# Three empirical studies on the performance of firms involved in M&As and IPOs

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Submitted in satisfaction of the requirements for the degree of

PhD in the University of Edinburgh

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# Abstract

This PhD thesis consists of three empirical papers. Each paper can be read independently. However, all three papers investigate different factors affecting the performance of firms involved in mergers and acquisitions (M&As) and initial public offerings (IPOs).

A private firm seeking to become listed and who also wish to grow through acquisition can do so with an IPO followed by acquisitions or a reverse takeover (RT). In a RT, a private firm is acquired by a public firm, but the private firm controls the combined public entity after completion of the deal. Chapter 2, "Post-acquisition performance when firms list and acquire simultaneously versus sequentially: Reverse takeover versus IPO-M&As", examines the differential performance of firms conducting an IPO prior to undertaking follow-on acquisitions (IPO-M&As) versus firms that combine the process of obtaining the listing and acquiring another firm by conducting a RT. I investigate how acquirers' choices affect their post-acquisition performances. In this paper, I also investigate the impact of board structure changes on firm performance in IPO-M&A and RT deals. This event study covers RTs and acquisition-motived IPOs listed on the London Stock Exchange during 1995-2012. Challenging the theoretical expectation that IPOs increase the likelihood of optimal exercise of acquisition options by reducing valuation uncertainty, my results show that an IPO does not alleviate the stock market underperformance of acquirers within 3 years post-acquisition. Private firms seem to self-select into different listing-and-acquisition routes depending on firm-specific characteristics and the board members keep the same level of control preference. However, the

choice of listing-and-acquisition does not appear to significantly affect performance. I find no significant difference in the post-acquisition performance of firms undertaking IPO-M&As or RTs.

Chapter 3, “Post-acquisition performance of target firms: The impact of management turnover”, investigates the efficiency of the takeover market and the impact of management turnover on target firm performance. Investigating separately the operating performance of targets and acquirers in U.K. domestic acquisitions during 2006-2014, I find that the post-acquisition peer-adjusted profits significantly improve in the unprofitable targets but do not change significantly in profitable targets. Both profitable and unprofitable targets experienced high management turnovers, but the improvement in profits does not appear to be driven by the management turnover. The reason of management turnovers is more complex than the acquisitions’ market discipline function or resource-based management hypothesis. However, a complete turnover of top management in target firms seems to hurt the post-acquisition performance of acquirers, suggesting target management team may possess valuable information to facilitate the integration process. This study sheds light on the post-acquisition restructuring of target firms and their management teams, especially in private targets.

Chapter 4, “Identifying leaders among IPO firms: a content analysis of analyst coverage reports”, investigates how analysts identify firms as a leader and whether leader firms go on to generate superior operating performance to non-leaders. Using a content analysis approach, I extract sentences including the keyword “lead” from initial coverage reports and pick out sentences where the

IPO firm is identified as either an “industry leader” or “partial leader”. I examine the textual content of initial coverage reports on U.S. IPOs during 1999-2012 and find that lead-underwriter analysts appear not to be more optimistic than non-lead-underwriters in their leadership identification of IPO firms, however, nor are they more accurate than non-lead-underwriters in identifying leader firms. I find that neither firms identified by analysts as industry leaders nor firms identified as having partial leadership advantages tend to generate superior peer-adjusted net sales or profit margins compared to non-leaders. The Global Settlement in 2003 significantly reduced the likelihood, frequency and intensity of partial leadership identification. Although there is no explicit regulation requirement on the text content in analyst reports, analysts have become more conservative in identifying a firm as a leader after the Global Settlement. This study helps investors to understand the incremental information of leadership identification in analyst reports, beyond the quantitative outputs such as stock recommendations.

# Lay Summary

This PhD thesis consists of three empirical papers, which investigate factors affecting the performance of firms involved in mergers and acquisitions (M&As) and initial public offerings (IPOs). Each paper can be read independently.

A private firm seeking to become listed and who also wish to grow through acquisition can do so with an IPO followed by acquisitions or a reverse takeover. In a reverse takeover, a private firm is acquired by a public firm, but the private firm controls the combined public entity after completion of the deal. Chapter 2, "Post-acquisition performance when firms list and acquire simultaneously versus sequentially: Reverse takeover versus IPO-M&As", examines the differential performance of firms taking each route. I investigate how acquirers' choices and the board structure affect their post-acquisition performances. Challenging the theoretical expectation that IPOs increase the likelihood of optimal exercise of acquisition options by reducing valuation uncertainty, my results show that an IPO does not alleviate the stock market underperformance of acquirers within 3 years post-acquisition. Private firms seem to self-select into different listing-and-acquisition routes depending on firm-specific characteristics and the board members keep the same level of control preference. However, the choice of listing-and-acquisition does not appear to significantly affect performance. I find no significant difference in the post-acquisition performance of firms undertaking IPO-M&As or RTs.

Chapter 3, "Post-acquisition performance of target firms: The impact of management turnover", investigates the efficiency of the takeover market and the impact of management turnover on target firm performance. Investigating separately the operating performance of targets and acquirers in U.K. domestic acquisitions during 2006-2014, I find that the post-acquisition peer-adjusted profits significantly improve in the unprofitable targets but do not change significantly in profitable targets. Both profitable and unprofitable targets experienced high management turnovers, but the improvement in profits does not appear to be driven by the management turnover. The reason of management turnovers is more complex than the acquisitions' market discipline function or resource-based management hypothesis. However, a complete turnover of top management in target firms seems to hurt the post-acquisition performance of acquirers, suggesting target management team may possess valuable information to facilitate the integration process.

Chapter 4, "Identifying leaders among IPO firms: a content analysis of analyst coverage reports", investigates how analysts identify firms as a leader and whether leader firms go on to generate superior operating performance to non-leaders. Using a content analysis approach, I find that lead-underwriter analysts appear not to be more optimistic than non-lead-underwriters in their leadership identification of IPO firms, however, nor are they more successful than non-lead-underwriters in identifying leader firms. I find that neither firms identified by analysts as industry leaders nor firms identified as having partial leadership advantages tend to generate superior peer-adjusted net sales or profit margins compared to non-leaders. The Global Settlement in 2003 significantly reduced the likelihood, frequency and intensity of partial leadership identification. Although there is no explicit regulation requirement on the text content in analyst reports, analysts have become more conservative in identifying a firm as a leader after the Global Settlement.

# Abbreviations

| | |
|---|---|
| AIM | Alternative Investment Market |
| BHAR | buy-and-hold abnormal return |
| BHAAR | average of BHARs |
| BOD | board of director |
| CAR | cumulative abnormal return |
| CAAR | average of CARs |
| CEO | chief executive officer |
| ED | executive director |
| EBIT | earnings before interest and taxes |
| EBITDA | earnings before interest, taxes, depreciation and |
| FCA | Financial Conduct Authority |
| FSA | Financial Services Authority |
| GS | Global Analyst Research Settlement |
| ICR | initial coverage report |
| IPO | initial public offering |
| IV | instrumental variable |
| LBO | leveraged buyout |
| LSE | London Stock Exchange |
| LTM | last-twelve-month |
| LUW | lead-underwriter |
| MBO | management buyout |
| MD | managing director |
| M&A | merger and acquisition |
| NED | non-executive officer |
| Non-LUW | non-lead underwriter |
| NI | net income |
| OL | Official List |
| OP | operating profit |
| PE | private equity |
| PIMS | Profit Impact of Market Strategy |
| RAC | Regulation Analysts Certification |
| ROA | return on assets |
| RT | reverse takeover |
| SEC | Securities and Exchange Commission |
| SOX | Sarbanes–Oxley Act |
| TA | total assets |
| TFP | total factor productivity |
| TMT | top management team |
| UW | underwriter |
| VC | venture capital |

# Chapter 1. Introduction

This thesis consists of three empirical projects which investigate different factors affecting the performance of firms involved in mergers and acquisitions (M&As) and initial public offerings (IPOs) in the U.K. and the U.S. Each chapter is self-contained, with its own literature review, methodology, data and results. The present chapter introduces the motivations and research questions, provides a summary of research methods, and briefly discusses the main findings of the three projects. Chapters 2 and 3 investigate post-acquisition performance of acquirers and target firms in the U.K, respectively. Chapter 4 examines the post-listing performance of IPO firms in the U.S. Chapter 5 draws overall conclusions, discusses contributions, implications and limitations, and provides suggestions for future research.

Chapter 2 – "Post-acquisition performance when firms list and acquire simultaneously versus sequentially: Reverse takeover versus IPO-M&As" – focuses on the choice between a reverse takeover (RT), whereby listing and acquisition take place simultaneously, versus getting listed first through a conventional IPO and engaging in an acquisition subsequently. In particular, I examine the impact of this choice on post-acquisition performance, using a sample of U.K. firms. The same chapter tests Hsieh et al.'s (2011) conjecture that an IPO leads to a more efficient acquisition strategy, and therefore enhances firm value. Chapter 3 – "Post-acquisition performance of target firms: The impact of management turnover" – examines the efficiency of the U.K. takeover market and studies the impact of top management turnover following acquisitions upon target firm performance. Chapter 4 – "Identifying leaders among IPO firms: a content analysis of analyst coverage reports" – investigates whether U.S. IPO firms that have leadership position qualities according to analysts generate superior performance post-listing.

The main findings are discussed in Section 1.4 below. However, in summary, Chapter 2 finds that the choice of listing-and-acquisition route does not affect post-acquisition performance of acquirers. Firms opting for each route also show a similar proportion of insider ownership after the acquisition. Insiders in IPO firms retain 34.4% of common shares after listing, which is not statistically significantly lower than the 36.1% of common shares retained by insiders in RTs.

Chapter 3 finds that the peer-adjusted operating performance of unprofitable targets improves significantly but deteriorates insignificantly in profitable targets. Furthermore, Chapter 3 finds that top management turnover in target firms does not tend to affect the post-acquisition performance of target firms. On the other hand, the complete TMT turnover in target firms is harmful to acquirers' post-acquisition performance.

Chapter 4 finds that, in general, leader firms identified by analysts tend not to generate superior post-listing performance compared to firms not identified as leaders. Furthermore, the inaccurate forecast is not due to the conflicts of interest in LUWs. I find that LUWs do not tend to provide more optimistic leadership identification than non-LUWs. Financial analysts appear to be more conservative after the Global Settlement, as they tend to reduce the partial leadership identification. The industry leadership identification tends to be less affected by the GS than partial leaders.

The rest of this chapter discusses research motivations and questions and sets out the main contributions, outlines the data, summaries the research methods, and outlines the main findings.

## 1.1 Motivation, research questions and contributions

M&A is a complex corporate restructuring event that has a high risk of failure (Bruner, 2002). Prior M&A literature generally suggests that target firms generate positive market-adjusted returns after acquisition, but acquirers earn returns close to zero (Bruner, 2002; Sudarsanam, 2003). In Chapters 2 and 3, this thesis intends to investigate post-acquisition performance and factors affecting the post-acquisition performance of target and acquirer firms. Chapter 2 contributes to the acquisition literature by examining Hsieh et al.'s (2011) conjecture that an IPO helps acquirers to conduct acquisitions at the optimal time and therefore acquisitions conducted after a firm has gone public in an IPO are more likely to outperform acquisitions conducted by private acquirers. Chapter 2 also extends existing RT studies by investigating the post-listing ownership structure of RT and acquisition-driven IPO firms. In addition, it may help practitioners to establish, if there is, a more suitable practice to improve the long-run performance of acquirers. Chapter 3 extends existing research on target performance by investigating the post-acquisition operating performance of both public and private target firms. Chapter 3 also extends existing research by investigating the impact of top management team (TMT) turnover on the post-acquisition performance of target firms.

Existing studies of acquisitions generally focus on deals with public firms, as price and performance data for private firms is limited (Bruner, 2002; Zollo and Singh, 2004; Capron and Shen, 2007). Several studies suggest that public acquirers tend to realise higher returns than private acquirers, as a public listing status provides benefits to subsequent M&As (Celikyurt et al., 2010; Hovakimian and Hutton, 2010; Hsieh et al., 2011; Maksimovic et al., 2013).

Celikyurt et al. (2010) and Hovakimian and Hutton (2010) show that IPOs are frequently followed by acquisitions within a short period after listing. Although do not prove that making acquisitions is the primary motivation for firms to take an IPO, Celikyurt et al. (2010) and Hovakimian and Hutton (2010) suggest that an IPO can provide an infusion of cash and publicly traded stocks as acquisition currencies to facilitate subsequent M&As. Hsieh et al. (2011) suggest that an IPO reduces the information asymmetry of acquirers' firm value between acquirers and target firms, and help acquirers to conduct subsequent M&As at the optimal time. Furthermore, Maksimovic et al. (2013) find that public acquirers generate higher profit margins than private acquirers.

However, these studies do not provide any empirical evidence that these benefits of an IPO help improve firms' post-acquisition performance. Chapter 2 aims to fill the gap by investigating the acquisition performance of acquirers and exploring factors that influencing the listing-and-acquisition choice between IPO-M&As and RTs. By comparing acquirers' post-deal stock performance of acquisitions conducted by recently listed IPO firms and RTs, Chapter 2 tests whether an IPO provides benefits in subsequent acquisitions to improve acquirers' performance.

In addition, Chapter 2 contains an analysis of the impact of ownership structure on the choice of listing routes and post-acquisition performance. Firms involved in RTs, unlike those undertaking IPOs, are not required to issue capital at the time of listing. Private firms with a preference for retaining more concentrated control are expected to be more likely to opt for a RT than an IPO. Jensen and Meckling (1979) suggest that large insider ownership helps to enhance firm value by aligning management and shareholder interests. Thus, acquirers with large insider ownership may be more likely to undertake value-enhancing acquisitions than acquirers suffering from severe agency problems (Jensen, 1986 and 2004; Fu et al., 2013). If acquirers are found to generate lower returns in acquisitions conducted by recently listed IPO firms than in RTs, can this be attributed to a potentially high extent of agency problems in public acquirers? Chapter 2 extends existing RT research by exploring the relation between insider ownership and acquirers' post-deal performance.

The main aims of Chapter 2 are to empirically test whether an IPO helps private acquirers conduct more value-enhancing acquisitions than private acquirers opting for a RT (the conjecture in Hsieh et al. (2011)), and to explore insiders' preference to control ownership post-listing in IPOs versus RTs in the U.K. market.

While Chapter 2 investigates the post-acquisition performance of acquirers, Chapter 3 examines the post-acquisition performance of target firms. While there are numerous studies examining the efficiency of the market for corporate control in terms of targets' and acquirers' announcement returns and the combined firms' operating performance, existing literature on post-acquisition performance of target firms, especially private targets, is limited.

Several studies provide survey evidence of target firms' post-acquisition operating performance, with performance rating scales, and indicate that target performance improves post-acquisition (Cannella and Hambric, 1993; Very et al., 1997; Zollo and Singh, 2004). Maksimovic et al. (2011), a U.S. based study, find that target firms experience a significant improvement in operating margin up to three years after being acquired. However, Jang and Reisel (2015) investigate E.U. acquisitions and find no improvement in target firms' operating performance post-acquisition. Therefore, the findings on target firms' post-acquisition performance changes are inconclusive.

Much less is known about performance change in target firms, which is due to the general lack of data on accounting performance and stock price information of target firms, especially private targets, post-acquisition. In the U.S., there is no federal statutory requirement for unlisted subsidiaries to make their accounts public (FASB, 2013). However, in the U.K., all registered limited companies, including subsidiaries, and small and inactive companies, must make their annual financial statements and information of appointment and termination of officers publicly available through the Companies House (GOV.UK, 2016).

The requirement for target firms, as a separated legal entity, to report accounting performance separated from that of the parent company allows me to investigate two research areas. First, I examine the overall efficiency of the

U.K. takeover market, which is measured by the improvement in the operating performance of target firms. Second, and more importantly, I investigate a potentially key source of efficiency improvements in target firms post-acquisition, which is the TMT turnover rate.

Existing studies on the impact of target TMT turnover generally restrict their analyses to the combined firms' post-acquisition performance (Kennedy and Limmack, 1996; Krishnan et al., 1997; Zollo and Singh, 2004; Fich et al., 2016), or focus on public targets' announcement returns (Martin and McConnell, 1991; Kennedy and Limmack, 1996; Walsh and Ellwood, 1991; Walsh and Kosnik, 1993; Franks and Mayer, 1996). However, acquirers' existing business does not experience a change of ownership or control after acquisition. The post-acquisition performance of private targets that constitute a substantial part of M&As, is also under-investigated (Zollo and Singh, 2004). Chapter 3 extends prior literature by investigating the impact of target TMT turnover on the operating performance of both public and private targets.

To the best of my knowledge, no similar studies appear to examine the correlation between target TMT turnover and post-acquisition performance in both public and private target firms. Prior studies, such as Cannella and Hambrick (1993) and Jang and Reisel (2015), investigate the negative correlation between pre-acquisition performance of targets and post-acquisition TMT turnover of targets, and argue that acquisitions have a disciplinary function in terms of replacing inefficient TMTs. However, showing the negative correlation between the TMT turnover and the pre-acquisition performance may not be sufficient to prove the market discipline hypothesis. It is also necessary to show that replacing inefficient TMTs creates value. TMT turnover may not change the post-acquisition performance of targets. For example, Martin and McConnell (1991) show that abnormal announcement returns to target firms with and without CEO replacement are not significantly different at the 10% level. Prior studies fail to show that replacing inefficient TMTs helps to improve post-acquisition performance.

Chapter 3 overcomes these problems by investigating how pre-acquisition performance of target firms affects TMT turnovers, and the impact of target TMT turnover on the long-run operating performance of both public listed and private targets. The main aim of Chapter 3 is to examine the market discipline theory of acquisition versus the resource-based management view of TMTs. I conduct empirical tests to examine the market discipline theory of acquisitions, which states that a target firm with poor pre-acquisition performance experiences a higher degree of TMT turnover and that its performance improves after removing inefficient TMTs, and to examine the resource-based view that retaining efficient TMTs helps targets to generate superior operating profits.

Chapter 4 investigates the operating performance of IPO firms that are identified as leaders by analysts in initial coverage reports. Prior studies of analyst reports investigate the impact of stock recommendations, financial forecasts, and sentiment of text content on stock returns and operating performance (Lys and Sohn, 1990; Stickle, 1992; Previts et al., 1994; Hirst et al., 1995; Francis and Soffer, 1997; Michaely and Womack, 1999; Brav and Lehavy, 2003; Irvine 2003; Gleason and Lee, 2003; Ivkovic and Jegadeesh, 2004; Asquith et al., 2005; James and Karceski, 2006; Loughran and McDonald, 2013; Twedt and Rees, 2012; Huang et al., 2014). To the best of my knowledge, this is the first study to investigate what is said about leadership identification in analyst reports. Chapter 4 contributes to the literature on IPO firm performance by testing whether firms identified by analysts as leaders provide superior future operating performance.

Chapter 4 examines whether leadership attributes identified by analysts convey valuable information to investors about IPO firms' future operating performance, and explores factors that affect analysts' decision to identify an IPO firm as a leader. Using a content analysis approach, I extract sentences including the keyword "lead" from initial coverage reports and pick out sentences where the IPO firm is identified as either an "industry leader" or "partial leader". Chapter 4 extends the existing literature on analysts' research output by showing that leader firms identified by analysts tend not to provide superior operating performance post-listing compared to firms without leadership identification. Chapter 4 not only extends existing research on the accuracy of analysts' research outputs, but also helps to measure the impact of competitive advantages due to being a leader on IPO firms' performance.

In addition, Chapter 4 analyses the impact of regulatory reforms on leadership identification. Previous studies conjecture that the text content in analyst reports is less affected by regulatory reforms than recommendations and earnings forecasts (Stocken and Verrecchia, 2004; Bradley et al., 2008; Huang et al., 2014). The Global Settlement (GS), introduced in 2003, requires financial analysts (especially affiliated analysts) to disclose conflicts of interest and limit relations between research and investment banking departments (Kadan et al., 2009). The GS also requires analysts to disclose the proportion of buy/hold/sell recommendations (Kadan et al., 2009). The GS does not, however, regulate the text of analyst reports (Kadan et al., 2009; Corwin et al., 2017). Therefore, the GS would not be expected to have an impact on the leadership identification in analyst reports. This study empirically examines this conjecture. Chapter 4 also investigates how analysts' affiliation affects leadership identification and prediction accuracy.

## 1.2 Data

Each chapter has its own sample and data applied. Chapter 2 investigates acquisitions conducted by recently listed IPO firms and RTs on the London Stock Exchange between 1 January 1995 and 31 December 2012. I identify 128 RTs and 513 IPO firms that conduct 948 acquisitions within one year of listing. However, due to data limitations in pre-listing financial data, post-listing stock price data, and insider ownership data, data is available for 179 public acquirers in IPO-M&As and 66 private acquirers in RTs.

Chapter 3 investigates U.K. domestic acquisitions announced and completed between 1 January 2006 and 31 December 2014. As Chapter 3 focuses on the targets' TMT turnover and operating performance, target firms without information of TMT appointment and resignation or pre- and post-acquisition operating performance are excluded from the sample. Data is available for targets and acquirers in 498 U.K. domestic acquisitions.

Chapter 4 explores initial coverage reports provided for U.S. non-financial IPO firms within six months of the IPO. I identify 1,850 IPOs conducted between 1 January 1999 and 31 December 2012. Excluding IPOs without initial coverage reports available from the Investext database results in a final sample of 1,501 IPOs, with a total of 4,021 initial coverage reports from analysts.

## 1.3 Research methods

The research method of this thesis contains three parts: an event study approach, regression models and a content analysis.

In Chapter 2, an event study approach is employed to examine acquirers' post-acquisition abnormal returns. Cumulative abnormal returns (CARs) and buy-and-hold returns (BHARs) over a two-year window are estimated based on the market-adjusted model. I use an instrumental variable approach to control the self-selection issue in private firms' decision of listing-and-acquisition, as introduced in Section 2.5.2. Both maximum likelihood treatment estimations and ordinary least squares (OLS) regressions are provided to examine whether acquisitions conducted by IPO firms outperform those conducted by private firms in RTs.

