	0.16	(0.80)	0.68	(0.36)
No. of obs.	275		248		314		241	
-2 Log Likelihood	375.54		338.58		431.07		324.86	
R^2 Cox Snell	0.02		0.02		0.01		0.04	
R^2 Nagelkerke	0.03		0.03		0.02		0.05	

Table 8.5 Regression of announcement period (-1, 1) CARs on the information asymmetry proxies of pre-spinoff parents

Regression coefficients for announcement period (-1, 1) cumulative abnormal returns for the 157 completed spinoffs by 144 European companies from January 1987 to December 2005. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. The t-statistic based on White heteroskedasticity-adjusted standard errors is reported in parentheses. [a], [b], and [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	Model 1		Model 2		Model 3		Model 4	
Intercept	-6.67[b]	(-2.47)	-3.96	(-1.55)	-7.33[a]	(-2.62)	-6.62[b]	(-2.58)
ERROR	7.39	(1.17)						
DISP			15.81[c]	(1.72)				
RESD					133.03	(1.59)		
BIDASK							-9.22	(-0.53)
FOCUS	4.05[a]	(2.97)	3.24[b]	(2.20)	4.14[a]	(3.13)	3.80[b]	(2.57)
GROWTH	0.15	(0.81)	0.07	(0.45)	0.17	(1.00)	0.13	(0.66)
ROA	11.07	(1.61)	12.94	(1.53)	5.85	(1.01)	3.77	(0.64)
RELSIZ	16.28[a]	(3.25)	12.38[b]	(2.44)	14.94[a]	(3.21)	20.28[a]	(3.19)
ANTIDIR	0.21	(0.39)	-0.27	(-0.53)	-0.15	(-0.30)	0.31	(0.64)
HOTTIME	1.97	(1.47)	2.11[c]	(1.68)	2.17	(1.61)	2.15	(1.31)
No. of obs.	136		123		157		119	
Adj. R^2	0.18		0.14		0.18		0.16	
F statistic	5.34		3.93		5.93		4.29	
Sig. level	<0.001		0.001		<0.001		<0.001	

Table 8.6 Regression of 3-year size- and book-to-market-adjusted BHARs to post-spinoff combined firms on the information asymmetry proxies of pre-spinoff parents

Regression coefficients for 3-year size- and book-to-market adjusted BHARs for post-spinoff parent/subsidiary combined firms from the 129 spinoffs completed from January 1987 to December 2002. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. The t-statistic based on White heteroskedasticity-adjusted standard errors is reported in parentheses. [a], [b], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	Model 1		Model 2		Model 3		Model 4	
Intercept	0.42	(1.02)	0.51	(1.46)	0.42	(1.19)	0.49	(1.13)
ERROR	-0.77[b]	(-2.26)						
DISP			-1.04	(-2.91)				
RESD					-10.45[c]	(-1.92)		
BIDASK							-2.83[a]	(-3.37)
FOCUS	-0.02	(-0.09)	-0.06	(-0.35)	-0.01	(-0.07)	0.03	(0.14)
GROWTH	-0.02	(-1.27)	-0.01	(-0.62)	-0.01	(-0.83)	-0.03	(-1.51)
ROA	-1.78[a]	(-2.62)	-1.24	(-1.99)	-0.88	(-1.33)	-1.61[b]	(-2.52)
RELSIZ	0.19	(0.51)	-0.02	(-0.06)	0.18	(0.47)	-0.22	(-0.47)
ANTIDIR	0.01	(0.11)	-0.02	(-0.43)	-0.01	(-0.10)	0.01	(0.13)
HOTTIME	-0.07	(-0.35)	-0.14	(-0.80)	-0.02	(-0.08)	0.06	(0.28)
No. of obs.	114		103		129		91	
Adj. R^2	-0.02		-0.03		-0.03		-0.03	
F statistic	0.68		0.64		0.54		0.63	
Sig. level	0.69		0.73		0.80		0.73	

Table 8.7 Regression of 3-year size- and book-to-market-adjusted BHARs to post-spinoff combined firms on the change of information asymmetry proxies following spinoffs

Regression coefficients for 3-year size- and book-to-market adjusted BHARs for post-spinoff parent/subsidiary combined firms from the 129 spinoffs completed from January 1987 to December 2002. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. Δ ERROR is the difference in ERROR between post-spinoff parents and pre-spinoff parents. Δ DISP is the difference in DISP between post-spinoff parents and pre-spinoff parents. Δ RESD is the difference in RESD between post-spinoff parents and pre-spinoff parents. Δ BIDASK is the difference in BIDASK between post-spinoff parents and pre-spinoff parents. The t-statistic based on White heteroskedasticity-adjusted standard errors is reported in parentheses. [a], [b], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Intercept	0.75[b]	(2.44)	0.71[b]	(2.16)	0.37	(1.08)	0.51	(1.20)
Δ ERROR	-0.55	(-0.45)						
Δ DISP			-3.43	(-1.11)				
Δ RESD					-5.44	(-0.94)		
Δ BIDASK							0.34	(0.10)
FOCUS	-0.17	(-0.99)	-0.19	(-0.99)	-0.02	(-0.13)	0.04	(0.17)
GROWTH	-0.02	(-0.80)	-0.01	(-0.30)	-0.02	(-0.91)	-0.03	(-1.43)
ROA	-0.95	(-1.47)	-1.08	(-0.98)	-0.76	(-1.14)	-1.34[b]	(-2.36)
RELSIZ	0.00	(-0.01)	-0.01	(-0.04)	0.13	(0.35)	-0.37	(-0.94)
ANTIDIR	-0.07	(-1.17)	-0.04	(-0.68)	-0.02	(-0.27)	-0.02	(-0.41)
HOTTIME	-0.24	(-1.40)	-0.27	(-1.50)	-0.02	(-0.11)	0.08	(0.34)
No. of obs.	106		97		128		91	
Adj. R^2	-0.01		-0.02		-0.04		-0.05	
F statistic	0.89		0.78		0.29		0.39	
Sig. level	0.52		0.61		0.96		0.91	

Table 8.8 Information asymmetry proxies of pre-spinoff parents and non-spinoff control firms by sub-samples

This table reports comparative statistics of information asymmetry proxies for pre-spinoff parent and non-spinoff control firms by sub-samples. Panel A reports the data for spinoff parents that reduce the business segment number subsequent to spinoffs. Panel B reports the data for spinoff parents that have increased analyst coverage subsequent to spinoffs. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. ACOV is the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. In parentheses are the t-statistics (mean) or Wilcoxon test z-statistics (median) for the difference in information asymmetry variables between spinoff firms and control firms. [b] indicates the 5% significance level.

	Spinoff firm (1)		**Control firm (2)**		**Group difference (1 -2)**	
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Panel A: Spinoff parents that reduce the business segment number following spinoffs						
ERROR	0.10	0.009	0.01	0.006	0.09[b]	0.003[a]
No. of obs.		60		60	(2.29)	(2.65)
DISP	0.02	0.008	0.01	0.004	0.01	0.004[b]
No. of obs.		66		58	(1.02)	(2.48)
RESD	0.02	0.02	0.02	0.02	0.00	0.00
No. of obs.		67		67	(0.04)	(0.62)
BIDASK	0.02	0.01	0.03	0.01	-0.01	-0.00
No. of obs.		52		52	(-1.03)	(-0.48)
ACOV	16.48	13.00	13.72	9.00	2.76[c]	4.00[b]
No. of obs.		67		67	(1.91)	(2.53)
Panel B: Spinoff parents that divest lowly related divisions through spinoffs						
ERROR	0.08	0.06	0.02	0.01	0.06[c]	0.05
No. of obs.		60		60	(1.85)	(1.34)
DISP	0.02	0.08	0.02	0.00	0.00	0.08
No. of obs.		53		53	(0.18)	(1.52)
RESD	0.02	0.22	0.02	0.02	0.00	0.20
No. of obs.		78		78	(0.05)	(0.43)
BIDASK	0.04	0.02	0.04	0.02	0.01	0.01
No. of obs.		59		59	(0.09)	(0.71)
ACOV	10.15	6.50	9.68	4.00	0.47	2.50
No. of obs.		78		78	(0.52)	(0.78)

Table 8.9 Information asymmetry proxies of pre-spinoff parent and post-spinoff parents by sub-samples

This table reports comparative statistics of information asymmetry proxies for pre-spinoff and post-spinoff parents by sub-samples. Panel A reports the data for parents that reduce the business segment number subsequent to spinoffs. Panel B reports the data for parents that divest lowly related subsidiaries through spinoffs. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. ACOV is the number of following analysts over the one-year period prior to the spinoff announcement for pre-spinoff parents and over the one-year period subsequent to the spinoff completion for post-spinoff firms. In parentheses are the t-statistics (mean) or Wilcoxon test z-statistics (median) for the difference in information asymmetry variables between pre-spinoff and post-spinoff parents. [a], [b] indicates the significance at the 1% and 5% level, respectively.

	Pre-spinoff (1)		Post-spinoff (2)		Group difference (1 -2)	
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Panel A: Spinoff parents that reduce the business segment number following spinoffs						
ERROR	0.10	0.01	0.04	0.01	0.06	-0.002
No. of obs.		60		59	(1.28)	(0.37)
DISP	0.02	0.01	0.02	0.01	-0.002	0.001
No. of obs.		66		56	(-0.70)	(0.62)
RESD	0.021	0.019	0.024	0.021	-0.003[a]	-0.002[a]
No. of obs.		67		66	(-2.75)	(-2.77)
BIDASK	0.02	0.01	0.03	0.01	-0.01	-0.00
No. of obs.		52		56	(-1.61)	(-1.14)
ACOV	16.48	13.00	11.72	8.00	4.76[a]	5.00[a]
No. of obs.		67		67	(6.85)	(7.14)
Panel B: Spinoff parents that divest lowly related divisions through spinoffs						
ERROR	0.06	0.01	0.03	0.01	0.03	-0.01[c]
No. of obs.		63		67	(0.89)	(-1.65)
DISP	0.02	0.01	0.02	0.01	0.00	-0.002[c]
No. of obs.		56		57	(-1.30)	(-1.76)
RESD	0.02	0.02	0.03	0.02	-0.003[b]	-0.001[b]
No. of obs.		78		78	(-2.33)	(-2.48)
BIDASK	0.04	0.02	0.06	0.02	-0.01[b]	0.00
No. of obs.		59		61	(-2.08)	(-0.31)
ACOV	10.15	6.50	8.53	4.00	1.63[b]	2.50[b]
No. of obs.		78		78	(2.30)	(2.46)

Table 8.10 Regression of announcement period (-1, 1) CARs based on the world market model on the information asymmetry proxies of pre-spinoff parents

Regression coefficients for announcement period (-1, 1) cumulative abnormal returns calculated with the world market model for the 157 completed spinoffs by 144 European companies from January 1987 to December 2005. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. The t-statistic based on White heteroskedasticity-adjusted standard errors is reported in parentheses. [a], [b], and [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	Model 1		Model 2		Model 3		Model 4	
Intercept	-6.85[b]	(-2.56)	-4.24[c]	(-1.66)	-7.53[a]	(-2.72)	-6.71[b]	(-2.60)
ERROR	7.77	(1.22)						
DISP			16.49[c]	(1.82)				
RESD					137.12[c]	(1.66)		
BIDASK							-9.47	(-0.53)
FOCUS	4.05[a]	(2.98)	3.28[b]	(2.22)	4.14[a]	(3.13)	3.88[b]	(2.62)
GROWTH	0.15	(0.81)	0.08	(0.50)	0.16	(1.00)	0.12	(0.65)
ROA	11.30	(1.64)	13.43	(1.58)	6.06	(1.04)	3.83	(0.63)
RELSIZ	16.41[a]	(3.28)	12.65[b]	(2.48)	15.00[a]	(3.21)	20.24[a]	(3.17)
ANTIDIR	0.24	(0.44)	-0.25	(-0.49)	-0.12	(-0.25)	0.33	(0.69)
HOTTIME	1.95	(1.46)	2.07[c]	(1.66)	2.13	(1.58)	2.16	(1.31)
No. of obs.	136		123		157		119	
Adj. R^2	0.19		0.15		0.18		0.16	
F statistic	5.52		4.10		6.02		4.29	
Sig. level	<0.001		<0.001		<0.001		<0.001	

Table 8.11 Regression of 3-year industry- and size-adjusted BHARs to post-spinoff combined firms on the information asymmetry proxies of pre-spinoff parents

Regression coefficients for 3-year industry- and size-adjusted BHARs for post-spinoff parent/subsidiary combined firms from the 129 spinoffs completed from January 1987 to December 2002. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. The t-statistic based on White heteroskedasticity-adjusted standard errors is reported in parentheses. [a], [b], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	Model 1		Model 2		Model 3		Model 4	
Intercept	0.08	(0.20)	0.02	(0.08)	0.11	(0.33)	0.23	(0.56)
ERROR	-0.90[a]	(-2.70)						
DISP			0.59	(1.32)				
RESD					-6.34	(-1.04)		
BIDASK							-4.11[b]	(-2.13)
FOCUS	0.22	(1.14)	0.20	(1.20)	0.19	(1.08)	0.33[c]	(1.70)
GROWTH	-0.002	(-0.13)	0.01	(0.59)	0.002	(0.13)	-0.02	(-1.24)
ROA	-2.03[a]	(-2.78)	-1.44[b]	(-1.99)	-1.50	(-2.28)	-2.22[b]	(-2.59)
RELSIZ	0.24	(0.61)	-0.18	(-0.51)	0.14	(0.38)	-0.24	(-0.57)
ANTIDIR	0.04	(0.55)	0.04	(0.80)	0.03	(0.42)	0.06	(0.84)
HOTTIME	-0.18	(-0.89)	-0.18	(-1.02)	-0.13	(-0.69)	-0.06	(-0.26)
No. of obs.	114		103		129		91	
Adj. R^2	-0.01		-0.01		-0.02		0.02	
F statistic	0.87		0.93		0.62		1.21	
Sig. level	0.53		0.49		0.74		0.31	

Table 8.12 Regression of 3-year industry- and size-adjusted BHARs to post-spinoff combined firms on the change of information asymmetry proxies following spinoffs

Regression coefficients for 3-year industry- and size-adjusted BHARs for post-spinoff parent/subsidiary combined firms from the 129 spinoffs completed from January 1987 to December 2002. ERROR is the ratio of the absolute difference between the mean forecast earnings for the current year and actual earnings per share to the stock price at the beginning of the last month of the fiscal year. DISP is the standard deviation of all analysts' earnings forecasts for the current year made in the last month of the fiscal year divided by the stock price at the beginning of that month. RESD is the dispersion in the market-adjusted daily stock returns to a firm in a year. BIDASK is the difference between ask price and bid price divided by the mid point. Δ ERROR is the difference in ERROR between post-spinoff parents and pre-spinoff parents. Δ DISP is the difference in DISP between post-spinoff parents and pre-spinoff parents. Δ RESD is the difference in RESD between post-spinoff parents and pre-spinoff parents. Δ BIDASK is the difference in BIDASK between post-spinoff parents and pre-spinoff parents. The t-statistic based on White heteroskedasticity-adjusted standard errors is reported in parentheses. [a], [b], [c] indicates the significance at the 1%, 5%, and 10% level, respectively.

Variable	Model 1		Model 2		Model 3		Model 4	
Intercept	-0.03	(-0.07)	0.03	(0.11)	0.02	(0.06)	0.10	(0.24)
Δ ERROR	1.08[a]	(3.95)						
Δ DISP			4.36	(1.21)				
Δ RESD					3.56	(0.24)		
Δ BIDASK							9.85	(1.45)
FOCUS	0.30	(1.53)	0.25	(1.56)	0.20	(1.06)	0.34[c]	(1.97)
GROWTH	0.00	(0.04)	0.01	(0.54)	0.00	(0.01)	-0.01	(-0.85)
ROA	-2.01[b]	(-2.49)	-1.35[c]	(-1.85)	-1.46	(-2.29)	-1.45[b]	(-2.21)
RELSIZ	0.34	(0.89)	0.04	(0.11)	0.02	(0.06)	-0.77[c]	(-1.89)
ANTIDIR	0.03	(0.49)	0.01	(0.20)	0.02	(0.31)	0.01	(0.23)
HOTTIME	-0.13	(-0.63)	-0.16	(-0.89)	-0.12	(-0.67)	0.09	(0.35)
No. of obs.	106		97		128		91	
Adj. R^2	0.01		-0.01		-0.03		0.10	
F statistic	1.02		0.88		0.53		2.42	
Sig. level	0.42		0.53		0.81		0.03	

Chapter 9 Conclusions

9.1 Introduction

Corporate spinoffs are a special type of corporate restructuring activities. Through a spinoff, the stocks of a subsidiary (or several subsidiaries) are offered on a pro-rata distribution basis to the existing shareholders of the parent. As shown in the literature review in Chapter 2, there is extensive evidence that stock markets react to corporate spinoff announcements positively. However, the precise source of spinoff announcement gains is still a subject of debate. In addition, Chapter 3 summarises the literature on the stock market efficiency and shows that conclusions drawn from long-run event studies must be based on robust abnormal return calculation methodologies. In Chapter 4, I identify the gap in extant literature of corporate spinoffs and propose the following related research questions:

1. Do corporate spinoffs really create shareholder value?
2. What are the determinants of spinoff value effects?

Using a sample of 170 spinoffs completed by European companies between the years 1987 and 2005, I test the relative validity of behavioural, governance-based and information-based models to explain spinoff value effects. Chapter 5 analyses the stock and operating performance of post-spinoff firms with robust long-run abnormal return measurement methodologies. Chapter 6 explores whether investor irrationality affects the spinoff value effects. Chapter 7 examines whether the spinoff value effects are related to the improvement of corporate governance in post-spinoff firms. Chapter 8 investigates the validity of the information asymmetry for spinoff value effects.