In Chapter 3, I use logit and OLS regression models to examine factors that affect post-acquisition TMT turnover in target firms. I also use OLS models to investigate factors that affect post-acquisition operating performance changes in target and acquirer firms.

In Chapter 4, I use a content analysis approach to extract leadership identification sentences from initial coverage reports, as introduced in Section

4.4.1. Similar to Chapter 3, I use logit and Tobit models to examining factors affecting analysts' decision of whether to identify a firm as a leader, and OLS models to investigate factors affecting operating performance changes in IPO firms.

## 1.4 Main findings

Each chapter contains a section that presents and interprets the results. I offer a short overview of the main findings here. The findings in Chapter 2 suggest that private firms self-select into different listing-and-acquisition routes depending on firm-specific financial characteristics. Private firms with higher leverage and cash-to-total assets ratios are more likely to opt for the RT route, as these firms may not be able to bear the considerable transaction costs in an IPO process. Contrary to the conjecture in Hsieh et al. (2011), an IPO tends to provide limited benefits to the long-run post-acquisition stock returns. On average, acquisitions conducted by recently listed firms and RTs experience negative two-year CARs of 35% and 45% respectively, and the difference is not statistically significant. Controlling for self-selection and firm- and deal-specific characteristics, RTs on average outperform IPOs by 13% to 27% within two years of the acquisition, but the difference is not statistically significant.

There are at least two potential explanations of an IPO's negative impact on the performance of subsequent acquisitions, as introduced in Section 2.3. First, the benefits of valuation surprise or overvaluation in public acquirers' capital do not outweigh the costs of overvalued synergy (Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004). Second, private acquirers with a high level of insider ownership are less likely to suffer from agency problems and conduct value-decreasing acquisitions compared to public acquirers with a low degree of insider ownership (Jensen, 1986 and 2004). Section 2.6.4 provides evidence to support the two explanations.

Chapter 3 finds that post-acquisition peer-adjusted performance improves significantly in unprofitable targets but insignificantly deteriorates in profitable targets. On average, acquisitions improve unprofitable targets' peer-adjusted return on assets (ROA) by 3.2% over the period to year +1 (not different from zero), 16.3% over a two-year period to year +2 (significant at the 5% level), and 25.5% over a three-year period to year +3 (significant at the 1% level). By contrast, for profitable target firms, acquisitions decrease the peer-adjusted ROAs by -3.2% over the period to year +1, -1% over a two-year period to year +2, and -4.2% over a three-year period to year +3, and these decreases are not significant at the 10% level. The results reveal that the U.K. takeover market is generally efficient and improves the profit margin of unprofitable targets.

Results in Chapter 3 suggest that the reasons for TMT turnover could be much more complex than the disciplinary role of acquisitions. Both profitable and unprofitable targets experience high TMT turnover post-acquisition, at 29.6% in unprofitable targets and 23.2% in profitable targets. Chapter 3 also finds that TMT turnover does not appear to affect the peer-adjusted post-acquisition performance of targets. Therefore, TMT turnover tends not to be the main driver of post-acquisition profitability improvement. A possible interpretation of the results in Chapter 3 is that other sources of efficiency improvements may explain the improvements of profit margins in unprofitable targets. I speculate that an increasing financing capacity provided by acquirers to targets may explain the improvements of profit margins in target firms, as Erel et al. (2015) show that acquisitions relieve target firms' financial constraints. Exploring this speculation is not the focus of this thesis and could be a future expansion.

To address the question of the informativeness of analyst reports, I investigate the post-listing operating performance of U.S. IPO firms. Results in Chapter 4 suggest that, in general, firms whose leadership position is identified by analysts tend not to experience superior peer-adjusted performance compared to non-leaders within three years of the IPO. Results in Chapter 4 suggest that the leadership identification tends to pick out firms with large size or venture capital and lead-underwriter sponsoring, regardless of future superior performance. Thus, investors should be aware of how to use analysts' leadership identification to make their own investment decisions.

Other results on the impact of regulatory reforms on the content of analyst reports and how analyst affiliation affects the tone and accuracy of leadership identification in initial coverage reports are discussed in Section 4.5. Generally, I find that analysts reduce the likelihood, frequency and intensity of leadership identification after regulatory reforms. Although text content in analyst reports is not subject to regulation requirements to the extent that analyst recommendations are after the GS, analysts tend to be more conservative in the text content of coverage reports after the GS, implemented in 2003. Analysts with a lead-underwriter affiliation tend not to be more optimistic in identifying their IPO clients as leaders, or, more accurately, identifying leaders with superior performance, compared to analysts without a lead-underwriter affiliation. Therefore, analyst affiliation tends not to affect analysts' research outputs.

The rest of this thesis is structured as follows: Chapter 2 investigates the impact of the choice of listing-and-acquisition route between IPO-M&As and RTs on post-acquisition performance in acquirers. Chapter 3 explores the changes in post-acquisition performance of target firms in U.K. domestic acquisitions, and tests whether TMT turnover in target firms affects the post-acquisition performance of target and acquirer firms. Chapter 4 explores the analysts' leadership identification in initial coverage reports, and tests whether firms with leadership qualities according to analysts generate superior performance post-listing. Finally, Chapter 5 summarises findings related to the hypotheses tested, shows the main contributions and implications, and discusses limitations and potential research extensions.

# Chapter 2. Post-acquisition performance when firms list and acquire simultaneously versus sequentially: Reverse takeover versus IPO-M&As

## 2.1 Introduction

A private firm can conduct listing and acquisition simultaneously or sequentially through a reverse takeover (RT)[1] or IPO-M&A. In an IPO-M&A, a private acquirer firstly conducts an initial public offering (IPO) and subsequently takeover another business through a merger or acquisition. In a RT, a private firm is acquired by a public firm, but the private firm controls the combined public entity after completion of the deal. Prior research suggests that an IPO can provide a springboard effect to facilitate subsequent acquisitions and increase the gains from potential acquisitions (Eckbo et al., 1990; Mikkelson et al., 1997; Hsieh et al., 2011). However, none of these acquisition-motived IPO papers theoretically or empirically analyse whether an IPO contributes to a profitable acquisition outcome.

My study empirically examines whether IPOs provide springboard effect to subsequent acquisitions and improve the post-acquisition stock performance of acquirers. If there is positive springboard effect from IPOs as conjectured in Hsieh et al. (2011), I would observe acquisitions conducted by public acquirers generate superior performance to private acquirers conducting RTs. My study seeks to help practitioners to establish, if there is, a more suitable listing-and-

[1] A reverse takeover is also referred to as "reverse merger" in the U.S.

acquisition route for private firms, which enhances acquirers' value in the long-run.

Prior literature generally suggests that private firms self-select to become public or remain private, depending to their pre-listing financial characteristics and transaction costs of listing (Pavkov, 2006; Sjostrom, 2007; Adjei et al., 2008; Jindra, 2012; Maksimovic et al., 2013). Using a sample of 66 RTs and 179 acquisitions conducted by newly listed IPO firms in the U.K. over the period 1995 to 2012, I examine what pre-listing firm characteristics affect private firms' self-selection into different listing-and-acquisition routes, and investigate the post-acquisition performance of acquirers after controlling for the self-selection (Derrien and Kecskés, 2007).

Recent literature suggests that IPO firms are engaged in a significant amount of merger and acquisition (M&A) activity. In Brau and Fawcett's (2006) survey, 59% of 336 chief financial officers in the United States (U.S.) agree that creating an acquisition currency ranks as the most important reason for an IPO. Empirically, Schultz and Zaman (2001) find that the internet IPO wave in the late 1990s was followed by an acquisition wave. The post-IPO M&A waves tend to be stock-financed (Jo and Harjoto, 2012). Celikyurt et al. (2010) and Hovakimian and Hutton (2010) show that an IPO can provide an infusion of cash and overvalued public shares, which help facilitates subsequent M&As.

An IPO can not only provide a cash infusion to facilitate future acquisitions, but also alleviate the asymmetric information problems in private acquirers attempting to conduct stock acquisitions (Mikkelson et al., 1997; Eckbo et al., 1990). A private firm intending to acquire another firm in the future faces uncertainties in the value of private acquirer's capital. Hsieh et al. (2011) present a theoretical model that an IPO helps a private acquirer to evaluate more precisely the value of gains from potential acquisitions, assuming that investors are rational and that firms are fairly priced. Thus, Hsieh et al. (2011) predict that an IPO increases the likelihood that an acquisition option is in the money and lead to a more efficient acquisition to enhance firm value.

An alternative route is to conduct listing and acquisition activities simultaneously. With a RT, a private firm inherits the public listing status as well as the operational business, if any, of the public firm. A distinct feature between a RT and an IPO is that a RT is not required to issue shares to the public at the time of listing (Gleason et al., 2005; Appadu et al., 2014; Brown et al., 2010; Sjostrom, 2007; Asquith and Rock, 2011).

When firms issue shares to the public, their insider ownership is diluted. Floros and Shatri (2009) claim that insiders of the U.S. RT private firms remain the owners of the combined firm and tend to sell less to the public than they would in an IPO. They observe that the median values of the percentage of common shares given up by insiders as a result of going public is 16% in U.S. RT transactions, which is significantly smaller than the 24% in U.S. penny stock IPO transactions (Floros and Shatri, 2009).[2] However, these studies do not show whether the post-listing board ownership is higher in RTs than in IPOs. I

[2] Floros and Shatri (2009) argue that penny stock IPOs are more comparable to RTs than regular IPOs, given the small firm size of RTs and penny stock IPOs.

extend the RT research by investigating the post-listing board ownership in the U.K. RTs and IPOs.

Previous studies suggest that the concentration of insider ownership raises the issue of corporate governance. Jensen and Meckling (1979) propose the agency cost hypothesis that larger managerial equity ownership helps to enhance firm value by aligning management and shareholders' interests. Later, Jensen advanced the implication of agency theory on M&A activities with a free-cash-flow hypothesis and overvalued-equity hypothesis (Jensen, 1986 and 2004). Jensen speculated that firms with more free cash flows and overvalued equity suffer severe agency costs and that these firms are more likely to undertake low-benefit or even value-destroying mergers than firms distributing cash to shareholders or issuing additional debt (Jensen, 1986 and 2004).

In this paper, I explore the impact of board ownership on acquisition routes and outcomes. According to agency theory, firms with a higher insider ownership are more likely to have better corporate governance and, therefore, are more likely to conduct well-conceived acquisitions to enhance long-run firm value.

To investors, what matters should be the outcome of listing and acquisition (for example, the post-M&A profits and stock market returns), rather than the process of an M&A. Contrary to the conjecture in Hsieh et al. (2011), I find no evidence of significant difference in terms of long-run post-acquisition cumulative abnormal returns between acquirers opting for RT or IPO routes.

My results suggest that although private firms self-select into different acquisition routes depending on firm-specific financial characteristics, their long-run post-listing-and-acquisition performance is not fundamentally different. Public acquirers significantly outperform private acquirers at the 5% level only in the first month after acquisition, with differences in cumulative abnormal returns ranging from 2.6% to 5.1%. The outperformance of public acquirers disappears in the second month after acquisition, and firms opting for each route perform similarly two years after acquisition.

Since insiders of RT acquirers and recently listed acquirers retain control of the combined public entity, whether post-acquisition board ownerships are different between RTs and IPOs is an empirical issue. Contrary to the U.S. finding and claims, my results suggest that private firms in the U.K. reach a similar level of board ownership after listing. I find U.K. RT firms on average only have 2% higher post-listing board ownership than IPO firms and the difference is not significant at the 10% level. A sub-sample test of 24 RTs and 163 IPO-M&As, for which data is available, suggests that the firms opting for each route have similar board ownerships that control half of the common equities in the pre-listing private firms. Without considering listing costs, private firms achieve a similar proportion of board ownership and post-acquisition performance.

My study extends the prior literature in several ways. First, I extend prior studies of private acquirers to test the conjecture that a springboard IPO enhances post-acquisition firm value (Hsieh et al., 2011; Maksimovic et al., 2013). A recent paper on U.S. acquisitions by Maksimovic et al. (2013) gives some indication that post-acquisition performance could differ depending on which of the two routes firms opt for. Using census data on a sample of approximately 40,000 firms during 1977-2004, Maksimovic et al. (2013) document that public acquirers conduct more acquisitions and realise higher productivity gains than private acquirers. However, Maksimovic et al. (2013) suggest that higher productivity gains are only partially explained by acquirers' public status, and acquirers' productivity is the fundamental factor. Comparing the acquisition outcomes of public and private acquirers provides no direct examination of the conjecture in Hsieh et al. (2011) and Celikyurt et al. (2010) that an IPO increases a firm's ability to make a profitable acquisition.

Investigating the post-acquisition performance could also help to explain the underperformance of RTs and that of IPOs observed in previous RT literature. Previous studies in the U.S. suggest that acquisitions following either route could cause stock market underperformance and delisting of newly listed firms. Gleason et al. (2005) observe little improvement in operations or profitability on public firms after RTs and the delisting rate is 46.3% two years post-RT. Adjei et al. (2008) find that 42% of RTs are delisted within three years of listing, compared to 27% of IPOs. Brau et al. (2012) show that firms acquiring within a year of going public significantly underperform in the long-run, with a -32.1% five-year buy-and-hold abnormal return (BHAR) on average, whereas non-acquiring IPOs do not significantly underperform over these time frames, with a 1.1% five-year BHAR. Similarly, Amor and Kooli (2015) find that frequent acquirers significantly underperform and are less likely to survive than single acquirers.

Second, I explore the impact of board ownership and other board characteristics on acquisition routes and outcomes in the U.K. According to agency theory, firms with better corporate governance are more likely to conduct well-conceived acquisitions to enhance long-run firm value (Jensen, 1986 and 2004). The U.S. empirical evidence supports Jensen's hypothesis. Fu et al. (2013) observe that overvalued stock acquisitions have weak pre-acquisition corporate governance, which encourages valuing-destroying acquisition. Cuñat et al. (2012) find that when shareholder-sponsored corporate governance proposals are passed at annual meetings, which indicates an improvement in internal corporate governance, acquisition activities and capital expenditures fall and long-term performance increases. On the contrary, I find that in the U.K., board members in RTs and IPO-M&As tend to hold a similar level of shareholdings post-listing and generally board ownership do not affect the post-acquisition performance of acquirers.

Third, I investigate the post-acquisition stock market performance for both public acquirers taking the IPO and subsequent acquisition route and private acquirers taking the RT route. I focus on acquiring firms' long-run performance for two reasons. First, the long-run study extends the acquisition announcement study in Hsieh et al. (2011). Hsieh et al. (2011) propose a theoretical model suggesting that an IPO can reduce the valuation uncertainty and leasd to a more efficient acquisition strategy. Hsieh et al. (2011) focus on the announcement returns of acquisition, while I focus on the long-run stock returns. Second, the long-run performance shows the acquisition outcome after the integration, while the acquirer's stock market movement around the announcement shows investors' expectation of potential acquisition outcome.

Fourth, to the best of my knowledge, the RT literature has focused predominantly on its public listing feature (Gleason et al., 2005; Appadu et al., 2014; Brown et al., 2010; Sjostrom, 2007; Makamson, 2010; Asquith and Rock, 2011). My study fills the gap by investigating RTs from a conventional M&A perspective and exploring factors that influence the choice between two routes and post-acquisition performance. Makamson (2010) argues that a RT has strategic benefits beyond the financial motive to get listed, as it can help a private firm to enter a new market or rebrand its business by acquiring another firm and help a public firm to exit existing business by selling it to a private firm. Gleason et al. (2005) state seven motivations cited for the RT in proxy statements, including capitalizing on the strength of the private firm, growth, expanding into complementary lines of business, taking advantage of economies of scale, a desire on the part of the private firm to be publicly listed, diversifying the business, and more organizational depth.

The rest of the paper is organized as follows. Section 2.2 compares the regulatory framework of RTs and IPOs. Section 2.3 develops the hypothesis of post-acquisition performance. Section 2.4 describes the sample selection and data collection. Section 2.5 describes the models and variable measurements. Section 2.6 provides descriptive statistics and tests the hypothesis. Section 2.7 concludes.

## 2.2 Regulatory Framework and Background Information

In this section, I present the regulatory requirements of listing and acquisition transactions. Generally, in the U.K., firms opting for RTs or IPOs are under the same listing and trading scrutiny, and, after deal completion, these firms are required to follow the same reporting requirements. A RT transaction is similar to a regular acquisition in terms of the announcement, circular, shareholder approval, and required documentation (e.g. prospectus). I also compare the regulatory differences of RTs in the U.K. and the U.S.

### 2.2.1 Regulatory Definition of RTs

In the U.K., Listing Rule 10.4 (d) defines a RT as "a transaction consisting of an acquisition by a listed company of a business, an unlisted company or assets where any percentage ratio is 100% or more or which would result in a fundamental change in the business or a change in board or voting control of the listed company" (FSA, 2004).[3] By contrast, the U.S. listing rules have no formal definition of a RT. The Securities and Exchange Commission (SEC) explains the RT transaction process:

> *"Typically, the shareholders of the private operating company exchange their shares for a large majority of the shares of the public company. Although the public shell company survives the merger, the private operating company's shareholders gain a controlling interest in the voting power and outstanding shares of stock of the public shell company. Also typically, the private operating*

[3] The 2010 updated version of the FSA (2004) listing rules maintains the same definition under Section 10.2.2(4).

*company's management takes over the board of directors and management of the public shell company. The assets and business operations of the post-merger surviving public company are primarily, if not solely, those of the former private operating company" (SEC, 2011,p.1).*

These shell RTs only provide private firms a public listing status, without any M&A growth opportunity built in (Floros and Sapp, 2011; Jambal et al., 2012; Feldman, 2006; Feldman, 2010). Lee et al. (2014) make an analogy that shell companies are traded much like website domain names. As trading shell companies can help to meet the minimum shareholder threshold, they can facilitate exchange listing (Floros and Sapp, 2011). Floros and Sapp (2011) find that shell RTs constituted 89% of 236 RTs in the U.S. market in 2008. The popularity of shell RTs partially explains the listing mechanism of RTs viewed by financial consultants and academics. Due to data availability, I focus on RTs involving operational firms. Further discussions of my operational RT sample and shell RTs appears in Section 2.4.

### 2.2.2 Listing process and admission to trading of IPOs and RTs

The Financial Conduct Authority (FCA) Handbook describes an IPO as the process by which a company obtains a first listing or admission to trading of its securities on a stock market and offers transferable securities to the public for the first time (FCA, 2001). A firm obtains public listing status, and its securities can be traded after the completion of the IPO process. Private firms conducting a RT are required to apply for a re-admission to get the listing status. Listing Rule 14 suggests that a RT triggers a re-admission (FSA, 2004). Listing Rule

10.2.10R states that the enlarged entity emerging from the RT is effectively a different business and is treated as a new applicant for listing (FSA, 2004). Thus, to obtain public listing status and ask for admission to trade on a regulated market, private firms opting for RTs must comply with exactly the same entry requirements as any other companies applying for admission for the first time. Both RTs and IPOs need to provide prospectuses approved by the FCA.

Unlike the U.S., where shell firms are traded either on the OTC Bulletin Board (OTCBB) or through Pink Sheets, U.K. RTs can occur on the two London Stock Exchange (LSE) markets, the Official List (OL) and the Alternative Investment Market (AIM) (Floros and Sapp, 2011; Appadu et al., 2014). Therefore, after listing, both RT and IPO firms are subject to the same public disclosure regime of the U.K. markets.

### 2.2.3 Acquisition process of RTs

As presented in Section 2.2.1, both the U.S. SEC and the U.K. FSA emphasize the fundamental change in control of the surviving company. Similarly, an acquisition transaction passes the control of a target firm to an acquirer. The UKLA requires that a RT transaction be conditional on the consent of shareholder approval (FSA, 2004). In RTs and regular acquisitions which trigger a change of control, firms are required to disclose this (including announcement and circular), and shareholder approval is needed (FSA, 2004). Generally, in the U.S., shareholder approval is required in a RT, with the exception of “triangular” RTs, where the public shell creates an empty, wholly owned subsidiary that merges into the private company (Floros and Sapp, 2011).

## 2.3 Hypothesis Development

The hypothesis of this paper is based on Hsieh et al.'s (2011) conjecture that an IPO leads to a more efficient acquisition strategy, and therefore enhancing firm value compared to RT. This conjecture is based on the information asymmetry theory that an IPO reduces valuation uncertainty. Hsieh et al. (2011) assume that in the absence of market valuation, firms learn their valuation from the capital market and managers adjust their valuation of the firm following the market response.[4] An IPO facilitates subsequent stock-financed M&As by reducing information asymmetry of the firm value and that of potential synergy value between investors (Hsieh et al., 2011).

When exercising the option to acquire another business, a public firm is able to evaluate the takeover gain resulting from a potential acquisition more precisely than a similar private firm. A public acquirer is able to exercise its acquisition option optimally, while a private acquirer is more likely to pursue a suboptimal acquisition policy. Not knowing the precise value of a private acquirer, the private firm and potential targets are more likely to make suboptimal acquisitions (Hsieh et al., 2011). In addition, Shleifer and Vishny (2003) suggest that overvalued acquirers can increase firm value by using their stock as currency to purchases less overvalued firms. Thus, a public acquirer

[4] See Hsieh et al. (2011) pages 1369-1370 for the justification and empirical support of the two assumptions.

may be more likely to conduct value-enhancing acquisitions than a private acquirer.