In this final chapter, a summary of findings of four empirical chapters is presented in section 9.2. Then section 9.3 discusses the limitations of these results and offers recommendations for future research on corporate spinoffs. Section 9.4 outlines the contributions to the literature and practical implications for practitioners.

9.2 Summary of Empirical Findings

This section summarises the key findings reported in the preceding four empirical chapters.

First, Chapter 5 documents evidence that European spinoffs have positive and significant abnormal stock returns over the announcement period. The positive spinoff announcement abnormal returns do not substantially differ across sample countries. This evidence is consistent with the findings of earlier empirical studies (e.g. Daley et al., 1997; Desai and Jain, 1999; Krishnaswami and Subramaniam, 1999; Veld and Veld-Merkoulova, 2004).

Second, Chapter 5 reports evidence consistent with the efficient market hypothesis. In general, there are no significant long-run abnormal returns to post-spinoff firms for my sample. The conclusion holds for long-run returns measured with different methodologies to adjust for the cross-sectional return-dependence problem (Jegadeesh and Karceski, 2004; Lyon et al., 1999; Mitchell and Stafford, 2000). Regressions on the Fama and French (1993) three-factor model and Carhart (1997) four-factor model indicate that post-spinoff firms generally earn insignificant abnormal returns in the long-term. Using the calendar-time abnormal portfolio approach as advocated in Mitchell and Stafford (2000) produces qualitatively similar results. Given that the measurement of long-run abnormal stock returns is controversial, I then examine the operating performance of post-spinoff firms. Results show that post-spinoff firms do not have an improvement in the accounting returns. Taken together, my findings indicate that European stock markets are generally efficient in valuing corporate spinoffs.

Third, Chapter 6 provides evidence of the relationship between investor sentiments and the market reaction to spinoff announcements. There is a significant and positive association between investor demands for corporate focus (and glamour stocks of offspring) and the spinoff announcement returns. The strong association holds even after controlling for the value factors suggested in prior studies such as corporate focus and information asymmetry. Hence, my results show that investor sentiment is an additional factor for the positive market reaction to spinoff announcements.

Fourth, Chapter 6 further explores whether investor sentiment affects the managerial decision to spin off. I propose the catering theory of corporate spinoffs that some spinoffs are not undertaken for efficiency-related reasons. In contrast, managers may cater to irrational investor demand by spinning off overvalued subsidiaries. I conjecture that managers of unvalued parent firms have strong incentives to cater to investor demands by spinning off overvalued subsidiaries in order to maximise the short run share prices. I use three different measures to indicate such catering spinoffs. I find that the announcement returns to catering spinoffs are significantly higher than those to other types of spinoff. However, offspring following spinoffs that cater to investor demand for glamour stocks have lower long-run stock performance those from other types of spinoff. This evidence confirms that investors react to spinoff announcements for non-fundamental factors. A cautionary note should be made here. The number of catering spinoffs is small and offspring emerging from non-catering spinoffs still have positive long-run abnormal returns over a three-year post-spinoff period. Based on results in Chapters 5 and 6, European stock markets can be regarded as generally efficient and may only misvalue some types of spinoff.

Fifth, Chapter 7 tests a governance-based model that spinoffs create value by strengthening the corporate governance of post-spinoff firms (Chemmanur and Yan, 2004). I find that firms with a controlling family shareholder have lower spinoff announcement returns and long-run post-spinoff performance than firms without a controlling family shareholder. I also observe that controlling family shareholders generally reduce their equity holdings but still keep control of post-spinoff firms, indicating that these family owners may undertake a spinoff to reshuffle their wealth portfolios. The long-run underperformance of post-spinoff firms may be because that controlling family shareholders still retain a tight control on these post-spinoff firms and the agency conflicts between family owners and minority shareholders are not alleviated in the post-spinoff period. On the other hand, I find that post-spinoff firms with an improvement in the corporate governance structure earn higher long-run stock returns than those without an improvement in the corporate governance structure. Therefore, my evidence is generally consistent with the governance-based model of spinoff value effects that the gains from spinoffs represent the mitigation of agency conflicts.

Sixth, Chapter 8 documents no evidence for the information asymmetry hypothesis. The spinoff announcement returns are positively associated with the information asymmetry measures. Nevertheless, there is no improvement in the information asymmetry proxies and the analyst coverage following a spinoff. A further examination reveals that the information asymmetry measures does not improve for sub-samples of spinoff parent firms which are likely to have significant information benefits from spinoffs. Thus, it is unlikely that a European spinoff is motivated by reducing the information asymmetry problem. On the other hand, I find that the information asymmetry problem may be exacerbated following a spinoff when the organisational complexity of spinoff parents is reduced. This evidence supports the argument of Goldman (2005) that a spinoff may exacerbate the information asymmetry problems when the liquidity of a post-spinoff firm is reduced.

9.3 Limitations and Recommendations

Like other empirical studies in corporate finance, this thesis is subject to several limitations and my results should be treated with caution. Future research on corporate spinoffs should tackle these issues in order to report more robust and fruitful results.

First, my sample size is quite small since there are only 157 completed spinoffs over the period 1987 to 2005. This is due to fact that spinoffs have only become popular in Europe in recent years. Therefore, my results will be subject to the small sample size problem. In addition, I cannot conduct detailed analysis of the spinoff value effects for individual countries because of the data availability problem. Future research employing a larger sample of spinoffs should deliver more unbiased and interesting results.

Second, there are several important differences across European countries, which I have not controlled in my empirical analysis. For instance, European countries differ substantially with regard to accounting standard, stock exchange regulations, and creditor right protection, all of which are likely to affect the spinoff value effects and the spinoff decision. Subsequent studies should consider these issues in the cross-country analysis of spinoff value effects.

Third, the return methodologies employed in Chapter 5 are still subject to statistical and model misspecification problems. The adjusted t-statistics advocated in Lyon et al. (1999) and Mitchell and Stafford (2000) do not fully resolve the cross-sectional dependence problems. The serial correlation and heteroskedsticity-consistent t-statistics proposed in Jegadeesh and Karceski (2004) may have a lower power to test the long-run abnormal returns for a small sample, such as the spinoff sample used in this study. In addition, the Fama and French (1993) three-factor model and the Carhart (1997) four-factor model are an imperfect approximation of asset pricing models. There is evidence that these models have limited powers in explaining cross-sectional stock returns. For instance, Cremers et al. (2005) find a significant impact of takeover likelihood on firm valuation. Using estimates of the likelihood that a firm will be acquired, they create a takeover-spread portfolio that longs firms with a high likelihood of being acquired and shorts firms with low likelihood of being acquired. They find that the Fama-French (1993) three-factor model cannot explain the returns to the takeover-spread portfolio and thus propose an asset pricing model including the takeover factor. Therefore, future research can use better asset pricing models, such as the takeover-augmented factor model, to examine the significance of long-run abnormal returns to post-spinoff firms. Moreover, I only examine whether a simple investment strategy that buys all post-spinoff firms at the completion date can earn superior long run abnormal returns. Future research may examine whether other investment strategies can provide superior long-run returns as claimed in the Press.

Fourth, the accuracy of proxies for catering spinoffs used in Chapter 6 may be improved. A spinoff with a substantial difference in industry-based market valuation between different divisions may not necessarily indicate that managers are exploiting market misvaluation to spin off. In addition, the market valuation of a division's industry do not necessarily relate to the real market valuation of the division. Future studies can design better proxies to measure the managerial incentives to exploit the market misevaluation in order to test the value impact of catering spinoffs. For instance, future research may consider the intensity of stock-based compensation for managers, which should be positively related to managerial incentives to exploit market misevaluation. Denis, Hanouna, and Sarin (2006) have reported a significant positive association between the likelihood of securities fraud allegations and a measure of executive stock option incentives. They argue that managerial stock options increase the incentive to engage in fraudulent activity. An extension of their argument is that managerial stock options could increase the incentive to engage in other non-value-maximisation corporate transactions, such as spinoffs aiming to exploit market misevaluation.

Fifth, the measurements of agency problems in Chapter 7 may contain biases. For example, I measure the effectiveness of board monitoring based on the proportion of independent directors in the corporate board. However, the actual working of corporate board may be another important factor in measuring the monitoring effectiveness, such as the frequency of board meeting (Fich and Shivdasani, 2006). In addition, I classify independent directors and institutional blockholders based on my own assessment of the information provides in sample firms' financial reports. Therefore, the classification results for board independence are likely to be biased. Furthermore, my corporate governance variables do not consider several important aspects of corporate governance mechanisms, such as director accountability, information disclosure quality, and anti-takeover provisions. These governance practices will also have significant impact on the spinoff value effects and the spinoff decision.

Future research should use better sources of corporate governance data to examine the relationship between the corporate governance structure of post-spinoff firms and spinoff value effects. Some professional firms such as Credit Lyonnais Securities Asia and Manifest have begun to provide firm-level corporate governance data, which are used in the recent finance literature. For example, Durnev and Kim (2005) use the survey data compiled by Credit Lyonnais Securities Asia (CLSA) to measure the firm-level corporate governance strength for 494 firms in 24 countries. The CLSA survey provides scores on the quality of corporate governance practices that are based on responses from financial analysts to 57 questions covering six categories of governance, i.e. discipline (managerial incentives and discipline towards value-maximising actions), transparency (timely and accurate disclosure), independence (board independence), accountability (board accountability), responsibility (enforcement and management accountability), protection (monitory shareholder protection), and social awareness (social responsibility). The corporate governance score based on the CLSA survey will be a good proxy to measure the corporate governance strength.

Sixth, the analyses in Chapter 8 only investigate the validity of the information asymmetry hypothesis. It is not clear whether other information-based models can explain the change or no change in the information asymmetry problems following spinoffs. For instance, the information asymmetry problem may become worse because the focused post-spinoff firms lose the informational benefits resulting from the aggregated segment reports (Thomas, 2002) or because of the reduced liquidity of focusing post-spinoff firms (Goldman, 2005).

Finally, this study has not controlled the endogeneity issue in the research methodology. Corporate spinoffs are self-selection events and firms involved in spinoffs are non-random. Thus, any conclusions drawn from a non-random sample have to be treated with caution and appropriate econometric modes of self-selection should be employed (Li and Prabhala, 2006). For instance, Chapter 7 documents evidence that firms with a controlling family shareholder earn lower spinoff announcement returns than those without a controlling family shareholder. My explanation in Chapter 7 is that family firms generally have higher agency costs than non-family firms and a spinoff decision made by family firms may be not value-maximising. However, this evidence is also consistent with a self-selection explanation that family firms with severe agency problems are more likely to undertake spinoffs than non-family firms. It is possible that, in general, family firms do not have higher agency costs than non-family firms. Future research should model the managerial decision to spinoff with the Heckman selection model as argued in Lasfer (2006) to control this self-selection problem.

9.4 Contributions to the Theory and Practice

This thesis conducts a comprehensive examination of the sources of spinoff value effects and provides empirical evidence of the relative validity of different models to explain spinoff value gains. This study makes a number of contributions to the existing literature of corporate divestiture and has several important practical implications for investment professionals and corporate managers.

First of all, Chapter 5 examines the long-run performance of post-spinoff firms with different robust return methodologies. The long-run abnormal stock returns of post-spinoff firms are insignificant when the adjusted t-statistics are used to control the cross-sectional return dependence problem. The long-run operating performance of parent and offspring is also insignificant. Regressions on the multi-factor models also provide similar conclusions. My results also suggest that the significant long-run abnormal returns of post-spinoff firms in earlier US studies should be re-examined with robust return methodologies to account for the cross-sectional return-dependence issue. Furthermore, investment professionals should be aware that a simple investment strategy of buying post-spinoff firms upon spinoff completion dates will not necessarily deliver superior long-run returns as claimed in the Press.

Second, Chapter 6 demonstrates a positive association between investor sentiment and the spinoff value gains. This evidence is consistent with the argument of a growing literature of behavioural finance that investors tend to react to non-fundamental factors. My analysis further shows that some spinoffs are undertaken to exploit the market misevaluation of different divisions of a diversified firm. This finding suggests that not all focus-increasing spinoffs create shareholder values in the long run. Assessing the value creation from a spinoff transaction should take into account the managerial incentives to cater to investor demand for corporate focus and glamour stocks. Barberis and Thaler (2003) review the recent empirical finance papers and propose that investor irrationality affects financing and investment decisions. For instance, they observe that firms with high valuation issue equity while those with low valuation repurchase their shares. My work adds to this literature by showing that investor irrationality has an impact on corporate restructuring decisions.

This chapter also provides evidence that stock market may be inefficient in some cases since glamour spinoffs earn significant positive announcement period abnormal returns while significantly underperform other types of spinoff in the long run. I have used extensive methodology to test the market efficiency in the spinoff context and obtained consistent results. Thus, my conclusion is unlikely to be subject to the variable construction biases. My evidence adds to the past literature on market inefficiency and highlights the importance of relaxing traditional assumption that markets are efficient when examining value effects of corporate transactions.

The evidence presented in Chapter 7 further shows a positive association between the reduction of agency costs and spinoff value gains. In particular, post-spinoff firms that have an improvement in the board independence have better long-run stock returns than post-spinoff rims that have no improvement in the board independence. Therefore, it is important for corporate managers to design a more effective governance system in post-spinoff firms in order to enhance the performance of post-spinoff firms.

Finally, the results in Chapter 8 indicate that spinoffs do not resolve information asymmetry problems and the long-run performance of post-spinoff firms is unrelated to the change of information asymmetry proxies around a spinoff. Further, I document evidence that firms that are likely to suffer from severe information asymmetry problems do not have an improvement in the information transparency level following spinoffs. Hence, whether a spinoff alleviates the information asymmetry problem remains questionable. Allen (2001) observes that managers have private information about the prospect of post-spinoff firms and the change of their equity holdings around spinoffs is significant related to post-spinoff stock returns. For instance, Allen observes that net insider sales in offspring are significantly related to the likelihood that these firms will cease trading because of insolvency or bankruptcy in the 5-year period subsequent to the spinoff completion. Therefore, his evidence suggests that a spinoff can also occur when insiders have information that a division is overvalued. Collectively, investors should be cautious about the desirability of spinoff transactions when managers claim that the spinoff firm is undervalued by investors and the spinoff is undertaken to alleviate the information asymmetry problems.

Reference List

1. Afshar, K.A., Taffler, R.J. and Sudarsanam, P.S. (1992), 'The Effect of Corporate Divestments on Shareholder Wealth: The UK Experience', *Journal of Banking and Finance*, Vol. 16, No. 1, February, pp. 115-135.

2. Agrawal, A. and Knoeber, C.R. (1996), 'Firm Performance and Mechanisms to Control Agency Problems Between Managers and Shareholders', *Journal of Financial and Quantitative Analysis*, Vol. 31, No. 3, September, pp. 377-397.

3. Ahn, S. and Walker, M.D. (2006), 'Corporate Governance and the Spinoff Decision', *Journal of Corporate Finance*, forthcoming.

4. Alexandrou, G. and Sudarsanam, S. (2001), 'Shareholder Wealth Effects of Corporate Selloffs: Impact of Growth Opportunities, Economic Cycle and Bargaining Power', *European Financial Management*, Vol. 7, No. 2, June, pp. 237-258.

5. Allen, J.W. (2001), 'Private Information and Spin-Off Performance', *Journal of Business*, Vol. 74, No. 2, April, pp. 281-306.

6. Allen, J.W., Lummer, S.I., McConnell, J.J. and Reed, D.K. (1995), 'Can Takeover Losses Explain Spin-Off Gains?', *Journal of Financial and Quantitative Analysis*, Vol. 30, No. 4, December, pp. 465-485.

7. Allen, J.W. and McConnell, J. (1998), 'Equity Carve-Outs and Managerial Discretion', *Journal of Finance*, Vol. 53, No. 1, February, pp. 163-186.

8. Amihud, Y. and Lev, B. (1981), 'Risk Reduction As a Managerial Motive for Conglomerate Mergers', *Bell Journal of Economics*, Vol. 12, No. 2, Autumn, pp. 605-617.

9. Anderson, R.C. and Reeb, D.M. (2003), 'Founding-Family Ownership and Firm Performance: Evidence From the S&P 500', *Journal of Finance*, Vol. 58, No. 3, June, pp. 1301-1327.

10. Ang, J.S. and Zhang, S. (2004), 'An Evaluation of Testing Procedures for Long Horizon

Event Studies', *Review of Quantitative Finance and Accounting*, Vol. 23, No. 3, November, pp. 251-574.

11. Antweiler, W. and Frank, M.Z. (2006), *Do US Stock Markets Typically Overreact to Corporate News Stories?*, Working Paper, Available at SSRN: http://ssrn.com/abstract=878091.

12. Baker, M., Ruback, R. and Wurgler, J. (2004), *Behavioral Corporate Finance: A Survey*, Working Paper, Available at SSRN: http://ssrn.com/abstract=602902.

13. Baker, M. and Wurgler, J. (2000), 'The Equity Share in New Issues and Aggregate Stock Returns', *Journal of Finance*, Vol. 55, No. 5, October, pp. 2219-2259.

14. Baker, M. and Wurgler, J. (2002), 'Market Timing and Capital Structure', *Journal of Finance*, Vol. 57, No. 1, February, pp. 1-32.