Alternatively, RTs may outperform acquisitions conducted by recently listed IPO firms as private acquirers suffer less from problems of overvalued synergy and agency problems compared to public acquirers. Rhodes-Kropf and Viswanathan (2004) suggest that when the market is overvalued, acquirers and target firms are more likely to overestimate the synergy value. Since a private acquirer could not take advantage of overvalued stock price as a public acquirer does, it is less likely to conduct acquisitions with overvalued synergy. Fu et al. (2013) observe that acquisitions driven by stock overvaluation do not lead to synergy gains. As private acquirers cannot get valuation from the market before the RTs, acquisition-driven IPOs are more prone to the problem of overvalued synergy compared to private acquirers conducting RTs.

In addition, previous studies suggest that a private acquirer is subject to a lower extent of agency problems due to a more concentrated ownership than a public firm (Gao et al., 2013; Asker et al., 2011; Bhide, 1993). Agency theory suggests that firms with a higher level of agency problems are more likely to conduct ill-conceived M&As, which harm firm value (Jensen, 1986 and 2004; Moeller et al., 2005). As private acquirers involved in RTs are not required to issue shares to the public, RTs are more likely to have a higher insider ownership than that of IPOs. If having a more concentrated insider owenrship, private acquirers in RTs are less likely to be prone to agency problems compared to public acquirers. Therefore, RTs with a higher insider ownership and lower level of agency problems are more likely to conduct well-conceived acquisitions and outperform acquisitions conducted by recently listed IPO firms.

The above arguments lead to the following hypothesis:

> ***Hypothesis 2-1: Acquisitions conducted by recently listed IPO firms outperform acquisitions conducted by private firms in a RT.***

## 2.4 Sample Selection and Data Collection

In this section, I outline the sample selection procedure and describe the data sources. My initial sample consists of IPOs, RTs and M&As on the LSE from the Thomson ONE Securities Data Company (SDC). The sample period is between 1 January 1995, and 31 December 2012. I collect IPO and RT prospectuses from the Perfect Information (PI) Navigator database. The prospectuses include board ownership information before and immediately after listing. The pre-listing financial information of private firms is obtained from Datastream and the prospectuses. The deal-specific information is collected mainly from the SDC database and supplemented with information from the prospectuses. The post-deal stock market and financial performance data are collected from Datastream. Data from prospectuses are manually collected.

My sample period starts from 1995, when the AIM was launched, and ends in 2012, which allows the investigation of performance for two years after the RTs. I drop incomplete RTs, IPOs, and M&As for three reasons. First, the complete IPOs and RTs ensure private firms obtain their public listings. Second, I investigate whether the board of directors' (BOD) ownership structures influence the choice of listing routes and post-acquisition performance.[5] Ownership structure change is only expected to occur in complete RTs. Third, completed RTs and M&As generate combined new entities, of whose post-acquisition performance I can examine.

[Insert Table 2-1 here[6]]

Table 2-1 Panel A describes the filters used to construct the sample of RTs. RTs are identified by the variable "Reverse Takeover flag" in the SDC M&A database. The Reverse Takeover flag "indicates a merger in which the acquiring company offers more than 50% of its equity as consideration offered to the target company resulting in the target company becoming the majority owner of the new company" (SDC, 2014, p.257). The initial sample includes 238 RTs completed during 1995-2012. I eliminate RTs without a public acquirer and a private target. I narrow the sample to 135 RTs which follow the definition in the prior literature, that a private firm inherits the public listing status after being acquired by a public firm in a RT (Gleason et al., 2005; Lee et al., 2014). The filter of public status ensures that the private firm has no access to the general market before and obtains the public listing after the RT transaction. When a public firm purchases more than one private firm at the same time, the SDC database recognises it as multiple RTs with distinct SDC

[5] I check four other databases, FAME, Osiris, Orbis and Thomson One, as supplementary resources to collect financial and ownership information. Unfortunately, these supplementary databases do not provide additional benefit to my data collection.
[6] All tables are at the end of each chapter.

Deal Numbers.[7] I verify these multiple target RTs from prospectuses, and each RT prospectus is identified as one RT transaction. The private firm which obtains more than 50% shares post-RT is identified as the private target in multiple target RTs. Based on these criteria, I have 128 RTs left in my sample.

In Section 2.2.1, I discuss shell-RTs. A shell-RT followed by a regular acquisition also fits the listing-and-acquisition desire of a private firm. Floros and Sapp (2011) suggest that RTs identified by the SDC M&A database generally involve operating public firms. Floros and Shatri (2009) suggest that the SDC database fails to identify shell-RTs. I checked the SIC codes of my 238 RTs, and none of the public firms had codes 6770 and 9995, which represent blank checks and non-operating establishments, respectively, in Aydogdu et al. (2007). The shell-RT route is similar to an IPO route, which could provide a public listing status to facilitate subsequent M&As.

Appadu et al. (2014) observe 118 shell-RTs and 125 RTs between operational public and private firms in the same type of business during 1995-2012 on the LSE. Appadu et al. (2014) find that 41 shell-RTs conducted subsequent M&As within one year of listing. If the shell-RT sample is available, additional analyses could be conducted to test the springboard effect of shell-RTs on subsequent acquisitions.

In my study, shell-RTs are not included in my sample as the SDC database do not include shell-RTs. However, even if I got information of the sample shell-RT in Appadu et al. (2014), the sample of 41 private firms opting for the shell-

[7] The SDC M&A defines SDC Deal Number as a "Unique nine digit number assigned by Thomson Reuters to each individual transaction" (SDC, 2014).

RT-and-acquisition route is much smaller than my sample of 513 private firms opting for the IPO-and-acquisition route and the 128 private firms opting for the RT route. This difference in transaction numbers suggests that private firms are more likely to use the IPO and RT routes to conduct listing and acquisition transactions.

Table 2-1 Panels B and C describe the filters used to construct the sample of acquisition-motived IPOs. My initial sample of 3,204 IPOs comes from the SDC New Issue database, and the sample of 22,136 M&As comes from the SDC Mergers and Acquisitions database. Following Derrien and Kecskés (2007), I exclude 252 cross-listing firms already listed elsewhere. Unlike original IPOs, cross-listed issuers are listed or publicly traded in their domestic stock markets, where public funding can be provided to facilitate subsequent M&As (Baker and Wurgler, 2002). The remaining observations contain 2,952 original IPOs in my sample.

As my study focuses on acquirers who control the combined firm after deal completion, I track all M&A activities for the 2,952 original IPO sample firms over the sample period. Seventy-six leveraged buyout (LBO) and/or management buyout (MBO) transactions are excluded from the initial M&A sample of 22,136 (see Table 2-1 Panel C). In such transactions, the acquirer only provides its management's expertise to targets and contributes no physical capital of its own (Hsieh et al., 2011). I match IPOs and subsequent M&As using the SDC 6-digit CUSIP Number[8] and cross-check the acquirer's

[8] To match IPOs with their subsequent M&As, I use eleven firm identifiers provided by the SDC database. The identifiers are SDC 6-digit CUSIP Number, SDC 8-digit CUSIP Number, SDC 9-digit CUSIP Number, 6-digit SEDOL, 7-digit SEDOL, 10-digit Security Permanent ID, 10-digit Company

and IPO firms' names in the M&A prospectus provided by the PI Navigator database to confirm that the M&A is conducted by an IPO firm listed during 1995-2012. If the sample IPO firm conducts subsequent M&As, the IPO firm and the M&A acquirer will have the same SDC 6-digit CUSIP Number and same company name. I also exclude nine IPOs which conduct 61 M&As before listing. Based on these criteria, I am left with 1,088 IPO firms that conducted 4,027 M&As over the sample period.

Following Hovakimian and Hutton (2010) and Hsieh et al. (2011), I restrict the M&A sample to transactions in which at least 50% of the target's shares were acquired by the IPO firms. These IPO firms can provide consolidated financial statements on the post-acquisition entity, which is the same as acquirers in RTs. I exclude 99 M&A observations with missing information on the percentage of the target's shares acquired in the transaction, and 617 M&As with less than 50% of the target's shares acquired (see Table 2-1 Panel C). Based on these criteria, I have a sample of 949 IPO firms which acquire control of targets in 3,311 M&As (see Table 2-1 Panels B and C).

To make the acquisition-driven IPOs more comparable to RTs, I construct a sample of IPOs which acquire another firm within 12 months of the initial public offering process. I follow Brau et al. (2012) to apply a 12-month period between IPOs and subsequent acquisitions. Brau et al. (2012) show that IPOs that acquire within a year of going public significantly underperform for 1- through 5-year holding periods following the first year, whereas non-acquiring

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Permanent ID, 12-digit ISIN(International Securities Identification Number), Thomson Ticker Symbol, Datastream Code, and Company Name. The 6-digit CUSIP Number provides the best matching result as other identifiers have more missing observations than the 6-digit CUSIP Number.

IPOs do not significantly underperform over these time frames. The financial characteristics of a listed-within-12-months public acquirer are more comparable to RT private “acquirer” than a mature public firm. This restriction helps to better capture private firms’ choice of RTs versus IPOs followed by acquisitions. Based on these criteria, I have a sample of 513 IPOs, which acquire 948 firms within 12 months after IPOs (see Table 2-1 Panels B and C).

[Insert Table 2-2 here]

There are 128 RTs and 513 acquisition-motived IPOs that meet my sample selection criteria. In Table 2-2 Panel A, I exclude 50 RTs without prospectuses. The remaining 78 RTs have post-deal board ownership information, and 24 of them have pre-deal board ownership information. I supplement the prospectuses with annual reports from the PI Navigator for private firms’ pre-RT last-twelve-month (LTM) financial information. After eliminating seven private firms without consolidated financial information and five firms without LTM financial information in the prospectuses and adding back four private firms with LTM consolidated financial information in financial statements, I obtain my final RT sample of 70 observations (55% of my sample) with both ownership and LTM financial information.

Table 2-2 Panels B and C describe criteria applied to IPOs. I collect private firms’ pre-IPO financial information from the Datastream database and IPO prospectuses. Among the 513 acquisition-driven IPOs, 493 IPO firms can be matched to Datastream, and 223 out of 493 firms have LTM pre-IPO financial information from Datastream. IPO prospectuses are used as a supplementary resource to collect the financial information for the 20 IPO firms that cannot be matched to Datastream and the 270 IPO firms for which pre-deal LTM financial information cannot be found from Datastream. Among the 290 IPO firms without financial information from Datastream, 64 have LTM financial information in the IPO prospectuses. Merging LTM financial information from Datastream and prospectuses, I have a sample of 287 IPO firms that have the LTM financial information. Eliminating 98 IPOs with missing board ownership information results in a final sample of 189 acquisition-motived IPOs (37% of my sample), with both LTM financial statement information of private firm and post-deal Board of Directors' holdings information. Table 2-2 Panel C sequentially excludes IPO firms without board ownership information and pre-listing financial information, resulting in the same final sample of 189 IPOs.

[Insert Table 2-3 here]

Table 2-3 Panels A to E describe the pre- and post-listing board ownership and pre-listing financial information that I obtained for the final sample of 70 RTs and 189 acquisition-motived IPOs. All financial information is inflation-adjusted following Bargeron et al. (2008). The inflation rates are obtained from Datastream, and the base rate is set to 100 in 1995. All financial figures are exchanged to U.S. dollars, and exchange rates are obtained from Datastream. I collect the post-listing market performance data and post-acquisition financial report information from Datastream. Among the final sample of 70 RTs, 66 have total return index (RI) data. Among the final sample of 189 acquisition-motived IPOs, 179 IPOs conducted acquisitions that have RI data.

## 2.5 Model Design and Variable Measurement

This section presents the empirical model design and describes the measurement of variables. I also motivate the use of each variable and how it affects the post-acquisition performance.

### 2.5.1 Self-selection of listing routes

Feldman (2005), a U.S. RT legal advisor, suggests that a RT listing is faster and cheaper than an IPO listing, especially for small firms who may not be able to afford an IPO. Feldman (2005) suggests that for most RTs it takes two to three months to complete the due diligence and negotiation of documents, even if contemporaneous financing was taking place, while a typical IPO usually takes nine to twelve months to complete. Floros and Shatri (2009) find that the median duration of RTs, between the first announcement date and the completion date, is 51 days, while that of a penny stock IPO is 83 days. Gleason et al. (2005) show that the combined fees to the target and the acquirer on average are 2.72% of the transaction value, while Chen and Ritter (2000) suggest that the floatation cost of an IPO can be 7% of the transaction value. Thus, private firms who are not able to afford the cost and duration of an IPO listing may prefer to conduct a RT listing.

Previous RT studies in the U.S. show that smaller, younger, and less profitable private firms appear to opt for a RT (Adjei et al., 2008; Semenenko, 2011). As the pre-listing private firms' financial information is often subject to limited availability, some researchers investigate the financial information of combined firms in the first post-listing financial report and they find that firms opting for a U.S. RT tend to be smaller, less profitable, more highly leveraged, and less liquid (cash holding) than IPO counterparts of comparable size and industry (Pavkov, 2006; Sjostrom, 2007; Adjei et al., 2008; Floros and Shatri, 2009; Jindra, 2012). In the U.S., private firms appear to self-select a RT or an IPO listing based on their financial characteristics.

IPO literature shows that the insider ownership structure influences the decision of going public (Pagano and Roell, 1998; Mello and Parsons, 1998; Brau et al., 2003). Pagano and Roell (1998) suggest that insiders face a trade-off between external funding and concentrated control. Brau et al. (2003) observe that the level of post-deal insider ownership tends to be higher for IPO firms than for private firms choosing to be acquired by another firm. As mentioned in Section 2.1, in the U.S., insiders who prefer to retain a more concentrated control appear to opt for an IPO listing and hold more shares after an IPO than a RT.

The stock market condition is also a consideration when private firms go public (Ritter, 1984). Floros and Sapp (2011) observe that during 1990-2000, the number of RTs was lower than 20 transactions per year, while the number of IPOs peaked at around 800 in 1996. Gleason et al. (2005) suggest that RTs are more certain than IPOs as RTs only involve two parties and do not depend on the general market reaction to public offerings. However, if managers of IPO firms take advantage of equity mispricing, there is no reason why reverse takeover firms should follow a different strategy. Floros and Sapp (2011) observe that the number of RTs increases and RTs have the same wave as IPOs during 2000-2008. In addition, Semenenko (2011) observes that RT waves are highly correlated with conventional M&A waves, with a 0.82

correlation when measured on an annual basis. RT private firms try to time the market by acquiring financially distressed firms (or shell firms) when market conditions are unfavourable and acquiring operating firms pro-cyclically (Semenenko, 2011). These U.S. studies show that the RT private firms' market timing behavior changes over time.

In the U.K., Derrien and Kecskés (2007) show that introduction firms, which are listed without issuing equity and then issue equity shortly thereafter, time the market both when they list and when they issue equity. These introduction firms are similar to RT firms in terms of capital raising activity, as RTs are not required to issue capital at the time of listing. Similarly, RT firms have the same opportunity to time the market by separating listing and issuing. Thus, RTs are less likely to be as sensitive as IPOs to the market condition.

These RT empirical studies indicate the self-selection issue. A private firm could consider its financial characteristics, its expected insider ownership structure, the general market condition before listing and its cash needs, and self-select a listing-and-acquisition method that meets its constraints and desire of listing and acquisition.

### 2.5.2 Model Design

If one believes that the choice of listing-and-acquisition routes is induced by or reflects private information, then the consistent estimation of the parameters in the cross-sectional regression requires the appropriate control for self-selection (Prabhala, 2008). I use a logit regression model to test whether private firms self-select into different listing-and-acquisition routes and to investigate the determinants of route choice. If a self-selection issue exists, I use the instrumental variable (IV) approach to correct the issue and examine whether an IPO helps enhance acquirers' firm value in the long-run.

To address the self-selection issue, I examine the following regression:

$$Logit\ Model: T_i(IPO = 1|\ RT = 0) = \alpha_i X_i + \beta_i Z_i + \varepsilon_i \qquad (1)$$

Where $X_i$ stands for private firms' financial characteristics and post-deal board ownership structure characteristics, $Z_i$ stands for the firm's listing proceed and the market condition before the acquisition, and $\varepsilon_i$ is the error term.

Following Derrien and Kecskés (2007), if the self-selection issue exists, I examine the post-acquisition performance in the following regression:

$$Treatment\ Model: Y_i(post - acquisition\ performance)$$

$$= \gamma_i T_i + a_i X_i + \delta_i W_i + \varepsilon_i\ (2)$$

Where $T_i$ is the choice of treatment, which is the outcome of an unobserved latent variable in regression (1), $X_i$ stands for private firms' financial characteristics and post-deal board ownership structures characteristics, $W_i$ stands for acquisition deal-specific characteristics, and $\varepsilon_i$ is the error term.

The IVs should influence the choice of listing-and-acquisition at the first stage, but not influence acquiring firms' post-acquisition performance at the second stage (Heckman and Robb, 1985). I use two IVs: Listing Proceed and Market Condition. Listing Proceed measures the amount of proceeds issued in the LSE market, in millions of U.S. dollars of common stock issues proceeds. For RT transactions, the listing proceed can be zero, as RTs are not required to issue new capital at the time of listing. IPO firms tend to raise more listing proceeds than RTs, but more proceeds may not necessarily lead to better performance after acquisition. Table 2-4 shows that the correlation between the Listing Proceed and the choice of listing-and-acquisition is 0.071, while the correlation between the Listing Proceed and acquirers' post-acquisition performance is 0.047. Neither correlation coefficients are significant at the 10% level. The correlation in the first stage shows that the Listing Proceed does not influence the choice heavily. Therefore, I use the Listing Proceed as the second IV.

[Insert Table 2-4 here]

Listing Market Condition is generated as the log performance of the FTSE All Share cumulative market return three months before the listing transaction of RTs or IPOs (Cumming et al., 2014). As discussed in Section 2.5.1, an IPO listing is more likely to have a higher correlation with the market condition than a RT listing, but theoretically, the pre-listing market condition is uncorrelated with acquiring firms' post-acquisition performance. The acquiring firms consider the general market condition before the acquisitions and time the market by conducting M&As with over-valued stocks (Shleifer and Vishny, 2003; Rhodes-Kropf et al., 2005). Duchin and Schmidt (2013) show that the three-year post-M&A performance of in-wave acquirers' cumulative BHAR is 10% to 15% lower than out-wave acquirers. By contrast, Maksimovic et al. (2013) find that in-wave M&As create about 2% bigger efficiency gains.[9]

[9] Maksimovic et al. (2013) use firm productivity (TFP) to control for operating efficiency.

These empirical studies suggest that market conditions around M&As influence acquirers' post-acquisition performance in the long-run. In my study, the duration between IPOs and subsequent acquisitions is one year or less, and some acquisition-IPOs occur days before the acquisitions. Therefore, the three-month pre-listing windows could overlap with pre-acquisition windows and using market condition as an IV could create a theoretical problem in that the Listing Market Condition might influence the post-acquisition performance. Empirically, the Listing Market Condition is a proper IV, as it is 0.152 correlated with the choice of listing-and-acquisition (significant at the 1% level), and 0.016 correlated with the post-acquisition stock market performance (not significant at the 10% level) (Table 2-4). Therefore, the Listing Market Condition is not highly correlated with the post-acquisition performance and can serve as an IV.

I use maximum likelihood (ML) to estimate the treatment effects model:

$$ML\ Model: Y_i(post-acquisition\ performance)$$
$$= a_i X_i + \beta_i Z_i + \delta_i W_i + \varepsilon_i \qquad (3)$$

Where $X_i$ stands for private firms' financial characteristics and post-deal board ownership structures characteristics, $Z_i$ stands for the firm's listing proceed and the market condition before the acquisition, $W_i$ stands for acquisition deal-specific characteristics and $\varepsilon_i$ is error term.

[Insert Table 2-5 here]

Table 2-5 Panel A describes the measurement of the dependent variables in regressions (1), (2) and (3). The descriptive statistics for these dependent variables are given in Table 2-6 Panel A. To test the hypothesis, I use the event study approach to examine the market-based abnormal returns to shareholders in the acquiring firm for two years after the completion of the acquisition. I generate firm $i$'s cumulative abnormal return (CAR) and buy-and-hold abnormal return (BHAR) across ten event windows: (+2, +5), (+2, +10), (+2, +15), (+2, +20), (+2, +40), (+2, +60), (+2, +127), (+2, +254), (+2, +381), and (+2, +508). These windows cover short-run and long-run effects and range from one week to two years after the acquisition. For the final sample of 70 RTs and 189 IPOs conducting acquisitions within one year of listing, a sub-sample of 65 RTs and 179 IPOs have two years of post-acquisition stock market information in Datastream. [10] I examine the post-acquisition performance within the sub-sample. The results of alternative measures are presented in Section 2.6.3.

[Insert Table 2-6 here]

### 2.5.3 Dependent Variable Measurement and Motivation

Table 2-5 Panels B, C, and D describe the independent variables in the models, which are the financial characteristics of private firms opting for each listing-and-acquisition route, the board ownership structure immediately after the admission of the listing, and the listing and acquisition deal-specific characteristics. The descriptive statistics for these variables are given in Table 2-6 Panels C to F.

[10] 66 RTs and 179 IPOs have post-acquisition RIs in Datastream. I exclude one IPO, which was delisted after one year of listing. The sub-sample of 65 RTs and 179 IPOs survive two years after acquisition.

***LogTA*** is the logarithm of the book value of total assets twelve months before listing. LogTA is a firm size proxy that provides an indication of the private firm's ability to successfully compete as an independent publicly traded firm (Brau et al., 2003). Brau et al. (2003) show that the average value of total assets is $268 million for IPO firms and $111 million for firms choosing to be acquired by public firms; the difference is significant at the 1% level. As IPOs involve considerable transaction costs, small firms may not be equipped to operate as successfully as stand-alone public firms (Pagano and Roell, 1998; Coelho, 2015; Beaumont, 2015). In this study, private firms opting for each route operate as stand-alone public firms. I expect smaller firms opt for a RT as it is generally cheaper and quicker than an IPO.