15. Baker, M. and Wurgler, J. (2004), 'A Catering Theory of Dividends', *Journal of Finance*, Vol. 59, No. 3, June, pp. 1125-1165.

16. Barber, B.M. and Lyon, J.D. (1996), 'Detecting Abnormal Operating Performance: The Empirical Power and Specification of Test Statistics', *Journal of Financial Economics*, Vol. 41, No. 3, July, pp. 359-399.

17. Barber, B.M. and Lyon, J.D. (1997), 'Detecting Long-Run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics', *Journal of Financial Economics*, Vol. 43, No. 3, March, pp. 341-372.

18. Barberis, N., Shleifer, A. and Vishny, R.W. (1998), 'A Model of Investor Sentiment', *Journal of Financial Economics*, Vol. 49, No. 3, September, pp. 307-343.

19. Barberis, N. and Thaler, R. (2003), *A Survey of Behavioral Finance*, Working Paper, Available at SSRN: http://ssrn.com/abstract=327880.

20. Becht, M., Bolton, P. and Roell, A. (2002), *Corporate Governance and Control*, ECGI - Finance Working Paper No. 02/2002. Available at SSRN: http://ssrn.com/abstract=343461.

21. Berger, P.G. and Ofek, E. (1995), 'Diversification's Effect on Firm Value', *Journal of Financial Economics*, Vol. 37, No. 1, January, pp. 39-65.

22. Berger, P.G. and Ofek, E. (1999), 'Causes and Effects of Corporate Refocusing Programs', *Review of Financial Studies*, Vol. 12, No. 2, Summer, pp. 311-345.

23. Berk, J.B. (1995), 'A Critique of Size-Related Anomalies', *Review of Financial Studies*, Vol. 8, No. 2, Summer, pp. 275-286.

24. Best, R.W., Hodges, C.W. and Lin, B. (2004), 'Does Information Asymmetry Explain The Diversification Discount?', *Journal of Financial Research*, Vol. 27, No. 2, Summer, pp. 235-249.

25. Borokhovich, K.A., Parrino, R. and Trapani, T. (1996), 'Outside Directors and CEO Selection', *Journal of Financial and Quantitative Analysis*, Vol. 31, No. 3, September, pp. 337-355.

26. Brav, A., Geczy, C. and Gompers, P.A. (2000), 'Is the Abnormal Return Following Equity Issuances Anomalous?', *Journal of Financial Economics*, Vol. 56, No. 2, May, pp. 209-249.

27. Brown, S.J. and Warner, J.B. (1985), 'Using Daily Stock Returns: The Case of Event Studies', *Journal of Financial Economics*, Vol. 14, No. 1, March, pp. 3-31.

28. Burkart, M., Panunzi, F. and Shleifer, A. (2003), 'Family Firms', *Journal of Finance*, Vol. 58, No. 5, October, pp. 2167-2202.

29. Byrd, J.W. and Hickman, K.A. (1992), 'Do Outside Directors Monitor Managers?', *Journal of Financial Economics*, Vol. 32, No. 2, October, pp. 195-221.

30. Campbell, J.Y., Lo, A.W. and MacKinlay, A.C. (1997), *The Econometrics of Financial Markets*, Princeton University Press, Princeton, New Jersey.

31. Carhart, M. (1997), 'On Persistence in Mutual Fund Performance', *Journal of Finance*, Vol. 52, No. 1, March, pp. 57-82.

32. Chan, W.S., Frankel, R. and Kothari, S.P. (2004), 'Testing Behavioral Finance Theories

Using Trends and Consistency in Financial Performance', *Journal of Accounting and Economics*, Vol. 38, No. 1-3, December, pp. 3-50.

33. Chang, C. and Yu, X. (2004), 'Investment Opportunities, Liquidity Premium, and Conglomerate Mergers', *Journal of Business*, Vol. 77, No. 1, January, pp. 45-74.

34. Chemmanur, T.J. and Yan, A. (2004), 'A Theory of Corporate Spin-Offs', *Journal of Financial Economics*, Vol. 72, No. 2, May, pp. 259-290.

35. Chung, K.E. and Jo, H. (1996), *Journal of Financial and Quantitative Analysis*, Vol. 31, No. 4, December, pp. 493-512.

36. Coles, J.L., Daniel, N.D. and Naveen, L. (2006), 'Managerial Incentives and Risk-Taking', *Journal of Financial Economics*, Vol. 79, No. 2, February, pp. 431-468.

37. Colvin, G. (2003), 'Time Warner, Don't Blame Steve Case', *Fortune*, February 3,

38. Comment, R. and Jarrell, G.A. (1995), 'Corporate Focus and Stock Returns', *Journal of Financial Economics*, Vol. 37, No. 1, January, pp. 67-87.

39. Conyon, M.J. and Murphy, K.J. (2000), 'The Prince and the Pauper? CEO Pay in the United States and United Kingdom', *The Economic Journal*, Vol. 110, No. 467, November, pp. F640-671.

40. Core, J. and Guay, W. (1999), 'The Use of Equity Grants to Manage Optimal Equity Incentive Levels', *Journal of Accounting and Economics*, Vol. 28, No. 2, December, pp. 151-184.

41. Cremers, M., Nair, V. and John, K. (2005), *Takeovers and Cross-Section of Returns*, Working Paper, Available at SSRN: http://ssrn.com/abstract=690185 .

42. Cusatis, P.J., Miles, J.A. and Woolridge, J.R. (1993), 'Restructuring Through Spinoffs: the Stock-Market Evidence', *Journal of Financial Economics*, Vol. 33, No. 3, June, pp. 293-311.

43. Daley, L., Mehrotra, V. and Sivakumar, R. (1997), 'Corporate Focus and Value Creation Evidence From Spinoffs', *Journal of Financial Economics*, Vol. 45, No. 2, August, pp.

257-281.

44. Daniel, K., Hirshleifer, D. and Subrahmanyam, A. (1998), 'Investor Psychology and Security Market Under- and Overreactions', *Journal of Finance*, Vol. 53, No. 6, December, pp. 1839-1886.

45. Daniel, K., Hirshleifer, D. and Teoh, S.H. (2002), 'Investor Psychology in Capital Markets: Evidence and Policy Implications', *Journal of Monetary Economics*, Vol. 49, No. 1, January, pp. 139-209.

46. Daniel, K. and Titman, S. (1997), 'Evidence on the Characteristics of Cross Sectional Variation in Stock Returns', *Journal of Finance*, Vol. 52, No. 1, March, pp. 1-33.

47. Daniel, K. and Titman, S. (2006), 'Market Reactions to Tangible and Intangible Information', *Journal of Finance*, Vol. 61, No. 4, August, pp. 1605-1643.

48. Daniel, K., Titman, S. and Wei, J. (2001), 'Explaining the Cross-Section of Stock Returns in Japan: Factors or Characteristics?', *Journal of Finance*, Vol. 56, No. 2, April , pp. 743-766.

49. de Bettignies, J.E. and Baggs, J. (2006), *Product Market Competition and Agency Costs*, Sauder School of Business Working Paper, Available at SSRN: http://ssrn.com/abstract=604821 .

50. DeBondt, W.F.M. and Thaler, R. (1985), 'Does the Stock Market Overreact?', *Journal of Finance*, Vol. 40, No. 3, July, pp. 793-808.

51. DeBondt, W.F.M. and Thaler, R. (1987), 'Further Evidence On Investor Overreaction and Stock Market Seasonality', *Journal of Finance*, Vol. 42, No. 3, July, pp. 557-581.

52. DeBondt, W.F.M. and Thaler, R. (1990), 'Do Security Analysts Overreact?', *American Economic Review*, Vol. 80, No. 2, May, pp. 52-57.

53. Denis, D.J., Denis, D.K. and Sarin, A. (1997), 'Agency Problems, Equity Ownership, and Corporate Diversification', *Journal of Finance*, Vol. 52, No. 1, March, pp. 135-160.

54. Denis, D.J., Hanouna, P. and Sarin, A. (2006), 'Is There a Dark Side to Incentive

Compensation?', *Journal of Corporate Finance*, Vol. 12, No. 3, June, pp. 467-488.

55. Denis, D.K. and McConnell, J.J. (2003), 'International Corporate Governance', *Journal of Financial and Quantitative Analysis*, Vol. 38, No. 1, March, pp. 1-36.

56. Dennis, N. (2006), 'Just A Mention of Spin-Off Can Lock Value for Shareholders', *Financial Times*, 1 March,

57. Desai, H. and Jain, P.C. (1999), ' Firm Performance and Focus: Long-Run Stock Market Performance Following Spinoffs', *Journal of Financial Economics,* Vol. 54, No. 1, October, pp. 75-101.

58. Dharan, B.G. and Ikenberry, D. (1995), 'The Long-Run Negative Drift of Post-Listing Stock Returns', *Journal of Finance*, Vol. 50, No. 5, December, pp. 1547-1574.

59. Dodd, P. and Warner, J.B. (1983), 'On Corporate Governance: A Study of Proxy Contest', *Journal of Financial Economics*, Vol. 11, No. 1-4, April, pp. 401-438.

60. Doukas, J.A. , Kim, C. and Pantzalis, C. (2004), *Abnormal Analyst Coverage, External Financing, and Firm Investment*, Working Paper, Available at SSRN: http://ssrn.com/abstract=548424 .

61. Durnev, A. and Kim, E.H. (2005), ' To Steal or Not to Steal: Firm Attributes, Legal Environment, and Valuation', *Journal of Finance,* Vol. 60, No. 3, June, pp. 1461-1493.

62. Elton, E.J., Gruber, M.J. and Gultekin, M.N. (1984), 'Professional Expectations: Accuracy and Diagnosis of Errors', *Journal of Financial and Quantitative Analysis*, Vol. 19, No. 4, December, pp. 351-365.

63. Faccio, M. and Lang, L.H.P. (2002), 'The Ultimate Ownership of Western European Corporations', *Journal of Financial Economics,* Vol. 65, No. 3, September, pp. 365-395.

64. Faccio, M., McConnell, J.J. and Stolin, D. (2006), 'Returns to Acquirers of Listed and Unlisted Targets', *Journal of Quantitative and Financial Analysis*, Vol. 41, No. 1, March, pp. 197-220.

65. Fama, E.F. (1970), 'Efficient Capital Markets: A Review of Theory and Empirical Work', *Journal of Finance*, Vol. 25, No. 2, May, pp. 383-417.

66. Fama., E.F. (1991), 'Efficient Capital Markets: II', *Journal of Finance*, Vol. 46, No. 5, December, pp. 1575-1617.

67. Fama, E.F. (1998), 'Market Efficiency, Long-Term Returns, and Behavioral Finance', *Journal of Financial Economics*, Vol. 49, No. 3, September, pp. 283-306.

68. Fama, E.F. and French, K.R. (1992), 'The Cross-Section of Expected Stock Returns', *Journal of Finance*, Vol. 47, No. 2, June, pp. 427-465.

69. Fama, E.F. and French, K.R. (1993), 'Common Risk Factors in the Returns on Stocks and Bonds', *Journal of Financial Economics*, Vol. 33, No. 1, February, pp. 3-56.

70. Fama, E.F. and French, K.R. (1995), 'Size and Book-to-Market Factors in Earnings and Returns', *Journal of Finance*, Vol. 50, No. 1, March, pp. 131-155.

71. Fama, E.F. and French, K.R. (1996), 'Multifactor Explanations of Asset Pricing Anomalies', *Journal of Finance*, Vol. 51, No. 1, March, pp. 55-84.

72. Fama, E.F. and French, K.R. (1997), 'Industry Cost of Equity', *Journal of Financial Economics*, Vol. 43, No. 2, February, pp. 153-193.

73. Fama, E.F. and French, K.R. (2004), 'The Capital Asset Pricing Model: Theory and Evidence', *Journal of Economic Perspectives*, Vol. 18, No. 3, Summer, pp. 25-46.

74. Fama, E.F. and French, K.R. (2006), 'The Value Premium and the CAPM', *Journal of Finance*, Vol. 61, No. 5, October, pp. 2163-2185.

75. Fama, E.F. and Jensen, M.C. (1983), 'Separation of Ownership and Control', *Journal of Law and Economics*, Vol. 26, No. 2, June, pp. 301-326.

76. Fich, E.M. and Shivdasani, A. (2006), 'Are Busy Boards Effective Monitors?', *Journal of Finance*, Vol. 61, No. 2, April, pp. 689-724.

77. Franks, J. and Mayer, C. (1996), 'Hostile Takeovers and the Correction of Managerial Failure', *Journal of Financial Economics*, Vol. 40, No. 1, January, pp. 163-181.

78. Gao, L. and Sudarsanam, P.S. (2005), *Executive Compensation, Hubris, Corporate Governance: Impact on Managerial Risk Taking and Value Creation in UK High-Tech and Low-Tech Acquisitions*, Working Paper, Cranfield University.

79. Gemmill, G. (2005), *Catering for Dividends by Stripping Mutual-Fund Portfolios*, Working Paper, Warwick Business School.

80. Gertner, R., Powers, E. and Scharfstein, D. (2002), 'Learning about Internal Capital Markets From Corporate Spin-Offs', *Journal of Finance*, Vol. 57, No. 6, December, pp. 2479-2506.

81. Ghosh, A. (2001), 'Does Operating Performance Really Improve Following Corporate Acquisitions? ', *Journal of Corporate Finance*, Vol. 7, No. 2, June, pp. 151-178.

82. Gibbs, P. (1999), *Quarterly Focus: European Spin-Off Market*, Morgan Guaranty Trust Company, London, pp. April 23.

83. Gillan, S.L. (2006), 'Recent Developments in Corporate Governance: An Overview', *Journal of Corporate Finance*, Vol. 12, No. 3, June, pp. 381-402.

84. Gilson, S.C. , Healy, P.M., Noe, C.F. and Palepu, K.G. (2001), 'Corporate Focus and the Benefits From More Specialized Analyst Coverage', *Journal of Accounting Research*, Vol. 39, No. 3, December, pp. 565-582.

85. Goldman, E. (2005), 'Organizational Form, Information Collection, and the Value of the Firm', *Journal of Business*, Vol. 78, No. 3, May, pp. 817-839.

86. Gomes, A. (2000), 'Going Public without Governance: Managerial Reputation Effects', *Journal of Finance*, Vol. 55, No. 2, April, pp. 615-646.

87. Gregoriou, A., Ioannidis, C. and Skerratt, L. (2005), 'Information Asymmetry and the Bid-Ask Spread: Evidence from the UK ', *Journal of Business Finance and Accounting*, Vol. 32, No. 9-10, November, pp. 1801-1826.

88. Griffin, J.M. (2002), 'Are the Fama and French Factors Global or Country Specific?', *Review of Financial Studies*, Vol. 15, No. 3, Summer, pp. 783-803.

89. Grullon, G. and Michaely, R. (2004), 'The Information Content of Share Repurchase Programs', *Journal of Finance*, Vol. 59, No. 2, April, pp. 651-680.

90. Habib, M.A., Johnsen, D.B. and Naik, N.Y. (1997), 'Spinoffs and Information', *Journal of Financial Intermediation*, Vol. 6, No. 2, April, pp. 153-176.

91. Hadlock, C.J., Ryngaert, M. and Thomas, S. (2001), 'Corporate Structure and Equity Offerings: Are There Benefits to Diversification ', *Journal of Business*, Vol. 74, No. 4, October, pp. 613-635.

92. Hayes, J.R. (1997), 'Wall Street Loves Split-Ups. But What Does the Record Show About Them?', *Forbes*, October 20, pp. 215-215.

93. Hermalin, B.E. (1992), 'The Effects of Competition on Executive Behavior', *Rand Journal of Economics*, Vol. 23, No. 3, Autumn, pp. 350-365.

94. Hirshleifer, D. (2001), 'Investor Psychology and Asset Pricing', *Journal of Finance*, Vol. 56, No. 4, August, pp. 1533-1597.

95. Hite, G.L. and Owers, J.E. (1983), 'Security Price Reactions around Corporate Spin-Off Announcements', *Journal of Financial Economics*, Vol. 12, No. 4, December, pp. 409-436.

96. Hoberg, G. and Prabhala, N.R. (2006), *Disappearing Dividends: The Importance of Idiosyncratic Risk and the Irrelevance of Catering*, AFA 2007 Chicago Meetings Paper, Available at SSRN: http://ssrn.com/abstract=690406.

97. Hong, H., Lim, T. and Stein, J. (2000), 'Bad News Travels Slowly: Size, Analyst Coverage, and the Profitability of Momentum Strategies', *Journal of Finance*, Vol. 55, No. 1, February, pp. 265-297.

98. Hong, H. and Stein, J.C. (1999), ' A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets', *Journal of Finance*, Vol. 54, No. 6, December, pp.

2143-2184.

99. Hou, K. and Robinson, D.T. (2006), 'Industry Concentration and Average Stock Returns', *Journal of Finance*, forthcoming,

100. Huson, M.R. and MacKinnon, G. (2003), 'Corporate Spinoffs and Information Asymmetry between Investors', *Journal of Corporate Finance*, Vol. 9, No. 4, September, pp. 481-503.

101. Ikenberry, D., Lakonishok, J. and Vermaelen, T. (1995), 'Market Underreaction to Open Market Share Repurchases', *Journal of Financial Economics*, Vol. 39, No. 2-3, October-November, pp. 181-208.

102. Ikenberry, D.L. and Ramnath, S. (2002), 'Underreaction to Self-Selected News Events: The Case of Stock Splits', *Review of Financial Studies*, Vol. 25, No. 2, Special Edition, pp. 489-526.