***LogSALE*** equals the logarithm of the one plus the sales revenue value. As some private firms in RT and IPO transactions have a sale value of zero, the log(1+Sale) ensures the firm size is a positive figure. Derrien and Kecskés (2007) proxy firm size with sales revenue. I expect a positive relationship between LogSALE and the choice of an IPO.

***Leverage*** equals a private firm's book value of total debts twelve months before the listing, divided by the contemporaneous book value of total assets. Theoretically, the leverage ratio should range from zero to one. In practice, some private firms have negative equity due to write-down goodwill or cumulated loss larger than the book value of equity, and their leverage ratios are larger than one. I set the leverage to be one if the firm has negative equity. Several U.S. studies investigate the first post-listing financial reports and observe that RT firms have higher leverage and smaller size than IPO counterparts of comparable size and industry (Gleason et al., 2005; Floros and Shatri, 2009; Jindra, 2012). The negative correlation between firm size and leverage is consistent with international findings in Rajan and Zingales (1995).

***Profit ratio*** equals a private firm's book value of net income twelve months before the listing divided by the contemporaneous book value of total assets. The profit ratio is negative if the firm generates a loss and positive if the firm generates a profit. According to previous U.S. RT studies, less profitable private firms opt for a RT (Adjei et al., 2008; Semenenko, 2011). Previous research suggests that private firms are likely to conduct an IPO when firms expect an increase in profitability, and investors appear to value listing firms based on the pre-IPO profit margins (net income divided by sales) (Poulsen and Stegemoller, 2008; Mikkelson et al., 1997; Jain and Kini, 1994).

***Liquidity*** equals a private firm's book value of cash and cash equivalent twelve months before the listing divided by the contemporaneous book value of total assets. It ranges from zero to one. Denis and Sibilkov (2009) suggest that cash holdings are more valuable for financially constrained small firms than large firms. Small private firms opting for a RT are more likely to have a higher liquidity ratio than IPO firms. As RTs are not required to raise capital at the time of listing, private firms opting for a RT are less likely to have a cash need compared to IPO firms.

***Asset Turnover*** equals a private firm's book value of sales revenue twelve months before the listing divided by the contemporaneous book value of total assets. Asset turnover measures the firm's ability to generate revenue from its assets. I use asset turnover as a control of firm financial characteristics.

***Board Ownership*** is the collective proportion of common shares owned directly or indirectly by the board immediately following the admission of the acquisition.[11] As discussed in Section 2.1, whether post-acquisition board ownership in RTs and IPOs is different is an empirical issue.

I examine the post-listing board ownership structure for two reasons. First, board members in private firms make their decisions of whether to stay or leave after the IPO and the RT, and those who stay in the new board control the firm and supervise its performance. The post-listing board has more influence on the post-listing-and-acquisition performance than the pre-RT board. For example, in a private firm, if a pre-listing board member resigns and sells out his holding, he or she may not have any interest in the post-deal entity and his or her pre-deal position may have less influence on the listing-and-acquisition; if a pre-listing board member resigns from the board but keeps his holding, he or she can only enjoy the cash interest of the firm without direct influence in the firm. If a new member is introduced to the board immediately after listing, he or she is likely to be involved in the listing process, and his or her common shareholding is likely to be negotiated before the completion of the listing.

[11] Direct holding measures shares held by board members and indirect holding is shares held by board members' immediate families. The board ownership measure excludes options held by the board, following Brennan and Franks (1997), Mikkelson et al. (1997), Himmelberg et al. (1999), Morck et al. (1988), McKnight and Weir (2009), McConnell and Servaes (1990), Cho (1998), Hermalin and Weisbach (1991), and Lewellen et al. (1985).

Second, post-IPO board ownership is the pre-acquisition ownership, which reflects the agency cost arising from the separation of ownership and control. For RTs, I use post-RT board ownership as a proxy for pre-acquisition board ownership as pre-acquisition board ownership is only available for 24 RT private firms.

***CEO/MD Ownership*** is the proportion of common shares owned directly or indirectly by the chief executive officer (CEO) or managing director (MD) immediately following the admission of the acquisition. Executive officers are called managing directors in some U.K. firms. In this study, I investigate whether CEOs and MDs choose different listing routes based on their control preference.

I use Board Size (Singh and Davidson, 2003; Fu et al., 2013) and NED/BOARD (McKnight and Weir, 2009) to control for the post-listing firms' corporate governance. Board Size may influence the impact of insiders on corporate performance by acting as either a complement or substitute for ownership structure (Singh and Davidson, 2003). Previous studies find mixed evidence on the relation between board size and firm performance (Pearce and Zahra, 1992; Jensen and Meckling, 1979; Yermack, 1996; Eisenberg et al., 1998, among others). Empirical studies suggest that boards dominated by NEDs are more likely to have better governance and act in the best interest of shareholders (Borokhovich et al., 1996; Hermalin and Weisbach, 1988).

I also control acquisition deal-specific variables which are Listing Exchange, M&A motive (Use of Listing Proceed on Acquisitions), Value of Acquisition

Transaction, Acquisition Payment Method, Friendly Acquisition, Cross-Border Acquisition, and Synergy Acquisition. Table 2-5 Panel D discuss the measurements of these variables. I control for listing exchange with the AIM dummy which equals 1 if a firm is listed on the AIM, and zero if listed on the London Main Market. I classify an acquisition as synergy acquisition if the target and acquirer have the same 2-digit SIC.

Derrien and Kecskés (2007) suggest that AIM is the preferred exchange for smaller firms. Tolmunen and Torstila (2005) find that acquisitions with larger transaction values are more likely to use stock payment (Jensen, 1986; Agrawal et al., 1992). Previous studies find that cash acquirers outperform stock acquirers in long-run stock price performance (Loughran and Ritter, 1997). Ghosh (2001) and Linn and Switzer (2001) find the same relationship for acquirers' long-run operating performance. Prior research finds that friendly acquirers underperform hostile acquirers in the long-run (Agrawal et al., 1992; Loughran and Ritter, 1997). Danbolt and Maciver (2012) find that acquirers gain significantly more in cross-border than in comparable domestic acquisitions, since cross-border transactions may bring additional benefits of international diversification and access to new markets, and may transfer higher corporate governance standards from acquirers to targets. Acquirers unfamiliar with the target industry in non-synergy M&As experience underperformance.

## 2.6 Results

### 2.6.1 Descriptive Statistics

In this section, I compare private firms opting for the RT route and IPO-and-acquisition route and provide the descriptive statistics in Table 2-6 Panels A to G. Panel A of Table 2-6 and Figure 2-1 present the annual distribution of the initial sample of 128 RTs and 513 IPO transactions. During 1995 to 2012, RTs and IPOs have a similar trend that peaks around 2000 and 2005, and bottoms around 2009 and 2012. The annual frequency distribution suggests that the market condition may influence both RTs' and IPOs' volumes. Panel B presents industry distributions of acquirers and targets in RTs and acquisitions conducted by IPO firms. Both RTs and acquisitions are clustered in manufacturing, transportation and public utilities, finance, insurance and real estate, and services industries.

The average leverage ratio in RT private firms is 32.7% higher than private firms opting for an IPO, and the difference is statistically significant at the 5% level. A high leverage ratio suggests a high risk of financial distress and potentially high financing costs (Opler and Titman, 1994; Myers and Majluf, 1984). The higher financial risk and financing costs make a RT private firm appears to be less attractive than IPO firms for private firms at the listing issue. Private firms opting for IPOs hold 4.5% higher cash than RT private firms, and the difference is significant at the 10% level. Private firms opting for RTs and IPOs have comparable asset turnover ratios.

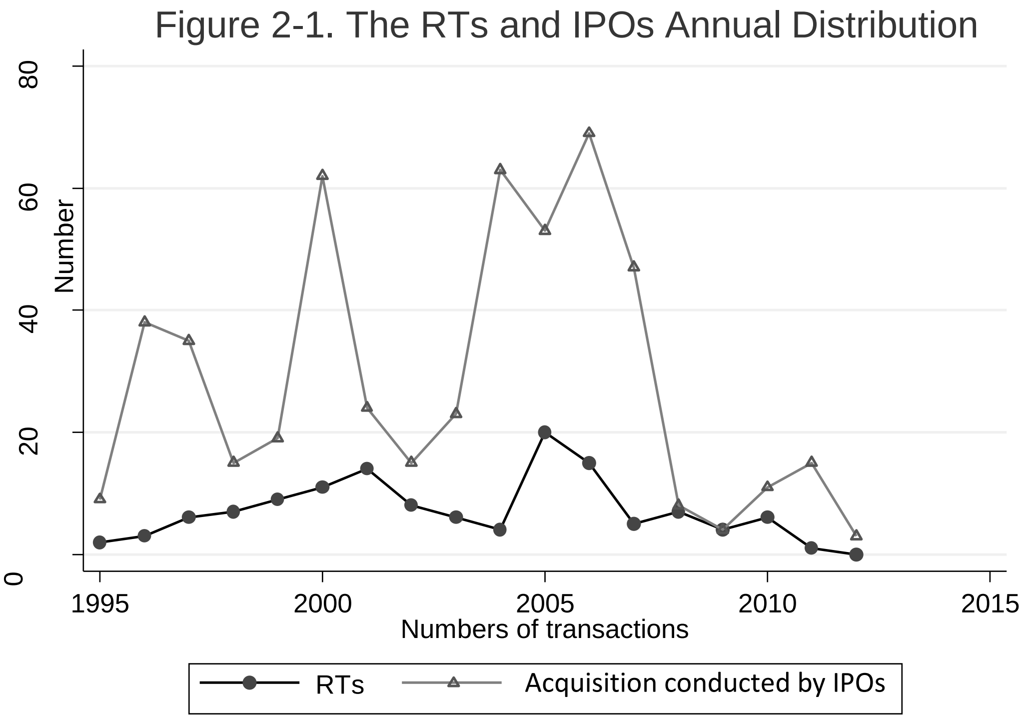



**Figure 2-1. The RTs and IPOs Annual Distribution.** The sample comprises 128 RTs and 513 acquisition-motived IPOs listed on the London Stock Exchanges between 1 January 1995 and 31 December 2012.

Panel D presents the post-listing board ownership structure in the public firms. Generally, firms opting for a RT or IPO route have comparable post-listing ownership structure. IPO firms have a slightly larger board with a mean (median) of 6 (15) members, while post-RT combined public firms have a mean (median) of 5.5 (9) members. IPO firms are much larger than RT private firms, and their larger scope and greater complexity of operations seem to require larger boards (Boone et al., 2007). Firms using both types of listing have around three executives, and 40% of the board are made up of non-executives, which is consistent with the U.K. combined code of best practice recommendation that non-executive directors should make up at least one-third of the board; the percentage of NEDs has increased since the Cadbury report in 1992 (McKnight and Weir, 2009; Dahya et al., 2002). Previous U.S. studies by Floros and Shastri (2008, 2009) suggest that insiders, including the board, managers and block holders, tend to retain higher holdings in an IPO firm than a RT firm. By contrast, Panel D shows that the board members in my sample of U.K. IPOs tends to hold 1.7% less than RT firms, with a mean of 34.4% versus 36.1%, respectively, and the 1.7% difference is not significant at the 10% level. The 1.7% higher board ownership in RT firms is held by NEDs, and executives in both types of listing hold 29% on average. Previous research suggests that the CEO is generally regarded as the most powerful organizational member and can significantly influence firm strategic decisions, such as listing and acquisitions (Daily and Johnson, 1997; Malmendier and Tate, 2008; Harford and Li, 2007). My sample shows that CEOs tend to hold 4% higher ownership in IPO firms than RT firms, but the difference is not statistically significant.

Panels E and F of Table 2-6 present the listing and acquisition deal-specific characteristics. Private firms tend to opt for an IPO when the stock market generates positive returns and choose a RT when the market is cold. The average value of three-month pre-listing market returns is 3% higher in IPOs than RTs, and the difference is significant at the 1% level. IPO firms raise more capital than RT firms, with a mean (median) of $124 million ($9.8 billion) versus $8 million ($65 million). Acquisitions conducted by IPO firms have a mean (median) transaction value of $248 million ($37.4 billion), which is around seven times the mean (median) transaction size of RTs. Private firms are smaller in size, and 68% of RT firms list on the AIM. In my sample, 55% of IPO firms list on the AIM. In the listing prospectuses, 12 IPO firms and 18 RTs stated that the use of listing proceed is on “acquisitions” or “future acquisitions” (M&A motive). The untabulated results present that the correlation coefficient between the listing proceed and the value of acquisition transaction is 0.948 in my sample of 65 RTs and 155 IPOs, 0.094 in the sample of 30 firms that state that listing proceeds are used for acquisition purposes, and 0.950 in the sample of 190 firms that do not state the use of listing proceed on acquisitions. These high correlations suggest that even if firms do not use the listing proceeds directly on subsequent or simultaneous acquisitions, the size of the listing proceed influences the size of acquisitions. The SDC M&A database clarifies all except one RT as friendly acquisitions, and the majority of acquisitions are domestic acquisitions. IPO firms make 57% of acquisitions within the same 2-digit SIC industries, while 65% of RTs are diversification deals. Both RTs and IPO acquisitions tend to prefer stock and mixed payment, and 1 RT and 45 acquisitions conducted by IPO firms are paid fully in cash.

Panel G of Table 2-6 presents the equally weighted average of CAR and BHAR from the first week to two years post acquisition, excluding the initial return. Figure 2-2 illustrates that the average of CARs (CAARs) and the average of BHARs (BHAARs) decrease, and after two years, investors on average experience a loss of 35% (18%) and 45% (14%) in acquisitions conducted by IPO firms and RTs respectively, with the CAR (BHAR) measure.

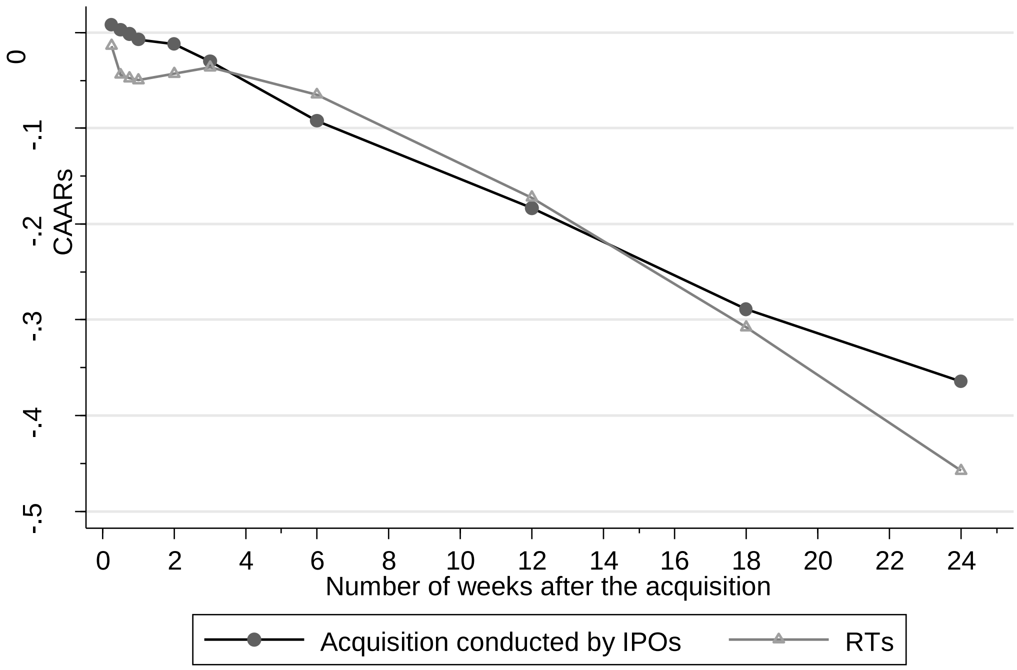
Acquisitions conducted by IPO firms experience 2% to 5% better performance than RTs in the short run. The differences in post-acquisition performance are statistically significant at the 5% level during the first month after the acquisition. The short-run post-acquisition performance is partially consistent with the conjecture in Hsieh et al. (2011) that an IPO facilitates subsequent M&As as an option and that an IPO creates firm value. However, the springboard effect is unstable in the long-run. Acquisitions conducted by IPO firms can outperform and underperform RTs, and the two-month to two-year performance differences are not statistically significant.

A possible explanation is that the valuation surprise discussed in Hsieh et al. (2011) may be over-estimated at the time of listing. Shleifer and Vishny (2003) suggest that exchanging overvalued stocks to less overvalued target firms enhances, or at least cushions the collapse of, the long-run value of acquirers. In a long-run time period post-acquisition, the overvalued stocks of acquirers could tend to decrease to the fair value. Furthermore, Rhodes-Kropf and Viswanathan (2004) suggest that when acquirers and targets are overvalued, the synergy is also likely to be overestimated. When the overvalued synergy is not realised post-acquisition, the market will adjust the price of acquirers to a fair-value. Therefore, the significant IPO spring-board effect exists in the short-run and disappears in the long-run.

The descriptive statistics in Table 2-6 Panel G suggest that private firms opting for either a RT or an IPO-M&A listing and acquisition route have similar stock returns within two years post-acquisition. I control for the firm-specific and deal-specific characteristics in Section 2.6.3, and examine the spring-board effect of IPO on the performance of subsequent acquisitions.

Overall, Table 2-6 suggests that a private firm tends to self-select into an IPO listing-and-acquisition route or a RT route based on its financial characteristics that reflect its capacity to afford the time and cost of an IPO. Board members do not show different control preference in firms deciding between the two listing-and-acquisition routes. IPO firms tend to prefer hot pre-listing market conditions, while the RTs are conducted in a cold market. Although in the short run IPOs bring a springboard effect to subsequent acquisitions which outperform RTs, in the long-run, both types of acquisitions experience a loss.

Figure 2-2a. Market-adjusted model CAARs



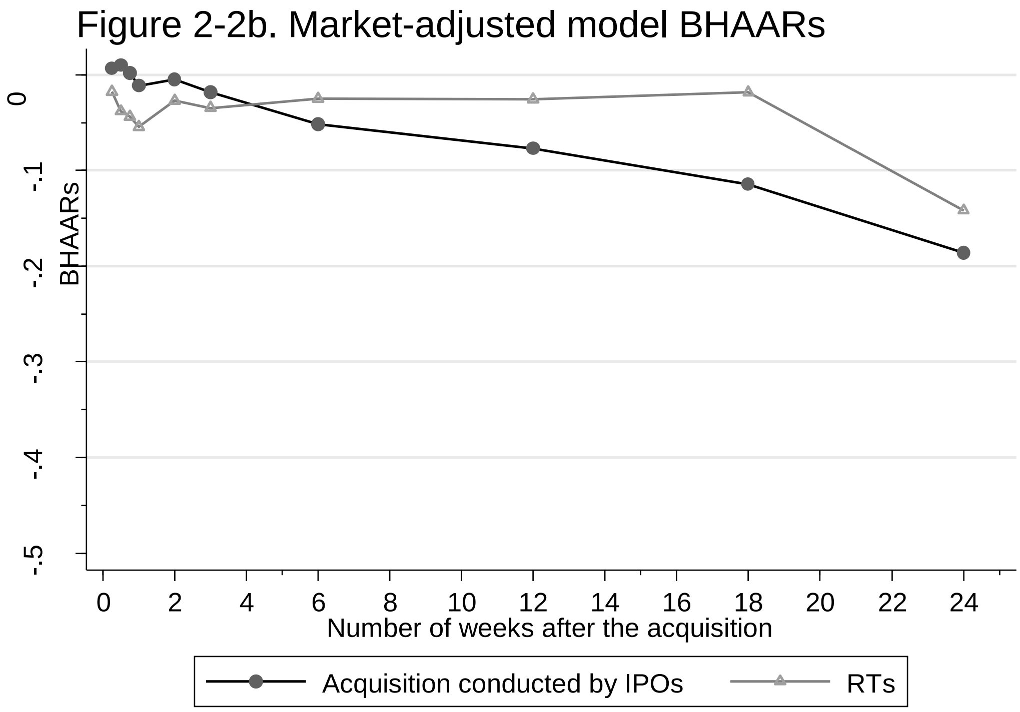



**Figure 2-2. The post-acquisition performance of acquiring firms under the market-adjusted model.** The sample comprises 65 RTs and 155 acquisitions conducted by IPOs within 12 months of listing between 1 January 1995 and 31 December 2012. Figures 2-2a and 2-2b show the average of CARs and BHARs, respectively, with different event windows.

### 2.6.2 Testing for the Self-Selection

When testing the hypothesis that IPOs provide springboard effects on subsequent acquisitions and these IPO firms generate better post-acquisition performance than RTs, I must account for the self-selection of the choice of the two listing-and-acquisition routes. Table 2-7 Panels A and B present the results of self-selection based on financial characteristics, board ownership structure, and listing and acquisition deal-specific characteristics. The p-values of Chi-square tests suggest that the models in Table 2-7 Panel A Columns (2) and (3) do not observe self-selection issues with regard to board members' and executives' control preference. Financial characteristics (Table 2-7 Panel A Column 1), CEO and MD ownership (Table 2-7 Panel A Column 4), the deal-specific characteristics in listing and acquisition transactions (Table 2-7 Panel A Columns 5 and 6), and the combinations of these factors (Table 2-7 Panel B) are statistically significant determinants of the choice between the two listing-and-acquisition routes.

[Insert Table 2-7 here]

My results show that, on average, private firms with large assets, low leverage ratio and low liquidity ratios tend to opt for an IPO listing (Table 2-7 Panel A Column 1 and Table 2-7 Panel B Columns 1 to 6). These results are consistent with the findings in previous literature that large private firms are more likely to be able to bear the IPO transaction costs than small private firms (Brau et al., 2003; Pagano and Roell, 1998; Coelho, 2015; Beaumont, 2015). Previous U.S. studies of RTs generally find that RT firms have higher leverage than IPO counterparts of comparable size and industry, as public firms are more likely and find it easier to issue debt than RT private firms (Gleason et al., 2005; Floros and Shatri, 2009; Jindra, 2012). As IPO firms can raise capital at the time of listing, private firms opting for an IPO are less likely to have a higher liquidity ratio (cash holding ratio) than private firms opting for a RT (Denis and Sibilkov, 2009).

I also find that firms with high CEO and MD control preference and large board sizes tend to opt for an IPO listing (Table 2-7 Panel A Column 4). In addition, private firms tend to opt for the IPO listing-and-acquisition route under favourable market conditions and use the favourable market condition to raise capital (Table 2-7 Panel A Column 4). This result is consistent with the transaction frequency in Table 2-6 Panel A. However, after controlling for the firm-specific financial characteristics, board structure and deal-specific characteristics, the CEO/MD ownership, board size and listing market condition do not tend to affect the choice of IPO versus RT route (Table 2-7 Panel B).

I find that acquisitions conducted by IPO firms are more likely to be paid in cash and are less likely to state the M&A motive of listing proceed (Table 2-7 Panel A Column 6 and Table 2-7 Panel B). As I discussed in Section 2.6.1, although IPO firms appear to not state that listing proceeds are used for acquisition purposes (M&A motive), the value of acquisition transaction and the listing proceed are highly correlated (correlation is 0.9483). On the contrary, RT firms tend to state the acquisition purpose of listing proceed.

### 2.6.3 Testing the hypothesis of performance

Table 2-8 investigates whether acquisitions conducted by recently listed IPO firms outperform acquisitions conducted by private firms in a RT. To control for the self-selection issue of private firms' listing-and-acquisition route, I apply the maximum likelihood treatment estimations in Table 2-8 (the detail of treatment model is discussed in Section 2.5.2 model (2)).

Table 2-8 Panel A shows that total asset and liquidity significantly influence the post-acquisition two-year CAR at the 5% and 10% levels, respectively. The coefficients in Columns (1) to (4) of Table 2-8 Panel A show that private firms with larger total assets and lower liquidity ratios are more likely to have better post-acquisition performance, as expected. Firm size indicates a firm's ability to successfully compete as an independent publicly traded firm (Brau et al., 2003). A high liquidity ratio indicates the firms' higher cost of external financing, and the U.S. evidence suggests that there is a negative relation between returns and liquidity (Kim et al., 1998; Opler and Titman, 1994). After accounting for self-selection, financial characteristics, and board ownership structures, a RT outperforms an IPO by 13% to 27% within two years post-acquisition, but the difference is not statistically significant (Table 2-8 Panel A Columns1-4).

Table 2-8 Panel A Columns 3 and 4 also show that executive ownership and CEO/MD ownership significantly positively influence the post-acquisition two-year CAR at the 1% levels, which support the agency cost hypothesis that a higher percentage of executive and CEO/MD ownership improves firm performance (Jensen and Meckling, 1979; McConnell and Servaes, 1990; Ang et al., 2000).

As the correlation coefficients of control variables in Table 2-8 Panel B are generally consistent with the findings in Table 2-8 Panel A, I simply show the regression coefficients for the IPO dummy on the BHAR in the following panels. The full table is available upon request. Table 2-8 Panel B Columns 1-4 shows that IPOs have a negative springboard effect and significantly underperform by 82% to 98% compared to RTs after controlling for self-selection, financial characteristics, and board ownership structures.

[Insert Table 2-8 here]

The regression coefficients in Table 2-8 Panels A and B Columns 5 to 7 need to be interpreted with caution, since the p-values of the maximum likelihood treatment model are larger than the conventional 10% level. As a robustness check of the self-selection issue in the maximum likelihood treatment model, I use an OLS estimation to investigate the IPO spring-board effect on the post-acquisition performance of acquirers. The full table is available upon request. Generally, Table 2-9 results are consistent with the finding in Table 2-8 that acquisitions conducted by recently listed firms do not tend to outperform RTs. In the long-run, acquirers opting for the IPO-and-acquisition route underperform by 2% to 9% compared to RT acquirers, and the IPO dummy is not significant at the 10% level (Table 2-9 Panel A).

[Insert Table 2-9 here]

My test results in this section fail to support the hypothesis that acquisitions conducted by recently listed IPO firms outperform RT. An IPO brings negative springboard effects on the performance of acquiring firms and does not enhance acquiring firms' value in the long-run.

### 2.6.4 Testing the hypothesis of performance in stock payment acquisitions and synergy acquisitions

As discussed in Section 2.3, overvalued stocks and synergy valuation can influence firms' post-acquisition performance. I examine the influence of these factors and present the post-acquisition performance of sub-samples of stock payment acquisitions and synergy acquisitions in Table 2-10.

[Insert Table 2-10 here]

Shleifer and Vishny (2003) suggest that stock acquisitions serve the interest of long-run shareholders of the acquirers, even with a negative return. Acquiring firms' claim on capital is enhanced with the stock payment and thereby cushions the collapse of the long-run value (Shleifer and Vishny, 2003). Table 2-10 shows that IPO firms' stock acquisitions outperform stock RTs in 1-year, 18-month, and 2-year post-acquisition periods by 21% (24%), 33% (30%), and 29% (23%) in CAARs (BHAARs). The outperformance differences are economically considerable but not statistically significant at the 10% level.

Panels A and B of Table 2-11 present the OLS regression on a sub-sample of stock payment deals.[12] After controlling the financial characteristics, board ownership, and deal-specific characteristics, stock payment IPO acquirers underperform RTs by 12.3% to 22.1% in terms of CARs and 1.6% to 20.4% in terms of BHARs (not significant at the 10% level).[13] Thus, in stock acquisitions, IPO acquirers' outperformance is not explained by the market valuation. This evidence fails to support Shleifer and Vishny's (2003) expectation.

[Insert Table 2-11 here]

Rhodes-Kropf and Viswanathan (2004) suggest that when acquirers and targets are overvalued, the synergy is also likely to be overestimated. The acquirer is a private firm in a RT and a public firm in an acquisition conducted by IPO firms. A public acquirer is more likely to be overvalued and have overvalued synergy. Thus, public acquirers are not more likely to outperform

[12] The full tables are available upon request.
[13] As there are only 42 stock payment deals analysed in Table 2-11 regressions, I apply the OLS estimation instead of the maximum likelihood treatment model. The small F statistic of the OLS model may be affected by the small sample size.

RTs if synergy values are overestimated. I investigate the performance of acquirers in synergy acquisitions, which are acquisitions conducted by acquirers and target firms in the same 2-digit SIC industry. Acquirers are less likely to overestimate synergy values in diversified acquisitions compared to that in synergy acquisitions.

Table 2-10 shows that, on average, synergy acquisitions conducted by IPO firms outperform synergy RT deals by 9% in the second week after the acquisition, and the outperformance increases to 14% in the second month. The outperformance is statistically significant at the 1% level. The post-acquisition two-year performance shows that, in synergy deals, IPO acquirers significantly outperform RTs by 43% at the 5% level, in terms of CAARs. Panels C and D of Table 2-11 present the OLS regression on a sub-sample of synergy deals. After controlling the financial characteristics, board ownership, and deal-specific characteristics, synergy IPO acquirers outperform RTs by 28.8% to 37.3% in terms of two-year CARs and 10.9% to 15.9% in terms of two-year BHARs. However, this outperformance is not statistically significant at the 10% level. This evidence tends to support Rhodes-Kropf and Viswanathan's (2004) expectation that public acquirers tend to suffer the costs of overvalued synergy.

As discussed in Section 2.3, acquirers with a higher level of insider ownership are more likely to conduct well-conceived acquisitions that enhance firm value. I investigate the impact of insider ownership on acquirers' post-acquisition performance. Table 2-12 presents the CAARs and BHAARs above and below the median value of board ownership, executive ownership and CEO/MD ownership. In the sample of all firms, acquirers with above-median ownership outperform lower ownership acquirers by 26.6% in terms of BHAARs, which is significant at the 5% level. This result is consistent with the un-tabulated regression coefficients in Table 2-8 Panel B, which shows that a one percentage increase in the acquirers' executive ownership (CEO/MD ownership) increases the BHARs by 0.8% (1.3%) at the 1% level. In the sub-sample of RT acquirers, below- and above-median ownership groups experience no difference in post-acquisition performance. Therefore, public acquirers with lower ownership are more likely to suffer agency problems and experience underperformance, which supports Jensen's (1986 and 2004) hypothesis that acquirers with a higher level of agency problems are more likely to conduct ill-conceived M&As which harm the long-run firm value.

## 2.7 Conclusion

This chapter seeks to establish if there is a preferable listing-and-acquisition route for private firms to conduct value-enhancing acquisitions. I investigate two listing-and-acquisitions routes for private firms that desire a public listing status and to take over another business, examine the U.K. RT long-run performance, and test Hsieh et al.'s (2011) conjecture that an IPO enhances the value of the acquiring firm with an optimal exercise of M&A activities.

First, I find that a private firm self-selects a listing-and-acquisition route according to its pre-listing financial characteristics. IPO firms are less leveraged and hold less cash in proportion to their total assets than RT firms. Firms opting for an IPO are more likely to use cash payment, and the acquisition size is highly correlated to the size of listing proceed. These results are consistent with previous literature that IPOs involve considerable process time and transaction costs, and that smaller firms are more likely to opt for quicker and cheaper RTs (Chen and Ritter, 2000; Brau et al., 2003).

Second, contrary to the conjecture in Hsieh et al. (2011), I find no evidence of significant difference in terms of long-run post-acquisition cumulative abnormal returns between acquirers opting for RT or IPO routes. Controlling for self-selection and firm- and deal-specific characteristics, I find an IPO brings a negative springboard effect. The U.K. evidence fails to support the hypothesis, as agency problems and overvaluation in acquirers influence post-acquisition performance.

Hsieh et al. (2011) assume there is no misvaluation in the market and the valuation surprise, which is the difference between pre- and post-listing firm value, influences acquirers' M&A activities. Whether defined as overvaluation or valuation surprise, it has different influences on the value of acquiring firms and the value of the synergy. Exchanging overvalued stocks to a less overvalued target firm enhances long-run value, and over-estimation of synergy harms the long-run value of acquiring firms. Thus, an IPO may benefit acquirers' post-acquisition performance if the positive effect of stock overvaluation outweighs the negative effect of synergy overvaluation.

Finally, efficient and effective corporate governance helps to reduce agency costs and enhance long-run performance by conducting well-conceived M&As. My study suggests that shareholdings may not serve as an effective control mechanism to align the interest of managers and shareholders. Generally, acquirers with above- or- below median insider ownership experience no significant difference in their post-acquisition performance. Board ownership and executive ownership do not affect the post-acquisition performance of acquirers. However, acquirers with a higher CEO/MD ownership tends to generate higher BHARs, which indicates that aligning the interest of CEO/MD and shareholders could help the CEO/MD to make value-enhancing acquisition decisions.

**Table 2-1 Panel A**
**Summary of RT sample selection processes**

This panel describes the sample selection of RT transactions.

| | | |
|---|---|---|
| RM firms on the LSE during 1995-2012 identified by "Reverse Takeover flag" in the SDC M&A database | | 238 |
| Less: RTs with private target and private acquirer | -2 | 236 |
| Less: RTs with subsidiary target and private acquirer | -1 | 235 |
| Less: RTs with a public target and a private acquirer | -0 | 235 |
| Less: RTs with a subsidiary target and a public acquirer | -47 | 188 |
| Less: RTs with a public target and a public acquirer | -45 | 143 |
| Less: RTs with a joint venture target and a public acquirer | -4 | 139 |
| Less: RTs with a government owned target and a public acquirer | -0 | 139 |
| Less: RTs with missing values of target firms' shares acquired at the deal | -3 | 136 |
| Less: Joint venture transaction misidentified as a RT | -1 | 135 |
| Less: RTs with multiple private targets in a single deal/multiple RTs (each private firm gets a distinct SDC Deal Number) | -7 | 128 |
| **Equals: RTs with at least one private target and a public acquirer** | | **=128** |

**Table 2-1 Panel B**
**Summary of acquisition-motived IPO sample selection processes**

This panel describes the sample selection of acquisition-motived IPOs that conduct acquisitions within 12 months after listing.

| | | |
|---|---|---|
| IPO firms on the LSE during 1995-2012 | | 3,204 |
| Less: cross-listing issues | -252 | 2,952 |
| Less: IPO firms that did not acquire another firm | -1,855 | 1,097 |
| Less: IPO firms with M&As conducted before IPO | -9 | 1,088 |
| Less: IPO firms that acquire less than 50% and have missing values of the percentage of target firms' shares | -139 | 949 |
| Less: IPO firms that take control of another firm within 12 months of the IPO | -436 | 513 |
| **Equals: IPO firms conducting M&As within 12 months of IPO** | | **=513** |

**Table 2-1 Panel C**
**Summary of recently listed firms' acquisitions sample selection processes**

This panel describes the sample selection of acquisitions conducted by IPO firms within 12 months of listing.

| | | |
|---|---|---|
| M&A transactions announced and completed on the LSE during 1995-2012 | | 22,136 |
| Less: LBO and MBO/ buyout transactions | -76 | 22,060 |
| Less: M&A firms not acquired by an IPO firm in my initial IPO sample | -17,972 | 4,088 |
| Less: M&As announced before IPO issue date | -61 | 4,027 |
| Less: M&As with missing value of the percentage of target's shares acquired in the transaction | -99 | 3,928 |
| Less: M&As where less than 50% of target's shares are acquired in the transaction | -617 | 3,311 |
| Less: M&As conducted by acquirers within 12 months post-IPO | -2,363 | 948 |
| **Equals: Acquisitions conducted by firms within 12 months of IPO** | | **=948** |

**Table 2-2 Panel A**

**Final sample of RTs with Post-RT board ownership information and pre-IPO financial information**

This panel describes the RT sample selection and the data collection of pre-listing consolidated financial information twelve months before the listing and immediate post-listing board ownership structures.

| | | |
|---|---|---|
| RT firms that conduct M&As within 12 months after RT | | 128 |
| Less: firms without RT prospectuses in the PI database | -50 | 78 |
| Less: RT private firms that have no consolidated financial information in the RT prospectuses | -7 | 71 |
| Less: RT private firms that have no LTM financial information in the RT prospectuses | -5 | 66 |
| Add: RT private firms which have LTM financial information in the financial reports | +4 | 70 |
| **Equals: RT private firms that have both LTM financial and Board of Directors' post-IPO holding information** | | **=70** |

**Table 2-2 Panel B**

**Final sample of acquisition-motived IPOs with both ownership and financial information**

This panel describes the sample selection process of the acquisition-motived IPOs and the data collection of pre-listing consolidated financial information twelve-month before the listing and immediate post-listing board ownership structures.

| | | |
|---|---|---|
| IPO firms that conduct M&As within 12 months after IPO | | 513 |
| Less: IPO firms that cannot be matched to Datastream | -20 | 493 |
| Less: IPO firms without last-twelve-month (LTM) financial information in Datastream | -270 | 223 |
| Add: IPO firms with LTM financial information from the IPO prospectuses | +64 | 287 |
| Less: IPO firms without ownership data in the prospectuses | -98 | 189 |
| **Equals: IPO firms that have both rational LTM financial and Board of Directors' post-IPO holding information** | | **=189** |

**Table 2-2 Panel C**

**Final sample of acquisition-motived IPOs with both ownership and financial information**

This panel describes the sample selection process of the acquisition-motived IPOs and the data collection of pre-listing consolidated financial information twelve-month before the listing and immediate post-listing board ownership structures.

| | | |
|---|---|---|
| IPO firms that conduct M&As within 12 months after IPO | | 513 |
| Less: firms without IPO prospectus in the PI database | -26 | 487 |
| Less: firms without Board of Directors' holdings of common shares immediately after the IPO in the IPO prospectuses | -188 | 299 |
| Less: IPO firms without LTM financial information from Datastream (these firms' financial data are collected from IPO prospectuses) | -174 | 125 |
| Add: IPO firms with LTM financial information from IPO prospectuses | +64 | 189 |
| **Equals: IPO firms that have both LTM financial and Board of Directors' post-IPO holding information** | | **=189** |

**Table 2-3 Panel A**

**Descriptions of board ownership, stock market performance and financial Information**

The immediate post-listing board ownership information is manually collected from IPO and RT prospectuses. The pre-listing financial information is manually collected from prospectuses for RT firms. For IPO firms, I collect financial information mainly from Datastream and use IPO prospectuses and IPO firms' financial reports as supplementary resource. Post-listing financial information, exchange rates, and inflation rates are collected from Datastream.

| **Data Item** | **Description** |
|---|---|
| Post-listing board holding | The proportion of common shares directly or indirectly owned by each board member following admission of the RT/IPO |
| Pre-listing board member holding in the private firm | The proportion of common shares directly or indirectly owned by each board member in the private firm before the RT/IPO |
| Board position of each member | For example, Chief Executive Director (CEO), non-executive director (NED), executive director (includes CEO, chief finance director, chief technology director, and so on), chair, vice-chair |
| Directorship category of each member | Three directorship categories: retained or proposed by pre-deal public firm's board, retained or proposed by pre-deal private firm's board, and proposed by outside parties if the board member holds no directorship in either public or private firms at the time of the deal |
| Age | The age of each board director |
| TA | The book value of total assets |
| TD | The book value of total debt |
| CASH | The cash and cash equivalent |
| SALE | The sales revenue |
| NI | The net income after tax |
| Total Return Index (RI) | A return index (RI) shows a theoretical growth in value of a shareholding over a specified period, assuming that dividends are re-invested to purchase additional units of an equity or unit trust at the closing price applicable on the ex-dividend date.<br>$RI_t = RI_{t-1} * \frac{P_t}{P_{t-1}}$<br>except when t = ex-date of the dividend payment date, then:<br>$RI_t = RI_{t-1} * \frac{P_t + D}{P_{t-1}}$<br>Where:<br>$P_t$= price on ex-date<br>$P_{t-1}$= price on previous day<br>$D_t$= dividend payment associated with ex-date t |

**Table 2-3 Panel B**
**IPO/RT/Acquisition deal-specific information**

The deal-specific information is mainly collected from the SDC New Issue database and the SDC M&A database. The listing proceeds and use of proceeds information are collected from IPO and RT prospectuses.

| Item | Description |
|---|---|
| **Issue Date** | Issue Date/Offer Date/Placement Date: For equity, equity-related, and debt issues, the pricing date of the issue. For syndicated loans, the announcement date of the transaction. |
| **Listing Date** | Date offering was listed. |
| **IPO proceed** | Proceeds amount ($, this market): The tranche amount in U.S. dollars. |
| **Use of proceed** | Purpose for which the funds received from the offering will be used. For example, Acquisition Finance, Future Acquisitions, General Corporate Purpose, Reduce Indebtedness, Investment, Working Capital, Capital Expenditures, etc. |
| **CUSIP Number of the target/ acquirer/issuer** | A 6-character, unique identifier for each company. Every U.S. company with publicly traded securities is listed in Standard & Poor’s CUSIP directory. If a CUSIP has not been assigned, TF will estimate one according to the rules specified by Standard & Poors. |
| **Stock exchange code and name of the target/acquirer/issuer** | Code indicating primary stock exchange on which issuer's/borrower's common stock trades (e.g. N).<br>Primary exchange listing name for target/ acquiring company. |
| **Target/acquirer/issuer company Name** | Firm name of the target/ acquirer/ issuer. |
| **Primary SIC Code of the target/ acquirer/issuer** | The SIC code of the target/ acquirer/issuer company's primary line of business. |
| **Nation of the target/ acquirer/issuer** | Nation in which target/ acquirer/issuer’s primary business or division was located at the time of the transaction. |
| **Acquisition announcement date** | The date one or more parties involved in the transaction makes the first public disclosure of common or unilateral intent to pursue the transaction (no formal agreement is required). Among other things, acquisition announcement date is determined by the disclosure of discussions between parties, disclosure of a unilateral approach made by a potential bidder, and the disclosure of a signed Memorandum of Understanding (MOU) or other agreement. |
| **Acquisition effective date** | Date when the entire transaction is completed and effective. In a two-step transaction this is the date when the second-step merger is completed. See also DUNCON (Date Unconditional) when searching targets headquartered in the United Kingdom, Australia, and New Zealand. |
| **Datastream Code of the target/ acquirer** | The unique Datastream code of the target/acquiring entity. |

| | |
|---|---|
| **Deal attitude** | Four categories: friendly, hostile, unknown, non-applicable. |
| **Acquisition technique** | Acquisition technique code number, e.g. 8 (Divestiture) For example, reverse takeover, stock swap, financial acquirer, property acquisition, tender offer, scheme of arrangement, etc. |
| **Transaction size for acquisitions** | The value of the transaction in millions of U.S. dollars |
| **Payment Method** | Four categories: cash, stock, other, unknown. |
| **Payment percentage** | The percentage of value paid in cash/stock/other/unknown in a deal. |
| **Cross-boarder** | Dummy of cross-border M&As. |
| **Percentage of shares acquired** | Number of common shares acquired in the transaction divided by the total number of shares outstanding. |
| **Percent owned by acquirer post-merger** | The percentage of a company held by the acquirer upon completion of a merger. it is the number of common shares acquired in the transaction plus any shares previously owned by the acquirer divided by the total number of shares outstanding. This data item will be populated if the merger results in the formation of a new company and the percentages held by former target and acquirer shareholders have been disclosed, or in reverse takeovers. In reverse takeovers, if the post-merger percentage owned is not disclosed, Thomson Reuters will calculate the percentage if the number of shares issued and current number of shares outstanding is publicly available. |
| **Percent owned by target post-merger** | The percentage of a company held by the target upon completion of a merger. This data item will be populated if the merger results in the formation of a new company and the percentages held by former target and acquirer shareholders have been disclosed, or in reverse takeovers. In reverse takeovers, if the post-merger percentage owned is not disclosed, Thomson Reuters will calculate the percentage if the number of shares issued and current number of shares outstanding is publicly available. |