103. Jegadeesh, N. (2000), 'Long-Term Performance of Seasoned Equity Offerings: Benchmark Errors and Biases in Expectations', *Financial Management*, Vol. 29, No. 3, Autumn, pp. 5-30.

104. Jegadeesh, N. and Karceski, J. (2004), *Long-Run Performance Evaluation: Correlation and Heteroskedasicity-Consistent Tests*, Working Paper, Available at SSRN: http://ssrn.com/abstract=532503.

105. Jegadeesh, N. and Titman, S. (1993), 'Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency', *Journal of Finance*, Vol. 48, No. 1, March, pp. 65-93.

106. Jegadeesh, N. and Titman, S. (2001), 'Profitability of Momentum Strategies: An Evaluation of Alternative Explanations', *Journal of Finance*, Vol. 56, No. 2, April, pp. 699-720.

107. Jensen, M.C. (1986), 'Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers', *Journal of Finance*, Vol. 76, No. 2, May, pp. 323-329.

108. Jensen, M.C. (1993), 'The Modern Industrial Revolution, Exit, and the Failure of Internal

Control Systems', *Journal of Finance*, Vol. 48, No. 3, July, pp. 831-880.

109. Jensen, M.C. and Meckling, W.H. (1976), 'Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure', *Journal of Financial Economics*, Vol. 3, No. 4, October, pp. 305-360.

110. Jensen, M.C. and Murphy, K.J. (1990), 'Performance Pay and Top Management Incentives ', *Journal of Political Economy*, Vol. 98, No. 2, April, pp. 225-264.

111. John, K. and Ofek, E. (1995), 'Asset Sales and Increase in Focus', *Journal of Financial Economics*, Vol. 37, No. 1, January, pp. 105-126.

112. Kadiyala, P. and Rau, P.R. (2004), 'Investor Reaction to Corporate Event Announcements: Underreaction or Overreaction?', *Journal of Business*, Vol. 77, No. 2, April, pp. 357-386.

113. Kaplan, S.N. and Weisbach, M.S. (1992), 'The Success of Acquisitions - Evidence From Divestitures', *Journal of Finance*, Vol. 47, No. 1, March, pp. 107-138.

114. Kasznik, R. and Lev, B. (1995), 'To Warn or Not to Warn: Management Disclosures in the Face of an Earnings Surprise', *Accounting Review*, Vol. 70, No. 1, January, pp. 113-134.

115. Kim, O. and Verrecchia, R.E. (1994), 'Market Liquidity and Volume Around Earnings Announcements', *Journal of Accounting and Economics*, Vol. 17, No. 1-2, January, pp. 41-67.

116. Klein, P. (2001), 'Were the Acquisitive Conglomerates Inefficient', *Rand Journal of Economics*, Vol. 32, No. 4, Winter, pp. 745-761.

117. Kohers, N. and Kohers, T. (2001), 'Takeovers of Technology Firms: Expectations Vs. Reality', *Financial Management*, Vol. 30, No. 3, Autumn, pp. 35-54.

118. Kothari, S.P. and Warner, J.B. (2006), 'Econometrics of Event Studies', in Eckbo, B.E. (Editor), *Handbook of Corporate Finance: Empirical Corporate Finance*, Elsevier, Oxford, UK,

119. Krishnaswami, S. and Subramaniam, V. (1999), 'Information Asymmetry, Valuation, and

the Corporate Spin-Off Decision', *Journal of Financial Economics*, Vol. 53, No. 1, July, pp. 73-112.

120. La Porta, R., Lopez-De-Silanes, F., Shleifer, A. and Vishny, R.W. (1998), 'Law and Finance', *Journal of Political Economy*, Vol. 106, No. 6, December, pp. 1113-1154.

121. La Porta, R., Lopez-De-Silanes, F., Shleifer, A. and Vishny, R.W. (1999), 'Corporate Ownership around the World', *Journal of Finance*, Vol. 54, No. 2, April, pp. 471-517.

122. La Porta, R., Lopez-De-Silanes, F., Shleifer, A. and Vishny, R.W. (2000), 'Investor Protection and Corporate Governance', *Journal of Financial Economics*, Vol. 58, No. 1-2, October-November, pp. 3-27.

123. Lamont, O. and Thaler, R. (2003), 'Can the Market Add and Subtract? Mispricing in Tech Stock Carve-Outs', *Journal of Political Economy*, Vol. 111, No. 2, April, pp. 227-268.

124. Lang, L.H.P., Poulsen, A. and Stulz, R.M. (1995), 'Asset Sales, Firm Performance, and The Agency Costs of Managerial Discretion', *Journal of Financial Economics*, Vol. 37, No. 1, January, pp. 3-37.

125. Lang, L.H.P. and Stulz, R.M. (1994), 'Tobin's Q, Corporate Diversification, and Firm Performance', *Journal of Political Economy*, Vol. 102, No. 6, December, pp. 1248-1280.

126. Lang, L.L.P. and Stulz, R.M. (1992), 'Contagion and Competitive Intra-Industry Effects of Bankruptcy Announcements', *Journal of Financial Economics*, Vol. 32, No. 1, August, pp. 45-60.

127. Lang, M.H. and Lundholm, R.J. (1996), 'Corporate Disclosure Policy and Analyst Behavior', *Accounting Review*, Vol. 71, No. 4, October, pp. 467-492.

128. Lasfer, A.M. (2006), 'Discussion of Separation of Ownership From Control and Acquiring Firm Performance: The Case of Family Ownership in Canada', *Journal of Business Finance and Accounting*, Vol. 33, No. 3-4, April-May, pp. 544-549.

129. Lasfer, M.A., Sudarsanam, P.S. and Taffler, R.J. (1996), 'Financial Distress, Asset Sales, and

Lender Monitoring', *Financial Management*, Vol. 25, No. 3, Autumn, pp. 57-66.

130. Lee, B. (2006), 'An Empirical Evaluation of Behavioral Models Based on Decompositions of Stock Prices', *Journal of Business*, Vol. 79, No. 1, January, pp. 393-427.

131. Li, K. and Prabhala, N.R. (2006), 'Self-Selection Models in Corporate Finance', in Eckbo, B.E.*Handbook of Corporate Finance: Empirical Corporate Finance*, Elsevier, Amsterdam,

132. Liew, J. and Vassalou, M. (2000), 'Can Book-to-Market, Size and Momentum Be Risk Factors That Predict Economic Growth?', *Journal of Financial Economics,* Vol. 57, No. 2, August, pp. 221-245.

133. Lins, K. and Servaes, H. (1999), 'International Evidence on the Value of Corporate Diversification', *Journal of Finance*, Vol. 54, No. 6, December, pp. 2215-2239.

134. Liu, W. (2006), 'A Liquidity-Augmented Capital Asset Pricing Model', *Journal of Financial Economics*, Vol. 82, No. 3, December, pp. 631-671.

135. Ljungqvist, A., Nanda, V. and Singh, R. (2006), 'Hot Markets, Investor Sentiment, and IPO Pricing', *Journal of Business*, Vol. 79, No. 4, July, pp. 1667-1702.

136. Loughran, T. and Ritter, J. (1995), 'The New Issues Puzzles', *Journal of Finance*, Vol. 51, No. 1, March, pp. 23-52.

137. Loughran, T. and Ritter, J.R. (1997), 'The Operating Performance of Firms Conducting Seasoned Equity Offerings', *Journal of Finance*, Vol. 52, No. 5, December, pp. 1823-1850.

138. Loughran, T. and Ritter, J.R. (2000), 'Uniformly Least Powerful Tests of Market Efficiency', *Journal of Financial Economics*, Vol. 55, No. 3, March, pp. 361-389.

139. Lyon, J.D., Barber, B.M. and Tsai, C.L. (1999), 'Improved Methods for Tests of Long-Run Abnormal Stock Returns ', *Journal of Finance*, Vol. 54, No. 1, February, pp. 165-201.

140. Malkiel, B.G. (2003), 'The Efficient Market Hypothesis and Its Critics', *Journal of Economic Perspectives*, Vol. 17, No. 1, Winter, pp. 59-82.

141. Matsusaka, J.G. (1993), 'Takeover Motives During the Conglomerate Merger Wave', *Rand Journal of Economics*, Vol. 24, No. 3, Autumn, pp. 357-379.

142. Maxwell, W.F. and Rao, R.P. (2003), 'Do Spin-Offs Expropriate Wealth From Bondholders?', *Journal of Finance*, Vol. 58, No. 5, October, pp. 2087-2108.

143. McConnell, J.J., Ozbilgin, M. and Wahal, S. (2001), 'Spin-Offs, Ex Ante', *Journal of Business*, Vol. 74, No. 2, April, pp. 245-280.

144. McConnell, J.J. and Servaes, H. (1990), 'Additional Evidence on Equity Ownership and Corporate Value', *Journal of Financial Economics*, Vol. 27, No. 2, October, pp. 595-612.