**Table 2-4 Correlation Matrix**

The table presents pairwise correlations of the variables (Golubov et al., 2012). The sample consists of the U.K. private firms listed in the LSE and acquiring another business. The acquisitions are completed deals announced during the period 1 January 1995 to 31 December 2012. All variables are defined in Table 2-3. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | IPO dummy | BHAR_ MAR | CAR_ MAR | LogTA | LogSALE | Leverage Ratio | Asset Turnover | Profit Ratio | Liquidity Ratio |
|---|---|---|---|---|---|---|---|---|---|
| BHAR_MAR | 0.008 | 1 | | | | | | | |
| CAR_MAR | 0.008 | 1 | 1 | | | | | | |
| LogTA | 0.277*** | 0.235*** | 0.235*** | 1 | | | | | |
| LogSALE | 0.254*** | 0.189*** | 0.189*** | 0.762*** | 1 | | | | |
| Leverage Ratio | -0.423*** | 0.024 | 0.024 | -0.144 | -0.107 | 1 | | | |
| Asset Turnover | 0 | -0.025 | -0.025 | -0.143 | 0.205*** | -0.026 | 1 | | |
| Profit Ratio | 0.067 | 0.093* | 0.093* | 0.275*** | 0.301*** | -0.194*** | 0.091 | 1 | |
| Liquidity Ratio | -0.102** | -0.165*** | -0.165*** | -0.192*** | -0.18*** | -0.183*** | 0.075 | 0.043 | 1 |
| Board Size | 0.037 | -0.018 | -0.018 | 0.302*** | 0.218*** | -0.063 | -0.019 | 0.022 | 0.041 |
| Board Ownership | -0.088* | 0.013 | 0.013 | -0.181 | 0.023 | 0.047 | 0.224*** | 0.059 | -0.062 |
| NED/BOARD | 0.116 | -0.039 | -0.039 | 0.101 | 0.024 | -0.176*** | -0.095 | 0.008 | 0.063 |
| Number of Executives | -0.05 | 0.023 | 0.023 | 0.091 | 0.132 | 0.096 | 0.099 | 0.005 | -0.01 |
| Executive Ownership | -0.043 | 0.061 | 0.061 | -0.137 | 0.091 | 0.004 | 0.222*** | 0.059 | -0.069 |
| CEO/MD Ownership | 0.07 | -0.02 | -0.02 | -0.143*** | 0.065 | -0.149 | 0.193 | 0.092 | -0.039 |
| Listing Proceed | 0.071* | 0.047 | 0.047 | 0.377*** | 0.293*** | -0.012 | -0.011 | 0.04 | -0.034 |
| Listing Market Condition | 0.152*** | 0.016 | 0.016 | 0.129** | 0.104** | -0.087 | -0.041 | 0.064 | -0.084 |
| Value of Acquisition Transaction | 0.017 | 0.014 | 0.014 | 0.225*** | 0.18*** | 0.01 | 0.003 | 0.011 | -0.039 |
| AIM dummy | -0.014 | -0.088** | -0.088** | -0.387*** | -0.27*** | -0.075 | 0.097** | -0.067 | 0.069 |
| Acquisition Motive | -0.146*** | -0.074* | -0.074* | 0.049 | 0.058 | 0.033 | 0.072 | 0.034 | -0.003 |
| Friendly Acquisition | 0.01 | -0.004 | -0.004 | -0.122* | -0.099* | -0.021 | 0.022 | -0.006 | 0.039 |
| Cross-Border Acquisition | 0.265*** | 0.011 | 0.011 | 0.121* | 0.016 | -0.138** | -0.076 | 0.029 | 0.065 |
| Synergy Acquisition | 0.138*** | -0.025 | -0.025 | 0.016 | 0.01 | -0.158** | 0.043 | -0.036 | -0.021 |
| Cash Payment | 0.176*** | 0.026 | 0.026 | 0.073 | 0.044 | -0.021 | -0.032 | -0.05 | -0.04 |

**Table 2-4 continued**

| Variables | Board Size | Board Ownership | NED/BOARD | Number of Executives | Executive Ownership | CEO/MD Ownership | Listing Proceed | Listing Market Condition |
|---|---|---|---|---|---|---|---|---|
| Board Ownership | -0.032 | 1 | | | | | | |
| NED/BOARD | 0.145*** | -0.222*** | 1 | | | | | |
| Number of Executives | 0.601*** | 0.183*** | -0.648*** | 1 | | | | |
| Executive Ownership | -0.058 | 0.887*** | -0.326*** | 0.241*** | 1 | | | |
| CEO/MD Ownership | -0.219*** | 0.643*** | -0.177*** | -0.021 | 0.768*** | 1 | | |
| Listing Proceed | 0.013 | -0.107** | -0.031 | -0.073 | -0.086** | -0.144** | 1 | |
| Listing Market Condition | 0.008 | -0.063 | 0.009 | 0.03 | -0.056 | -0.04 | 0.003 | 1 |
| Value of Acquisition Transaction | -0.126** | -0.048 | -0.112** | -0.084 | -0.032 | -0.121 | 0.91*** | -0.04 |
| AIM dummy | -0.216*** | 0.082 | 0.032 | -0.174 | 0.062 | 0.041 | -0.193*** | -0.093** |
| Acquisition Motive | -0.025 | -0.09 | 0.041* | -0.05 | -0.038 | 0.08 | -0.01 | -0.029 |
| Friendly Acquisition | -0.016 | 0.094* | -0.14** | 0.115** | 0.087* | . | -0.04 | -0.005 |
| Cross-Border Acquisition | 0.079 | -0.171*** | 0.235*** | -0.155*** | -0.123** | -0.05 | 0.076* | 0.039 |
| Synergy Acquisition | 0.075 | 0.081 | 0.142** | -0.022 | 0.071 | 0.035 | -0.055 | -0.01 |
| Cash Payment | 0.104** | 0.036 | -0.07 | 0.131** | 0.106** | 0.057 | 0.026 | 0.084** |

**Table 2-4 continued**

| Variables | Value of Acquisition Transaction | AIM dummy | Acquisition Motive | Friendly Acquisition | Cross-Border Acquisition | Synergy Acquisition | Cash Payment |
|---|---|---|---|---|---|---|---|
| AIM dummy | -0.082 | 1 | | | | | |
| Acquisition Motive | -0.012 | 0.052 | 1 | | | | |
| Friendly Acquisition | -0.024 | 0.032 | -0.061 | 1 | | | |
| Cross-Border Acquisition | -0.017 | -0.019 | 0.007 | -0.004 | 1 | | |
| Synergy Acquisition | -0.041 | 0.03 | -0.013 | 0.072* | 0.075 | 1 | |
| Cash Payment | -0.025 | -0.061 | 0.057 | 0.049 | 0.117*** | 0.03 | 1 |

**Table 2-5 Panel A**

**The choice of listing-and-acquisition routes and the post-deal performance of firms**

| **This panel describes the independent variables in regressions (1) and (2). The data are collected from Datastream.** | | | |
|---|---|---|---|
| **Item** | **Description and Calculation** | **N** | **N** |
| **IPO dummy** | Y=1 if a private firm opts for an IPO listing and conducts subsequent acquisitions;<br>Y=0 if a private firm opts for a RT, which helps a firm obtain a public listing status and the control of another business. | 70 | 189 |
| **Event Study Post-acquisition cumulative abnormal returns** | $$CAR_{it} = \sum_{t=1}^{T} AR_{it}$$ Where $AR_{it}$ is the abnormal return of firm $i$,<br>$T$ is the event window applied to cumulative abnormal returns. | 66 | 179 |
| **Event Study Post-acquisition buy-and-hold returns** | $$BHAR_{it} = \prod_{t=1}^{T}(1 + R_{it}) - \prod_{t=1}^{T}(1 + R_{benchmarkt})$$ Where $R_{it}$ is firm $i$'s daily stock return,<br>$R_{benchmarkt}$ is the contemporaneous holding period return on the benchmark,<br>$t = 0$ is the effective day of acquisitions and RTs,<br>$T$ is the event window applied to cumulative abnormal returns.<br>See Mitchell and Stafford (2000) for criticism of the BHAR measure of long-run performance. | 66 | 179 |
| **Abnormal Returns in Market-Adjusted Return Model** | $$AR_{it} = R_{it} - R_{mt}$$ Where $R_{it}$ is firm $i$'s daily stock return,<br>$R_{mt}$ is the contemporaneous daily return on the FTSE All Share Index,<br>$t = 0$ is the effective day of acquisitions and RTs.<br>See MacKinlay (1997) for criticism of the market adjusted return model. | 66 | 179 |
| **Abnormal Returns in Fama-French-Carhart Four-Factor Model** | The four-factor model is as follows: $$R_{it} = R_{ft} + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + u_i UMD_t + \varepsilon_{it}$$ The abnormal return is: $$AR_{it} = R_{it} - R_{ft} - \beta_i(R_{mt} - R_{ft}) - s_i SMB_t - h_i HML_t - u_i UMD_t - \varepsilon_{it}$$ Where $R_{it}$ is daily return of the listing firm,<br>$R_{ft}$ is the daily risk free rate, which is calculated using one month return on Treasury Bills,<br>$R_{mt}$ is the daily market return, which is calculated using the total return index on the FTSE All Share Index,<br>$SMB_t$ is the average return on the three small portfolios minus the average return on the three big portfolios,<br>$HML_t$ is the average return on the two value portfolios minus the average return on the two growth portfolios, | 66 | 179 |

| | | | |
|---|---|---|---|
| | $\boldsymbol{UMD_t}$ is the difference in the returns of value-weighted portfolios of firms with high and low prior momentum,<br>$\boldsymbol{\varepsilon_t}$ is the error term of estimation.<br>The four-factor model has consistent results with the market adjusted return model. The full tables is available upon request. | | |
| **Abnormal Returns in Control Firm Approach** | $AR_{it} = R_{it} - R_{ct}$<br>Where $R_{it}$ is firm $i$'s daily stock return,<br>$R_{ct}$ is the contemporaneous daily stock return of the individually matched control firm $c$.<br>See Lyon et al. (1999) for details on control firm approach. They claim that the control firm approach is free of the new-listing and rebalancing bias and propose drawing statistical evidence applying a bootstrapped version of the skewness-adjusted t-test. However, they cast doubt over whether this approach yields well-specified test statistics in non-random samples.<br>The control firm approach has consistent results with the market adjusted return model. The full tables is available upon request. | 66 | 179 |

**Table 2-5 Panel B**

**The LTM pre-deal financial information of private firms**

This panel describes the pre-listing financial information of private firms. The financial information is collected from IPO and RT prospectuses, financial statements, and Datastream database.

| **Item** | **Description** | **N** | **N** |
|---|---|---|---|
| **Leverage Ratio** | The value of total debt divided by total assets. | 70 | 189 |
| **Profit Ratio** | The net income divided by total assets. | 70 | 189 |
| **Liquidity Ratio** | The cash divided by total assets. | 70 | 189 |
| **Asset Turnover** | The sales revenue divided by total assets. | 69 | 188 |
| **LogTA** | Log(TA) equals the logarithm of the book value of total assets. | 70 | 189 |
| **LogSALE** | Log(SALE+1) equals the logarithm of the one plus the sales revenue. As some private firms in RTs and IPOs transactions have a sale value of zero, the ln(SALE+1) ensures the firm size is a positive figure[14]. | 69 | 188 |

[14] Lowry et al. (2010) use Log(Firm Age+1) to measure the firm age variable.

**Table 2-5 Panel C**
**Board Ownership Variables**

This panel describes the immediate post-listing board ownership information collected from IPO and RT prospectuses.

| Item | Description | N | N |
|---|---|---|---|
| **Board Ownership** | The collective proportion of ordinary shares owned by the board following admission of the deal | 70 | 189 |
| **Board Size** | The number of directors in the firm post-admission | 70 | 189 |
| **Executive Ownership** | The collective proportion of ordinary shares owned by executive directors following admission of the deal | 70 | 189 |
| **Executive Size** | The number of executive directors in the firm post-admission | 70 | 189 |
| **CEO/MD ownership** | The proportion of ordinary shares owned by chief executive directors or managing directors following admission of the deal | 62 | 183 |
| **Executive Number** | The number of executive directors in the firm post-admission | 70 | 189 |
| **NED/BOD** | The percentage of non-executive directors to total board of directors of the firm | 70 | 189 |
| **Private BOD/Board Size** | The percentage of private firms' BOD to total number of board members post-admission | 62 | 189 |
| **Pre-deal private board ownership** | The collective proportion of ordinary shares owned by the board in the private firm before admission of the deal | 26 | 188 |
| **Private firm's Board Size** | The number of directors in the private firm before listing | 26 | 188 |
| **Ownership per member** | The average ownership per board member | 70 | 189 |
| **Ownership per private member** | The average ownership per private BOD | 26 | 188 |
| **Average Age** | The average age of board members | 60 | 181 |
| **CEO/MD Age** | The age of the CEO or MD | 48 | 176 |

**Table 2-5 Panel D**
**Listing and acquisition deal-specific characteristics**

This panel describes the listing and acquisition deal-specific information collected from the IPO and RT prospectuses, the SDC New Issue database, and Datastream.

| Item | Description | N | N |
|---|---|---|---|
| **AIM dummy** | Listing Exchange is a dummy variable. AIM = 1 if a firm is listed on the Alternative Investment Market (AIM); AIM = 0 if listed on the London Main Market. | 65 | 155 |
| **Listing Market Condition** | The market return three months before the listing transaction of RTs or IPOs.<br>Following Cumming et al. (2014), I use the log performance of the equally weighted FTSE All Share for the three months before listing. The FTSE All Share index is collected from Datastream with Total Return Index. | 70 | 189 |
| **Listing Proceed** | This variable measures the proceeds amount of issue in the LSE market, in millions of U.S. dollars on common stock issues proceeds amount equals principal amount. (SDC New Issue Item Code: PROCDS)<br>For RT transactions, the listing proceed can be zero, as RTs are not required to issue new capital at the time of listing. | 70 | 189 |
| **Acquisition Motive (or M&A motive)** | Acquisition Motive = 1 if the "Use of proceed" includes "Acquisition Finance" or "Future Acquisitions, and 0 otherwise. | 65 | 155 |
| **Value of Acquisition Transaction** | Value of Acquisition Transaction measures the value of the acquisition transaction in millions of U.S. dollars. | 65 | 155 |
| **Friendly Acquisition** | Friendly Acquisition = 1 if the acquisition is a friendly deal, and 0 otherwise. | 65 | 155 |
| **Cross-Border Acquisition** | Cross-Border Acquisition = 1 if the acquisition is identified as a cross-border deal in the SDC M&A database, and 0 otherwise. | 65 | 155 |
| **Synergy Acquisition** | Synergy Acquisition = 1 if the 2-digit SIC codes of targets and acquirers are the same, and 0 otherwise. | 65 | 155 |
| **Cash Payment** | Cash payment = 1 if the deal is fully paid in cash, and 0 otherwise. | 65 | 155 |
| **Acquisition Payment Method** | Acquisition Payment Method is a categorical variable. Acquisition Payment=0 if payment is fully in cash, =1 if fully in stock, = 2 if mixed, =3 if payment information is missing. | 65 | 155 |

**Table 2-6 Descriptive Statistics**

This table presents descriptive statistics for reverse takeover (RT) and acquisition-motived IPO transactions. For the self-selection regression, the sample comprises 70 RTs and 189 IPOs on the London Stock Exchange markets in the United Kingdom from 1 January 1995 to 31 December 2012. For the performance testing regression, the sample comprises 65 RTs and 155 IPOs on the London Stock Exchange markets in the United Kingdom from 1 January 1995 to 31 December 2012. A RT is a particular M&A where a private firm is acquired by a public firm, and the private firm controls the combined public entity after deal completion. An acquisition-motived IPO is an IPO which conducts acquisition within 12 months of the listing and controls the target after the acquisition. Panels A presents statistics on annual frequency distribution of 128 RTs and 513 acquisitions conducted by IPO firms. and B presents statistics on industry frequency distribution of 78 RTs and 513 acquisitions conducted by IPO firms. Panels C to F present the descriptive statistics on pre-listing financial characteristics, post-listing board ownership structure, and deal-specific information of listings and acquisitions for the final sample. Panel G presents the post-acquisition abnormal returns in terms of cumulative abnormal return (CAR) and buy-and-hold abnormal return (BHAR) across ten event windows, which are (+2, +5), (+2, +10), (+2, +15), (+2, +20), (+2, +40), (+2, +60), (+2, +127), (+2, +254), (+2, +381), and (+2, +508). These windows cover short-run and long-run effects and range from one week to two years after the acquisition.

**Panel A. Annual frequency distribution of private firms opting for RT and IPO listing routes**

| | RTs | | IPOs | |
|---|---|---|---|---|
| 1995 | 2 | 1.56% | 9 | 1.75% |
| 1996 | 3 | 2.34% | 38 | 7.41% |
| 1997 | 6 | 4.69% | 35 | 6.82% |
| 1998 | 7 | 5.47% | 15 | 2.92% |
| 1999 | 9 | 7.03% | 19 | 3.70% |
| 2000 | 11 | 8.59% | 62 | 12.09% |
| 2001 | 14 | 10.94% | 24 | 4.68% |
| 2002 | 8 | 6.25% | 15 | 2.92% |
| 2003 | 6 | 4.69% | 23 | 4.48% |
| 2004 | 4 | 3.13% | 63 | 12.28% |
| 2005 | 20 | 15.63% | 53 | 10.33% |
| 2006 | 15 | 11.72% | 69 | 13.45% |
| 2007 | 5 | 3.91% | 47 | 9.16% |
| 2008 | 7 | 5.47% | 8 | 1.56% |
| 2009 | 4 | 3.13% | 4 | 0.78% |
| 2010 | 6 | 4.69% | 11 | 2.14% |
| 2011 | 1 | 0.78% | 15 | 2.92% |
| 2012 | 0 | 0.00% | 3 | 0.58% |
| Total | 128 | 100.00% | 513 | 100.00% |

**Table 2-6 Panel B**
**Frequency distribution by industry**

| | | Frequency | | | | Percentage of Frequency | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | RTs | | Acquisitions conducted by IPOs | | RTs | | Acquisitions conducted by IPOs | |
| Industry | 2-Digit SIC | Public Acquirer | Private Target | Public Acquirer | Target | Public Acquirer | Private Target | Public Acquirer | Target |
| Agriculture, Forestry, Fishing | 01-09 | 0 | 0 | 4 | 6 | 0.00 | 0.00 | 0.78 | 1.17 |
| Public Administration | 10-14 | 0 | 0 | 0 | 1 | 0.00 | 0.00 | 0.00 | 0.19 |
| Mining | 15-17 | 2 | 3 | 36 | 37 | 2.56 | 3.85 | 7.02 | 7.21 |
| Construction | 20-39 | 1 | 3 | 12 | 11 | 1.28 | 3.85 | 2.34 | 2.14 |
| Manufacturing | 40-49 | 12 | 13 | 69 | 64 | 15.38 | 16.67 | 13.45 | 12.48 |
| Transportation & Public Utilities | 50-51 | 6 | 8 | 47 | 38 | 7.69 | 10.26 | 9.16 | 7.41 |
| Wholesale Trade | 52-59 | 2 | 1 | 15 | 25 | 2.56 | 1.28 | 2.92 | 4.87 |
| Retail Trade | 60-67 | 1 | 4 | 20 | 22 | 1.28 | 5.13 | 3.90 | 4.29 |
| Finance, Insurance, Real Estate | 70-89 | 26 | 12 | 119 | 97 | 33.33 | 15.38 | 23.20 | 18.91 |
| Services | 91-97 | 28 | 34 | 191 | 212 | 35.90 | 43.59 | 37.23 | 41.33 |
| Total | | 78 | 78 | 513 | 513 | 100 | 100 | 100 | 100 |

**Table 2-6 Panel C**
**Pre-deal financial characteristics of private firms opting for RTs and IPOs**

***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Mean | | | | Median | | | |
|---|---|---|---|---|---|---|---|---|
| | All Firms | RTs | IPOs | Difference | All Firms | RTs | IPOs | Difference |
| Variables | N=259 | N=70 | N=189 | t-test | N=259 | N=70 | N=189 | Median |
| Total Asset | 293,324 | 21,383 | 394,043 | -372,660 | 54,640,000 | 437,695 | 54,640,000 | -54,202,305 |
| Total Debt | 164,795 | 17,771 | 219,249 | -201,477 | 30,830,000 | 378,572 | 30,830,000 | -30,451,428 |
| Cash | 9,350 | 1,931 | 12,098 | -10,166 | 749,949 | 30,957 | 749,949 | -718,992 |
| Sales Revenue | 460,592 | 21,390 | 623,260 | -601,870 | 100,800,000 | 159,209 | 100,800,000 | -100,640,791 |
| Net Income | 11,316 | -359 | 15,640 | -15,998 | 1,400,000 | 6,767 | 1,400,000 | -1,393,233 |
| Total Debt/Total Asset | 0.809 | 1.310 | 0.624 | 0.686** | 0.998 | 0.998 | 0.961 | 0.037 |
| Asset Turnover | 1.554 | 1.572 | 1.546 | 0.025 | 1.272 | 1.148 | 1.413 | -0.265 |
| Profit Ratio | -0.269 | -0.459 | -0.198 | -0.261 | 2.657 | 0.519 | 2.657 | -2 |
| Liquidity Ratio | 0.141 | 0.129 | 0.174 | -0.045* | 0.064 | 0.073 | 0.062 | 0.100 |
| Leverage Ratio | 0.514 | 0.753 | 0.426 | 0.327** | 1 | 1 | 1 | 0 |

**Table 2-6 Panel D**
**Post-listing board ownership structure of firms opting for RTs and IPOs**

***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | All Firms | | | RTs | | | IPOs | | | Difference | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | Median | N | Mean | Median | N | Mean | Median | Mean | Median |
| NED/BOARD | 259 | 0.415 | 0.875 | 70 | 0.392 | 0.875 | 189 | 0.423 | 0.818 | -0.031 | 0.057 |
| Board Size | 259 | 5.834 | 15 | 70 | 5.429 | 9 | 189 | 5.984 | 15 | -0.556** | -6 |
| Board Ownership | 259 | 34.890 | 99.9 | 70 | 36.148 | 89.19 | 189 | 34.421 | 99.9 | 1.727 | -10.71 |
| Executive Number | 259 | 3.324 | 8 | 70 | 3.214 | 7 | 189 | 3.365 | 8 | -0.151 | -1 |
| Executive Ownership | 259 | 29.170 | 94.72 | 70 | 29.329 | 88.21 | 189 | 29.107 | 94.72 | 0.222 | -6.51 |
| CEO/MD Ownership | 245 | 17.450 | 94.72 | 62 | 14.524 | 85.24 | 183 | 18.448 | 94.72 | -3.924 | -9.48 |
| Average Age | 241 | 48.630 | 63 | 60 | 47.722 | 63 | 181 | 48.934 | 60.8 | -1.213 | 2.2 |

**Table 2-6 Panel E**
**Listing-and-acquisition deal-specific characteristics**

***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | All Firms | | | RTs | | | IPOs | | | Difference | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | Median | N | Mean | Median | N | Mean | Median | Mean | Median |
| Listing Market Condition | 259 | 0.020 | 0.156 | 70 | -0.002 | 0.150 | 189 | 0.028 | 0.156 | -0.030*** | -0.006 |
| Log(Listing Proceed) | 235 | 2.526 | 9.186 | 46 | 1.656 | 4.189 | 189 | 2.738 | 9.186 | -1.083*** | -4.997 |
| Listing Proceed | 259 | 92.650 | 9762 | 70 | 8.204 | 65.980 | 189 | 123.928 | 9762 | -115.724 | -9696.020 |
| Log(Value of Acquisition Transaction) | 234 | 1.866 | 10.530 | 69 | 2.912 | 5.593 | 165 | 1.429 | 10.530 | 1.482*** | -4.937 |
| Value of Acquisition Transaction | 234 | 185 | 37,439 | 69 | 35.308 | 268.7 | 165 | 247.591 | 37,439 | -212.284 | 37,170.3 |

**Table 2-6 Panel F**
**Frequency and percentage table of dummy variables on listing and acquisition deal-specific characteristics**

| | Number of transactions | Listing Exchanges | | M&A motive | | Friendly Acquisition | |
|---|---|---|---|---|---|---|---|
| Frequency (Percent) | | London Main | AIM | Acquisition Motived | Non-Acquisition Motived | Friendly Deal | Hostile / Unknown Deal |
| RTs | 65 | 21<br>(32.31) | 44<br>(67.69) | 18<br>(27.69) | 47<br>(72.31) | 64<br>(98.46) | 1<br>(1.538) |
| IPOMAs | 155 | 69<br>(44.52) | 86<br>(55.48) | 12<br>(7.742) | 143<br>(92.26) | 155<br>(100) | 0<br>(0.00) |
| | Number of transactions | Cross-Border Acquisition Dummy | | Synergy Dummy | | Acquisition Payment Method | |
| Frequency (Percent) | | Cross-Border Acquisition | Domestic Acquisition | Synergy | Diversify | Cash Deal | Stock and Mixed Deal |
| RTs | 65 | 0<br>(0) | 65<br>(100) | 23<br>(35.38) | 42<br>(64.62) | 1<br>(1.538) | 64<br>(98.46) |
| IPOMAs | 155 | 44<br>(28.39) | 111<br>(71.61) | 89<br>(57.42) | 66<br>(42.58) | 45<br>(29.03) | 110<br>(70.97) |

**Table 2-6 Panel G**
**Post-acquisition abnormal returns under the market-adjusted models**

***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Mean | | | | Median | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | All Firms N=245 | RTs N=66 | Acquisition N=179 | Difference | All Firms N=245 | RTs N=66 | Acquisition N=179 | Difference |
| CAAR 1st week | 0.004 | -0.015 | 0.011 | -0.027* | -0.002 | -0.006 | -0.002 | -0.004 |
| BHAAR 1st week | 0.006 | -0.018 | 0.008 | -0.026** | -0.003 | -0.010 | -0.001 | -0.009 |
| CAAR 2 weeks | -0.010 | -0.045** | 0.006 | -0.051*** | -0.012 | -0.022 | -0.010 | -0.012** |
| BHAAR 2 weeks | -0.002 | -0.039** | 0.012 | -0.051*** | -0.008 | -0.030 | -0.005 | -0.025** |
| CAAR 3 weeks | -0.010 | -0.047** | 0.003 | -0.050*** | -0.013 | -0.020 | -0.012 | -0.008 |
| BHAAR 3 weeks | -0.008 | -0.044 | 0.006 | -0.050*** | -0.012 | -0.030 | -0.008 | -0.022** |
| CAAR 1st month | -0.014 | -0.049** | -0.002 | -0.047** | -0.015 | -0.019 | -0.013 | -0.006 |
| BHAAR 1st month | -0.018 | -0.054 | -0.005 | -0.049** | -0.016 | -0.024 | -0.012 | -0.012** |
| CAAR 2 months | -0.015 | -0.042 | -0.005 | -0.037 | -0.024 | -0.047 | -0.019 | -0.028 |
| BHAAR 2 months | -0.005 | -0.026 | 0.003 | -0.029 | -0.027 | -0.058 | -0.021 | -0.037** |
| CAAR 3 months | -0.030 | -0.036 | -0.028 | -0.008 | -0.027 | -0.017 | -0.030 | 0.013 |
| BHAAR 3 months | -0.019 | -0.034 | -0.014 | -0.020 | -0.036 | -0.034 | -0.037 | 0.003 |
| CAAR 6 months | -0.082*** | -0.064 | -0.089*** | 0.025 | -0.049 | -0.093 | -0.044 | -0.049 |
| BHAAR 6 months | -0.043 | -0.025 | -0.050 | 0.025 | -0.075 | -0.117 | -0.071 | -0.046 |
| CAAR 12 months | -0.187*** | -0.171 | -0.193*** | 0.022 | -0.164 | -0.164 | -0.160 | -0.004 |
| BHAAR 12 months | -0.071 | -0.027 | -0.088 | 0.061 | -0.190 | -0.232 | -0.187 | -0.045 |
| CAAR 18 months | -0.296*** | -0.306** | -0.293*** | -0.014 | -0.256 | -0.223 | -0.270 | 0.047 |
| BHAAR 18 months | -0.091 | -0.022 | -0.117 | 0.095 | -0.336 | -0.328 | -0.339 | 0.011 |
| CAAR 24 months | -0.381*** | -0.455*** | -0.354*** | -0.101 | -0.291 | -0.355 | -0.276 | -0.079 |
| BHAAR 24 months | -0.171*** | -0.144 | -0.180*** | 0.036 | -0.408 | -0.439 | -0.397 | -0.042 |

**Table 2-7 Panel A The choice of listing and acquisition route**

This panel presents private firms' choice of listing and acquisition routes, using a sample of 70 RTs and 189 acquisition-motived IPOs. Columns (1) to (6) examines whether a private self-selects into a RT or an IPO listing-and-acquisition routes according to its board ownership and deal-specific information. Logit regressions are applied to identify the self-selection issue. Independent variable Y=1 if IPO, Y=0 if RT. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | | (2) | | (3) | | (4) | | (5) | | (6) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Variables | Financial characteri-stics | Variables | BOARD1 | Variables | BOARD2 | Variables | BOARD3 | Variables | Listing deal-specific | Variables | Acquisition deal-specific |
| LogTA | 0.285*** | Board Ownership | -0.001 | NED/ BOARD | 1.988** | Board Size | 0.222** | Listing Market Condition | 5.97** | M&A Deal Value | 0.000 |
| | (0.094) | | (0.006) | | (0.964) | | (0.102) | | (2.381) | | (0.000) |
| Leverage Ratio | -3.516*** | Board Size | 0.173** | Executive Ownership | 0.002 | NED/ BOARD | 0.717 | Listing Proceed | 0.041*** | M&A motived | -1.725** |
| | (0.560) | | (0.091) | | (0.007) | | (0.900) | | (0.013) | | (0.471) |
| Asset Turnover | 0.153 | NED/ BOARD | 0.522 | Number of Executives | 0.250* | CEO/MD Ownership | 0.020** | List in AIM | 0.201 | Synergy Acquisition | 1.075** |
| | (0.109) | | (0.853) | | (0.140) | | (0.010) | | (0.328) | | (0.328) |
| Profit Ratio | -0.118 | Constant | -0.157 | | | | | | | Cash Payment | 3.507** |
| | (0.089) | | (0.607) | | | | | | | | (1.042) |
| Liquidity Ratio | -2.104** | | | | | | | | | | |
| | (0.836) | | | | | | | | | | |
| Constant | 0.586 | Constant | -0.157 | Constant | -0.701 | Constant | -0.812 | Constant | 0.161 | Constant | 0.281 |
| | (0.990) | | (0.607) | | (0.796) | | (0.664) | | (0.313) | | (0.225) |
| N | 259 | N | 259 | N | 259 | N | 245 | N | 259 | N | 234 |
| $Chi^2$ | 68.01 | $Chi^2$ | 5.667 | $Chi^2$ | 5.083 | $Chi^2$ | 9.716 | $Chi^2$ | 38.59 | $Chi^2$ | 57.57 |
| p-value | 0 | p-value | 0.129 | p-value | 0.166 | p-value | 0.0211 | p-value | 0.000 | p-value | 0 |
| Pseudo $R^2$ | 0.225 | Pseudo $R^2$ | 0.0187 | Pseudo $R^2$ | 0.0168 | Pseudo $R^2$ | 0.0351 | Pseudo $R^2$ | 0.128 | Pseudo $R^2$ | 0.203 |

**Table 2-7 Panel B**
**The choice of listing and acquisition route**

This panel presents private firms' choice of listing and acquisition routes, using a sample of 70 RTs and 189 acquisition-motived IPOs. Column (1) examines whether a private firm self-selects into a RT or an IPO listing-and-acquisition routes according to firm-specific financial characteristics. Columns (2) to (4) present the self-selection according to a combination of financial and board information. Columns (2) to (4) present the self-selection according to a combination of financial (fina.), board information, and deal-specific information. Logit regressions are applied to identify the self-selection issue. Y=1 if IPO, Y=0 if RT. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| VARIABLES | (1) Fina. & Board1 | (2) Fina. & Board2 | (3) Fina. & Board3 | (4) Fina. & Board1 &Deal | (5) Fina. & Board2 &Deal | (6) Fina. & Board3 &Deal |
|---|---|---|---|---|---|---|
| logTA | 0.243** | 0.251*** | 0.227 | 0.085 | 0.084 | 0.081 |
| | (0.096) | (0.094) | (0.107) | (0.140) | (0.140) | (0.152) |
| Leverage Ratio | -3.635*** | -3.638*** | -3.569*** | -3.544*** | -3.557*** | -3.686*** |
| | (0.583) | (0.584) | (0.615) | (0.692) | (0.690) | (0.769) |
| Asset Turnover | 0.126 | 0.120 | 0.076 | 0.208 | 0.205 | 0.142 |
| | (0.113) | (0.113) | (0.119) | (0.135) | (0.134) | (0.140) |
| Profit Ratio | -0.105 | -0.107 | -0.102 | -0.061 | -0.060 | -0.071 |
| | (0.089) | (0.090) | (0.092) | (0.184) | (0.181) | (0.183) |
| Liquidity Ratio | -2.314*** | -2.275*** | -2.608*** | -2.640*** | -2.644*** | -3.147*** |
| | (0.854) | (0.852) | (0.876) | (1.021) | (1.015) | (1.079) |
| Board Ownership | 0.000 | | | -0.001 | | |
| | (0.007) | | | (0.009) | | |
| Board Size | 0.207 | | 0.245 | 0.046 | | 0.043 |
| | (0.117) | | (0.132) | (0.140) | | (0.162) |
| NED/BOARD | -0.409 | 1.294 | -0.477 | -0.521 | -0.052 | -0.718 |
| | (0.979) | (1.138) | (1.034) | (1.214) | (1.462) | (1.326) |
| Executive Ownership | | 0.001 | | | -0.001 | |
| | | (0.008) | | | (0.009) | |
| Number of Executives | | 0.324 | | | 0.103 | |
| | | (0.176) | | | (0.214) | |
| CEO/MD Ownership | | | 0.013 | | | 0.020 |
| | | | (0.011) | | | (0.013) |
| Listing Market Condition | | | | 4.611 | 4.579 | 6.059 |
| | | | | (2.945) | (2.955) | (3.264) |
| Listing Proceed | | | | 0.044*** | 0.044*** | 0.054*** |
| | | | | (0.017) | (0.017) | (0.020) |
| List in AIM | | | | 0.254 | 0.253 | 0.508 |
| | | | | (0.441) | (0.440) | (0.461) |
| M&A motive | | | | -2.476*** | -2.468*** | -2.973*** |
| | | | | (0.618) | (0.616) | (0.681) |
| Synergy Acquisition | | | | 0.571 | 0.565 | 0.487 |
| | | | | (0.415) | (0.416) | (0.446) |
| Cash Payment | | | | 3.130*** | 3.135*** | 2.632*** |
| | | | | (1.084) | (1.085) | (1.068) |
| Constant | 0.102 | -0.566 | 0.029 | 1.357 | 1.115 | 1.356 |
| | (1.149) | (1.268) | (1.246) | (1.576) | (1.717) | (1.712) |
| N | 259 | 259 | 245 | 259 | 259 | 245 |
| $Chi^2$ | 71.27 | 71.55 | 66.43 | 130.5 | 130.6 | 125.8 |
| p-value | 0 | 0 | 0 | 0 | 0 | 0 |
| Pseudo $R^2$ | 0.236 | 0.237 | 0.240 | 0.432 | 0.432 | 0.454 |

**Table 2-8 Panel A**
**Treatment regression on post-acquisition performance of acquiring firms**

This panel presents the difference in post-acquisition two-year abnormal returns between acquirers opting for RT or acquisition-motived IPO routes. Columns (1) to (8) examine whether an IPO provides a springboard effect to acquiring firms' long-term performance after controlling financial characteristics (fina.), board ownership structure, and listing-and-acquisition deal-specific characteristics, and accounting for self-selection issue. This panel presents the maximum likelihood treatment estimations of CARs (dependent variable Y=CAR_MM_2yr). The sample comprises 65 RTs and 179 acquisition-motived IPOs. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | (1) Fina. | (2) Fina. & Board1 | (3) Fina. & Board2 | (4) Fina. & Board3 | (5) Fina. & Board1 &deal | (6) Fina. & Board2 &deal | (7) Fina. & Board3 &deal |
|---|---|---|---|---|---|---|---|
| IPO dummy | -0.271 | -0.264 | -0.242 | -0.132 | -0.228 | -0.163 | -0.021 |
| | (0.388) | (0.392) | (0.388) | (0.375) | (0.385) | (0.372) | (0.340) |
| LogTA | 0.084** | 0.088** | 0.085** | 0.098** | 0.097** | 0.081** | 0.096** |
| | (0.036) | (0.037) | (0.036) | (0.041) | (0.040) | (0.036) | (0.041) |
| Leverage Ratio | -0.032 | -0.049 | -0.022 | 0.005 | 0.005 | 0.032 | 0.075 |
| | (0.274) | (0.276) | (0.274) | (0.265) | (0.250) | (0.251) | (0.240) |
| Asset Turnover | -0.029 | -0.038 | -0.046 | -0.033 | -0.038 | -0.048 | -0.036 |
| | (0.042) | (0.043) | (0.042) | (0.044) | (0.043) | (0.042) | (0.043) |
| Profit Ratio | 0.026 | 0.023 | 0.024 | 0.021 | 0.022 | 0.025 | 0.020 |
| | (0.031) | (0.031) | (0.031) | (0.031) | (0.031) | (0.030) | (0.031) |
| Liquidity Ratio | -0.621* | -0.594* | -0.576* | -0.509 | -0.553* | -0.551* | -0.464 |
| | (0.341) | (0.344) | (0.342) | (0.351) | (0.334) | (0.333) | (0.337) |
| Board Ownership | | 0.002 | | | 0.002 | | |
| | | (0.003) | | | (0.003) | | |
| Board Size | | 0.005 | | 0.005 | -0.001 | | 0.005 |
| | | (0.036) | | (0.038) | (0.036) | | (0.038) |
| NED/BOARD | | -0.257 | 0.031 | -0.212 | -0.304 | -0.010 | -0.256 |
| | | (0.359) | (0.427) | (0.371) | (0.367) | (0.433) | (0.377) |
| Executive Ownership | | | 0.004*** | | | 0.004*** | |
| | | | (0.003) | | | (0.003) | |
| Number of Executives | | | 0.046 | | | 0.043 | |
| | | | (0.058) | | | (0.057) | |
| CEO/MD Ownership | | | | 0.003*** | | | 0.003*** |
| | | | | (0.003) | | | (0.003) |
| List in AIM | | | | | -0.019 | -0.029 | -0.019 |
| | | | | | (0.131) | (0.129) | (0.131) |
| M&A Motive | | | | | -0.141 | -0.108 | -0.094 |
| | | | | | (0.211) | (0.206) | (0.214) |
| Synergy Acquisition | | | | | 0.056 | 0.041 | 0.047 |
| | | | | | (0.126) | (0.125) | (0.127) |
| Cash Payment | | | | | -0.065 | -0.103 | -0.133 |
| | | | | | (0.176) | (0.175) | (0.170) |
| Constant | -0.793** | -0.814** | -1.083** | -1.063** | -0.879* | -1.078** | -1.133** |
| | (0.408) | (0.453) | (0.477) | (0.464) | (0.501) | (0.532) | (0.498) |
| N | 245 | 245 | 245 | 232 | 245 | 245 | 232 |
| chi2 | 15.44 | 16.69 | 18.50 | 17.12 | 18.50 | 19.62 | 18.36 |
| p | 0.0171 | 0.0537 | 0.0297 | 0.0468 | 0.237 | 0.105 | 0.144 |

**Table 2-8 Panel B Treatment regression on post-acquisition performance of acquiring firms**

This panel presents the difference in post-acquisition two-year abnormal returns between acquirers opting for RT or acquisition-motived IPO routes. Columns (1) to (8) examine whether an IPO provides a springboard effect to acquiring firms' long-term performance after controlling financial characteristics (fina.), board ownership structure, and listing-and-acquisition deal-specific characteristics, and accounting for self-selection issue. This panel presents the maximum likelihood treatment estimations of BHARs (dependent variable Y= BHAR_MM_2yr). The sample comprises 65 RTs and 179 acquisition-motived IPOs. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | (1) Fina. | (2) Fina. & Board1 | (3) Fina. & Board2 | (4) Fina. & Board3 | (5) Fina. & Board1 &deal | (6) Fina. & Board2 &deal | (7) Fina. & Board3 &deal |
|---|---|---|---|---|---|---|---|
| IPO dummy | -0.982*** | -0.895*** | -0.921*** | -0.817** | -0.560 | -0.640 | -0.403 |
| | (0.282) | (0.316) | (0.313) | (0.362) | (0.462) | (0.415) | (0.508) |
| Constant | -0.023 | -0.273 | -0.601 | -0.528 | -0.568 | -0.713 | -0.879 |
| | (0.402) | (0.461) | (0.496) | (0.484) | (0.537) | (0.560) | (0.554) |
| N | 245 | 245 | 245 | 232 | 245 | 245 | 232 |
| chi2 | 18.52 | 18.77 | 23.65 | 23.31 | 15.34 | 19.40 | 21.75 |
| p | 0.0051 | 0.0273 | 0.0049 | 0.0055 | 0.427 | 0.111 | 0.0593 |

**Table 2-9 Panel A OLS regression on post-acquisition performance of acquiring firms**

This panel presents the difference in post-acquisition two-year abnormal returns between acquirers opting for RT or acquisition-motived IPO routes. Columns (1) to (8) examine whether an IPO provides a springboard effect to acquiring firms' long-term performance after controlling for financial characteristics (fina.), board ownership structure, and listing-and-acquisition deal-specific characteristics. Dependent variable is CAR_MM_2yr. The sample comprises 65 RTs and 179 acquisition-motived IPOs. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | (1) Fina. | (2) Fina. & Board1 | (3) Fina. & Board2 | (4) Fina. & Board3 | (5) Fina. & Board1 &deal | (6) Fina. & Board2 &deal | (7) Fina. & Board3 &deal |
|---|---|---|---|---|---|---|---|
| IPO dummy | -0.092 | -0.058 | -0.075 | 0.020 | -0.049 | -0.056 | 0.076 |
| | (0.143) | (0.144) | (0.145) | (0.152) | (0.162) | (0.166) | (0.174) |
| Constant | -0.540 | -0.553 | -0.806* | -0.604 | -0.483 | -0.758 | -0.733 |
| | (0.344) | (0.400) | (0.443) | (0.422) | (0.482) | (0.537) | (0.519) |
| N | 244 | 248 | 248 | 231 | 221 | 220 | 208 |
| Adj. $R^2$ | 0.0523 | 0.0382 | 0.0430 | 0.0443 | 0.0365 | 0.0369 | 0.0331 |
| F | 3.236 | 2.091 | 2.233 | 2.186 | 1.596 | 1.599 | 1.506 |
| p | 0.0045 | 0.0311 | 0.0207 | 0.0240 | 0.0825 | 0.0816 | 0.112 |