145. Mehrotra, V., Mikkelson, W. and Partch, M. (2003), 'The Design of Financial Policies in Corporate Spin-Offs.', *Review of Financial Studies*, Vol. 16, No. 4, Winter, pp. 1359-1388.

146. Michaley, R., Thaler, R.H. and Womack, K.L. (1995), 'Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?', *Journal of Finance*, Vol. 50, No. 2, June, pp. 573-608.

147. Miles, J.A. and Rosenfeld, J.D. (1983), 'The Effect of Voluntary Spin-Off Announcements on Shareholder Wealth', *Journal of Finance*, Vol. 38, No. 5, December, pp. 1597-1606.

148. Mitchell, M., Pulvino, T. and Stafford, E. (2002), 'Limited Arbitrage in Equity Markets', *Journal of Finance*, Vol. 57, No. 2, April, pp. 551-584.

149. Mitchell, M.L. and Mulherin, J.H. (1996), 'The Impact of Industry Shocks on Takeover and Restructuring Activity', *Journal of Financial Economics*, Vol. 41, No. 2, June, pp. 193-229.

150. Mitchell, M.L. and Stafford, E. (2000), 'Managerial Decisions and Long-Term Stock Price Performance', *Journal of Business*, Vol. 73, No. 3, July, pp. 287-329.

151. Montier, J. (2002), *Behavioural Finance: Insights into Irrational Minds and Markets*, John Wiley & Sons, London.

152. Morck, R., Shleifer, A. and Vishny, R.W. (1988), 'Management Ownership and Market Valuation: An Empirical Analysis', *Journal of Financial Economics*, Vol. 20, No. 1-2,

January-March, pp. 293-315.

153. Morck, R., Shleifer, A. and Vishny, R.W. (1990), 'Do Managerial Objectives Drive Bad Acquisitions?', *Journal of Finance*, Vol. 45, No. 1, March, pp. 31-48.

154. Nanda, V. and Narayanan, M.P. (1999), 'Disentangling Value: Financing Needs, Firm Scope, and Divestitures', *Journal of Financial Intermediation*, Vol. 8, No. 3, July, pp. 174-204.

155. Park, N.K. (2004), 'A Guide to Using Event Study Methods in Multi-Country Settings', *Strategic Management Journal*, Vol. 25, No. 7, July, pp. 655-668.

156. Parrino, R. (1997), 'Spinoffs and Wealth Transfers: The Marriott Case', *Journal of Financial Economics*, Vol. 43, No. 2, February, pp. 241-274.

157. Porter, M.E. (1987), 'From Competitive Advantage to Corporate Strategy', *Harvard Business Review*, Vol. 65, No. 3, May-June, pp. 43-61.

158. Rau, P.R. and Vermaelen, T. (1998), 'Glamour, Value and the Post-Acquisition Performance of Acquiring Firms', *Journal of Financial Economics*, Vol. 49, No. 2, August, pp. 223-253.

159. Ravenscraft, D. and Scherer, F.M. (1987), *Mergers, Sell-Offs and Economic Efficiency*, The Brookings Institution, Washington DC.

160. Ritter, J.R. (1991), 'The Long-Run Performance of Initial Public Offerings', *Journal of Finance*, Vol. 46, No. 1, March, pp. 3-27.

161. Rosen, R.J. (2006), 'Merger Momentum and Investor Sentiment: The Stock Market Reaction to Merger Announcements', *Journal of Business*, Vol. 79, No. 2, March, pp. 987-1017.

162. Rubinstein, M. (2001), 'Rational Markets: Yes or No? The Affirmative Case', *Financial Analyst Journal*, May-June, pp. 15-29.

163. Sanders, W.M. and Carpenter, M.A. (2003), 'Strategic Satisficing? A Behavioral-Agency Theory Perspective on Stock Repurchase Program Announcements', *Academy of Management Journal*, Vol. 46, No. 2, April, pp. 160-178.

164. Schipper, K. and Smith, A. (1983), 'Effects of Recontracting on Shareholder Wealth: The Case of Voluntary Spin-Offs', *Journal of Financial Economics*, Vol. 12, No. 4, December, pp. 437-467.

165. Serwer, A.E. (1992), 'Super Payoffs from Spinoffs ', *Fortune*, March 23, pp. 34-34.

166. Seward, J.K. and Walsh, J.P. (1996), 'The Governance and Control of Voluntary Corporate Spin-Offs', *Strategic Management Journal*, Vol. 17, No. 1, January, pp. 25-39.

167. Sharpe, W.F. (1964), 'Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk', *Journal of Finance*, Vol. 19, No. 3, September, pp. 425-442.

168. Shefrin, H. (2002), *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing*, Oxford University Press, New York.

169. Sherer, P. and MacDonald, E. (2000), 'AOL and Time Warner Leaves Street Guessing on New Animal's Value', *The Wall Street Journal*, January 13,

170. Shleifer, A. (2000), *Inefficient Markets: An Introduction to Behavioral Finance*, Oxford University Press, Oxford.

171. Shleifer, A. and Vishny, R.W. (1986), 'Large Shareholders and Corporate Control', *Journal of Political Economy*, Vol. 94, No. 3, June, pp. 461-488.

172. Shleifer, A. and Vishny, R.W. (1989), 'Management Entrenchment', *Journal of Financial Economics*, Vol. 25, No. 1, November, pp. 123-139.

173. Shleifer, A. and Vishny, R.W. (1997), 'A Survey of Corporate Governance', *Journal of Finance*, Vol. 52, No. 2, June, pp. 737-783.

174. Shleifer, A. and Vishny, R.W. (2003), 'Stock Market Driven Acquisitions', *Journal of Financial Economics*, Vol. 70, No. 3, December, pp. 295-311.

175. Sivy, M. (1996), 'Seven Strategies to Help You Outrun the Market', *Money*, June, pp. 152-152.

176. Siwolop, S. (1997), 'Quiet Spinoffs Talk the Loudest in Returns', *New York Times*, February 23, pp. 3-3.

177. Slovin, M.B., Sushka, M.E. and Ferraro, S.R. (1995), 'A Comparison of the Information Conveyed by Equity Carve-Outs, Spin-Offs, and Asset Sell-Offs', *Journal of Financial Economics*, Vol. 37, No. 1, January, pp. 89-104.

178. Stulz, R.M. (1990), 'Managerial Discretion and Optimal Financing Policies', *Journal of Financial Economics*, Vol. 26, No. 1, July, pp. 3-27.

179. Sudarsanam, S. (2003), *Creating Value from Mergers and Acquisitions: The Challenges*, Prentice Hall International, London.

180. Sudarsanam, S., Holl, P. and Salami, A. (1996), 'Shareholder Wealth Gains in Mergers: Effect of Synergy and Ownership Structure', *Journal of Business Finance and Accounting*, Vol. 23, No. 5-6, July, pp. 673-698.

181. Sudarsanam, S. and Mahate, A.A. (2003), 'Galmour Acquirers, Method of Payment and Post-Acquisition Performance: The UK Evidence', *Journal of Business Finance and Accounting*, Vol. 30, No. 1-2, January-March, pp. 299-341.

182. Taffler, R.J., Lu, J. and Kausar, A. (2004), 'In Denial? Market Underreaction to Going-Concern Audit Report Disclosures', *Journal of Accounting and Economics*, Vol. 38, No. 1-3, December, pp. 263-296.

183. Thomas, S. (2002), 'Firm Diversification and Asymmetric Information: Evidence From Analysts' Forecasts and Earnings Announcements', *Journal of Financial Economics*, Vol. 64, No. 3, June, pp. 373-396.

184. Tversky, A. and Kahneman, D. (1974), 'Judgment Under Uncertainty: Heuristics and Biases', *Science*, Vol. 185, No. 27, September, pp. 1124-1131.

185. Veld, C. and Veld-Merkoulova, Y.V. (2004), 'Do Spin-Offs Really Create Value? The European Case', *Journal of Banking and Finance*, Vol. 28, No. 5, May, pp. 1111-1135.

186. Veld, C. and Veld-Merkoulova, Y.V. (2005), *An Empirical Analysis of the Stockholder-Bondholder Conflict in Corporate Spin-Offs*, Working Paper, Available at SSRN: http://ssrn.com/abstract=821604.

187. Vijh, A.M. (1999), 'Long-Term Returns From Equity Carveouts', *Journal of Financial Economics*, Vol. 51, No. 2, February, pp. 273-308.

188. Villalonga, B. and Amit, R. (2006), 'How Do Family Ownership, Control and Management Affect Firm Value?', *Journal of Financial Economics*, Vol. 80, No. 2, May, pp. 385-417.

189. Weston, J.F., Mitchell, M.L. and Mulherin, J.H. (2005), *Takeovers, Restructuring, and Corporate Governance* (4th edition), Prentice Hall, London.

190. Zhang, X.F. (2006), 'Information Uncertainty and Stock Returns', *Journal of Finance*, Vol. 61, No. 1, February, pp. 105-137.