**Table 2-9 Panel B OLS regression on post-acquisition performance of acquiring firms**

This panel presents the difference in post-acquisition two-year abnormal returns between acquirers opting for RT or acquisition-motived IPO routes. Columns (1) to (8) examine whether an IPO provides a springboard effect to acquiring firms' long-term performance after controlling for financial characteristics (fina.), board ownership structure, and listing-and-acquisition deal-specific characteristics. Dependent variable is BHAR_MM_2yr. The sample comprises 65 RTs and 179 acquisition-motived IPOs. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | (1) Fina. | (2) Fina. & Board1 | (3) Fina. & Board2 | (4) Fina. & Board3 | (5) Fina. & Board1 &deal | (6) Fina. & Board2 &deal | (7) Fina. & Board3 &deal |
|---|---|---|---|---|---|---|---|
| IPO dummy | -0.032 | -0.014 | -0.010 | 0.031 | -0.025 | -0.033 | 0.056 |
| | (0.093) | (0.094) | (0.093) | (0.096) | (0.111) | (0.112) | (0.114) |
| Constant | -0.658*** | -0.628** | -0.851*** | -0.659** | -0.904*** | -1.059*** | -0.901*** |
| | (0.224) | (0.260) | (0.281) | (0.268) | (0.321) | (0.357) | (0.339) |
| N | 244 | 248 | 249 | 231 | 221 | 221 | 208 |
| Adj. $R^2$ | 0.0299 | 0.0182 | 0.0144 | 0.0207 | 0.0014 | 0.0043 | 0.0069 |
| F | 2.247 | 1.508 | 1.403 | 1.541 | 1.022 | 1.069 | 1.102 |
| p | 0.0396 | 0.146 | 0.187 | 0.135 | 0.433 | 0.388 | 0.358 |

**Table 2-10**
**Post-acquisition abnormal returns under the market-adjusted models**

This panel presents the post-acquisition performance on a sub-sample of acquisitions fully paid in stocks and synergy deals, respectively. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Mean of stock payment deals | | | | Mean of synergy deals | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | All Firms N=42 | RTs N=7 | Acquisition N=35 | Difference t-test | All Firms N=126 | RTs N=23 | Acquisition N=103 | Difference t-test |
| CAAR 1st week | -0.028 | 0.012 | -0.035 | 0.047 | 0.009 | -0.032 | 0.019 | -0.051** |
| BHAAR 1st week | -0.012 | 0.030 | -0.020 | 0.050 | 0.006 | -0.027 | 0.013 | -0.040* |
| CAAR 2 weeks | -0.053 | -0.008 | -0.062 | 0.053 | -0.001 | -0.070 | 0.020 | -0.090*** |
| BHAAR 2 weeks | -0.042 | -0.007 | -0.048 | 0.041 | 0.010 | -0.069 | 0.027 | -0.096*** |
| CAAR 3 weeks | -0.041 | 0.020 | -0.053 | 0.073 | 0.000 | -0.058 | 0.017 | -0.076** |
| BHAAR 3 weeks | -0.044 | 0.022 | -0.057 | 0.078 | 0.004 | -0.064 | 0.019 | -0.083*** |
| CAAR 1st month | -0.052 | 0.034 | -0.069 | 0.104 | -0.008 | -0.070 | 0.012 | -0.082** |
| BHAAR 1st month | -0.049 | 0.014 | -0.061 | 0.076 | 0.000 | -0.059 | 0.013 | -0.072*** |
| CAAR 2 months | -0.082 | -0.044 | -0.090 | 0.046 | -0.003 | -0.117 | 0.024 | -0.141*** |
| BHAAR 2 months | -0.083 | -0.029 | -0.094 | 0.065 | 0.005 | -0.108 | 0.030 | -0.138*** |
| CAAR 3 months | -0.093 | -0.093 | -0.093 | -0.001 | -0.009 | -0.102 | 0.013 | -0.115** |
| BHAAR 3 months | -0.089 | -0.074 | -0.092 | 0.017 | -0.001 | -0.095 | 0.020 | -0.115** |
| CAAR 6 months | -0.170 | -0.173 | -0.169 | -0.004 | -0.047 | -0.140 | -0.044 | -0.096 |
| BHAAR 6 months | -0.150 | -0.198 | -0.141 | -0.057 | -0.029 | -0.109 | -0.011 | -0.098 |
| CAAR 12 months | -0.324 | -0.504 | -0.288 | -0.215 | -0.158 | -0.316 | -0.141 | -0.175 |
| BHAAR 12 months | -0.217 | -0.422 | -0.176 | -0.246 | -0.053 | -0.193 | -0.022 | -0.171 |
| CAAR 18 months | -0.474 | -0.751 | -0.419 | -0.332 | -0.278 | -0.508 | -0.227 | -0.281 |
| BHAAR 18 months | -0.196 | -0.448 | -0.145 | -0.303 | -0.080 | -0.173 | -0.059 | -0.114 |
| CAAR 24 months | -0.587 | -0.831 | -0.539 | -0.292 | -0.375 | -0.727 | -0.297 | -0.430** |
| BHAAR 24 months | -0.326 | -0.522 | -0.287 | -0.236 | -0.165 | -0.359 | -0.122 | -0.237 |

**Table 2-11 Panel A**
**OLS regression on a sub-sample of stock payment, Y=CAR_MM_2yr**

This panel presents factors affecting post-acquisition two-year abnormal returns on a sub-sample of stock payment deals. Columns (1) to (8) examine whether an IPO provides a springboard effect to acquiring firms' long-term performance after controlling for financial characteristics (fina.), board ownership structure, and listing-and-acquisition deal-specific characteristics. Dependent variable is CAR_MM_2yr. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | (1) Fina. | (2) Fina. & Board1 | (3) Fina. & Board2 | (4) Fina. & Board3 | (5) Fina. & Board1 &deal | (6) Fina. & Board2 &deal | (7) Fina. & Board3 &deal |
|---|---|---|---|---|---|---|---|
| IPO dummy | -0.189 | -0.190 | -0.221 | -0.142 | -0.123 | -0.193 | 0.169 |
| | (0.456) | (0.496) | (0.503) | (0.530) | (0.481) | (0.497) | (0.492) |
| Constant | -0.544 | 0.080 | 0.200 | -0.365 | -0.759 | -0.948 | -0.944 |
| | (0.858) | (1.211) | (1.360) | (1.416) | (1.297) | (1.565) | (1.262) |
| N | 42 | 42 | 42 | 38 | 41 | 41 | 38 |
| Adj. $R^2$ | 0.0698 | 0.0163 | 0.0132 | 0.0449 | 0.0633 | 0.0556 | 0.151 |
| F | 1.513 | 0.927 | 0.941 | 0.823 | 1.208 | 1.181 | 1.507 |
| p | 0.203 | 0.515 | 0.505 | 0.600 | 0.326 | 0.343 | 0.186 |

**Table 2-11 Panel B**
**OLS regression on a sub-sample of stock payment, Y= BHAR_MM_2yr**

This panel presents factors affecting post-acquisition two-year abnormal returns on a sub-sample of stock payment deals. Columns (1) to (8) examine whether an IPO provides a springboard effect to acquiring firms' long-term performance after controlling for financial characteristics (fina.), board ownership structure, and listing-and-acquisition deal-specific characteristics. Standard errors are presented in parenthesis. Dependent variable is BHAR_MM_2yr. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | (1) Fina. | (2) Fina. & Board1 | (3) Fina. & Board2 | (4) Fina. & Board3 | (5) Fina. & Board1 &deal | (6) Fina. & Board2 &deal | (7) Fina. & Board3 &deal |
|---|---|---|---|---|---|---|---|
| IPO dummy | -0.153 | -0.190 | -0.174 | -0.104 | -0.170 | -0.204 | -0.016 |
| | (0.287) | (0.308) | (0.322) | (0.326) | (0.343) | (0.344) | (0.335) |
| Constant | -0.939* | -0.931 | -1.030 | -1.286 | -1.661* | -1.771 | -1.861** |
| | (0.539) | (0.752) | (0.869) | (0.871) | (0.926) | (1.082) | (0.860) |
| N | 42 | 42 | 42 | 38 | 41 | 41 | 38 |
| Adj. $R^2$ | 0.0837 | 0.114 | 0.0876 | 0.104 | 0.137 | 0.136 | 0.0559 |
| F | 0.533 | 0.459 | 0.341 | 0.362 | 0.630 | 0.631 | 0.849 |
| p | 0.779 | 0.891 | 0.954 | 0.944 | 0.808 | 0.807 | 0.610 |

**Table 2-11 Panel C**
**OLS regression on a sub-sample of synergy deals, Y=CAR_MM_2yr**

This panel presents factors affecting post-acquisition two-year abnormal returns on a sub-sample of synergy deals. Columns (1) to (8) examine whether an IPO provides a springboard effect to acquiring firms' long-term performance after controlling for financial characteristics (fina.), board ownership structure, and listing-and-acquisition deal-specific characteristics. Standard errors are presented in parenthesis. Dependent variable is CAR_MM_2yr. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | (1) Fina. | (2) Fina. & Board1 | (3) Fina. & Board2 | (4) Fina. & Board3 | (5) Fina. & Board1 &deal | (6) Fina. & Board2 &deal | (7) Fina. & Board3 &deal |
|---|---|---|---|---|---|---|---|
| IPO dummy | 0.351 | 0.346 | 0.373 | 0.412* | 0.292 | 0.315 | 0.347 |
| | (0.226) | (0.231) | (0.231) | (0.241) | (0.248) | (0.248) | (0.261) |
| Constant | 0.014 | 0.385 | 0.533 | 0.248 | -0.082 | -0.012 | -0.268 |
| | (0.486) | (0.603) | (0.703) | (0.593) | (0.724) | (0.833) | (0.727) |
| N | 125 | 125 | 125 | 120 | 113 | 113 | 108 |
| Adj. $R^2$ | 0.0396 | 0.0258 | 0.0292 | 0.0332 | 0.0195 | 0.0202 | 0.0214 |
| F | 1.852 | 1.364 | 1.414 | 1.454 | 1.185 | 1.192 | 1.195 |
| p | 0.0949 | 0.212 | 0.190 | 0.174 | 0.304 | 0.299 | 0.298 |

**Table 2-11 Panel D**
**OLS regression on a sub-sample of synergy deals, Y=BHAR_MM_2yr**

This panel presents factors affecting post-acquisition two-year abnormal returns on a sub-sample of synergy deals. Columns (1) to (8) examine whether an IPO provides a springboard effect to acquiring firms' long-term performance after controlling for financial characteristics (fina.), board ownership structure, and listing-and-acquisition deal-specific characteristics. Dependent variable is BHAR_MM_2yr. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| Variables | (1) Fina. | (2) Fina. & Board1 | (3) Fina. & Board2 | (4) Fina. & Board3 | (5) Fina. & Board1 &deal | (6) Fina. & Board2 &deal | (7) Fina. & Board3 &deal |
|---|---|---|---|---|---|---|---|
| IPO dummy | 0.152 | 0.127 | 0.138 | 0.184 | 0.109 | 0.121 | 0.159 |
| | (0.153) | (0.157) | (0.156) | (0.161) | (0.171) | (0.171) | (0.177) |
| Constant | -0.454 | -0.222 | -0.283 | -0.437 | -0.697 | -0.770 | -0.908 |
| | (0.329) | (0.410) | (0.476) | (0.394) | (0.500) | (0.574) | (0.495) |
| N | 125 | 125 | 125 | 120 | 113 | 113 | 108 |
| Adj. $R^2$ | 0.0153 | 0.0354 | 0.0425 | 0.0376 | 0.0136 | 0.0194 | 0.0224 |
| F | 0.689 | 0.529 | 0.438 | 0.520 | 0.875 | 0.823 | 0.805 |
| p | 0.659 | 0.851 | 0.912 | 0.857 | 0.575 | 0.627 | 0.645 |

**Table 2-12**

**Breakdown of post-acquisition abnormal returns under the market-adjusted models by ownership**

This panel presents the two-year post-acquisition abnormal returns on the subgroups of board, executive, and CEO/MD ownership. I split the sample firms into two groups: ownership holdings above the median and below the median. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | | Board ownership | | | Executive ownership | | | CEO/MD ownership | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | <median | >median | Difference | <median | >median | Difference | <median | >median | Difference |
| All Firms | N | 110 | 110 | | 110 | 110 | | 103 | 104 | |
| | CAAR_MM_2yr | -0.436 | -0.349 | -0.087 | -0.461 | -0.323 | -0.138 | -0.434 | -0.401 | -0.033 |
| | BHAAR_MM_2yr | -0.280 | -0.066 | -0.215* | -0.306 | -0.040 | -0.266** | -0.285 | -0.069 | -0.215 |
| RM | N | 32 | 33 | | 32 | 33 | | 29 | 29 | |
| | CAAR_MM_2yr | -0.473 | -0.443 | -0.029 | -0.428 | -0.487 | 0.059 | -0.486 | -0.619 | 0.133 |
| | BHAAR_MM_2yr | -0.212 | -0.073 | -0.139 | -0.237 | -0.049 | -0.187 | -0.204 | -0.144 | -0.060 |
| IPO | N | 77 | 78 | | 77 | 78 | | 73 | 76 | |
| | CAAR_MM_2yr | -0.434 | -0.296 | -0.137 | -0.455 | -0.275 | -0.180 | -0.434 | -0.299 | -0.135 |
| | BHAAR_MM_2yr | -0.321 | -0.053 | -0.268* | -0.330 | -0.044 | -0.286* | -0.340 | -0.021 | -0.319* |

# Chapter 3. Post-acquisition performance of target firm: The impact of management turnover

## 3.1 Introduction

I ask two questions in this paper: first, does the performance of target firms improve after acquisitions, and second, does a change of target firm top management team (TMT) impact on the performance of target firms post-acquisition? After an acquisition, a target firm could stay as a separate taxable entity, be integrated into the acquirer's business, or be closed. In this chapter, I focus on target firms which stay as individual taxable entities and provide separate financial statements of their operations.

There are numerous studies (e.g., Jensen and Ruback, 1983) examining the efficiency of the market for corporate control from the perspective of announcement abnormal returns and long-run operational performance in the combined business. Few studies investigate the long-run performance of target firms, due to lack of data on the performance of target firms post-acquisition separated from that of the parent companies. The post-acquisition consolidated performance of acquirers combines the performance of targets and the performance of the acquirers' existing business. As the acquirer's existing business does not usually experience a change of ownership and control after an acquisition, analysing the consolidated performance of acquirers would not pin down the impact of any restructuring post-acquisition.

Furthermore, few studies investigate the impact on target performance from a change of management in M&As. Manne (1965) and Jensen and Ruback

(1983) proposed the “market discipline hypothesis” that in an efficient market for corporate control, acquisitions improve managerial efficiency by replacing less competent management teams with more competent ones. At the completion of an acquisition, the acquirer controls the majority of shares in targets and obtains the rights to retain or replace top-level managers and the board of directors in targets (Fama and Jensen, 1983a and 1983b).

Whether, and to what extent, the disciplinary role of acquisitions leads to an improvement in target firm performance and creates value to target firms remains an open question. The post-acquisition performance of target firms is not only affected by the change of ownership but may also be affected by a change of management. As discussed further in Section 3.2.2, theoretically, target TMT can be viewed as a valuable source of private information in targets or as an inefficient control agent which should be removed (Jensen and Ruback, 1983; Jemison and Sitkin, 1986). In this chapter, I aim to test whether the post-acquisition performance of target firms depends on whether TMT is replaced or maintained, which represent the expectations of the market discipline theory of acquisitions and the resource-based management theory, respectively.

There are several important findings of my study. I find that, on average, the post-acquisition performance improves significantly in the unprofitable targets, but for profitable firms, there is no evidence of performance changes. For targets with non-positive return on assets (ROA) ratios, their peer-adjusted ROAs increase on average by 0.16 in the second year post-acquisition and by 0.26 in the third year post-acquisition compared to pre-acquisition peer-adjusted ROAs, and the improvements are statistically significant. For targets with positive pre-acquisition ROAs, their peer-adjusted ROAs drop insignificantly. The mean-reverting performance exists after I control for the performance of peer firms. Therefore, the mean reversion of peer-adjusted performance of targets could be the result of the change of ownership and control in target firms.

I also find that acquirers replace a high proportion of target TMT in the first year post-acquisition. On average, acquirers tend to replace 29.6% of target TMT in unprofitable targets and 23.2% TMT in profitable targets within one year post-acquisition. The 6.4% difference in TMT turnovers between profitable and unprofitable targets is significant at the 5% level. The profitable target dummy is negatively correlated to the TMT turnover and the complete TMT turnover in target firms within one year post-acquisition, which supports the market discipline expectation to replace inefficient TMT in unprofitable target firms.

However, neither the proportion of TMT turnover nor the complete TMT turnover in target firms tend to be significantly correlated to the performance changes of target firms within three years post-acquisition. These results fail to support the market discipline hypothesis expectation that disciplinary TMT turnovers improve the operation and performance of target firms.

Furthermore, I find that the target TMT turnover does not appear to affect the changes of target post-acquisition performance after controlling for firm-specific and deal-specific characteristics. The complete TMT turnover in target firms, on the other hand, is harmful to the profits of acquirers, suggesting the knowledge transfer from target TMTs to acquirers may help to improve the operational efficiency of the combined entity.

Although existing literature mainly focuses on the impact of target TMT turnovers on acquirers as the performance of targets separated from that of parent companies is limited (Cannella and Hambrick, 1993; Kennedy and Limmack, 1996; Krishnan et al., 1997; Zollo and Singh, 2004; Fich et al., 2016), acquirers' consolidated performance is more likely to be affected by acquirers' TMT instead of targets' TMT. My regression results support this view and show that a 10% TMT turnover in acquirers within one-year post-acquisition reduces the acquirers' ROA(-1 year, +1 year) ratio by 1.8% (significant at the 1% level); while target TMT turnover during the same time period (-1, +1) does not affect acquirers' ROA. My results show that the 100% replacement of targets' TMT in year +1 is, on average, associated with a drop in the acquirers' ROA by about 3% within three years post-acquisition. Acquirers' TMT turnovers have more significant impact, both economically and statistically, than targets' complete TMT turnovers on the post-acquisition performance change of acquirers.

My study extends the prior literature in three ways. First, the majority of existing studies on the post-acquisition performance restrict their analyses to acquirers' post-acquisition performance, or to focus purely on public listed targets' announcement returns (Martin and McConnell, 1991; Walsh and Kosnik, 1993; Franks and Mayer, 1996; Kennedy and Limmack 1996; Krishnan et al., 1997; Fich et al., 2016). With only a few recent studies of target firms' operating performance (Maksimovic et al., 2001, 2011 and 2013; Erel et al., 2015; Jang and Reisel, 2015), my study adds to the literature by providing evidence on the post-acquisition efficiency of target firms.

Little is known about performance changes in target firms, due to lack of accounting performance and stock price information for the target firms post-acquisition separated from that of the parent companies (Cannella and Hambrick, 1993; Franks and Mayer, 1996). After an acquisition, a target firm becomes a subsidiary or a division of the acquirer's business.

However, unlike in the United States (U.S.) where there is no federal statutory requirement for unlisted subsidiaries to make their accounts public (FASB, 2013), in the U.K., all registered limited companies, including subsidiaries, small and inactive companies, must file company registry information[15], annual financial statements, information on appointment and termination of officers, and persons with significant control to the Companies House. These are all public records (GOV.UK, 2014). The accounting performance data for the U.K. target firms, separated from that of the parent companies, after acquisitions allows me to ascertain whether the change in ownership and any target TMT turnover following acquisitions leads to an improvement in the operating efficiency of the target firms or harm the valuable human resource transfer from targets to acquirers.

Separating the post-acquisition performance of newly acquired targets' assets from the performance of acquirers' existing assets pins down the extent and

[15] e.g., registered office address, company type and status, incorporation dates, annual return

direction of post-acquisition restructuring (Maksimovic et al., 2011). Maksimovic et al. (2011) use plant-level data of U.S. manufacturing target firms during 1997-2004 and find overall significant improvement in operating margin up to three years post-acquisitions. Jang and Reisel (2015) investigate accounting performance of E.U. private targets separated from that of the parent companies during 2000-2010 and find overall insignificant improvements in peer-adjusted profitability of targets. Maksimovic et al. (2011) and Jang and Reisel (2015) do not, however, address the source of performance change in target firms. My paper complements and extends Maksimovic et al. (2011) and Jang and Reisel's (2015) work on the operating efficiency of targets by analysing the extent to which TMT replacement contributes to the value creation.

Second, my work extends the literature on acquisitions by examining the impact of target TMT turnover on the operating efficiency of target firms post-acquisition. Some studies provide acquirers' views of post-acquisition target TMT turnovers and the changes of target operating performance (Cannella and Hambric, 1993; Zollo and Singh, 2004). Cannella and Hambric (1993) survey the perception (based on a 7-point scale) of target performance changes from the acquirers and Zollo and Singh (2004) survey the acquirers' perceptions (based on a four-point scale) of target TMT turnovers. These survey studies do not provide a direct measure of the target performance or the impact of TMT turnover in target firms, and managers in different firms may have different views as to what constitutes "good M&A performance" and different classifications for the TMT replacement level in target firms. My study extends the survey studies by investigating the detailed TMT composition data and audited accounting performance of target businesses.

Existing empirical studies support the prediction of the market discipline hypothesis that poorly performing targets are more likely to experience high TMT turnover than well-performing targets after M&As (e.g., Martin and McConnell, 1991; Jang and Reisel, 2015). However, they fail to fully support the second prediction of the market discipline hypothesis that removing TMT in such poorly performing firms creates value. The ownership of a target firm changes after an acquisition, but the management may stay the same if an acquirer views target TMT as a valuable source of private information and decides to retain the target's management team. The TMT turnover in target firms is arguably much more complex than what is explained by the poor pre-acquisition performance (Krug et al., 2015).

Third, my paper adds to the literature on mergers and acquisitions of private and subsidiary firms. While private firms constitute a substantial part of M&As, the announcement returns of target firms show the market expectation of the future performance change of only public targets (Krug, Wright, and Kroll, 2015). Zollo and Singh (2004) find that two-third of targets are private, or subsidiaries or divisions of other firms. However, due to lack of information on non-public targets, prior literature limits their research to public-to-public acquisitions and fails to explore the feature of acquisitions with private targets (Capron and Shen, 2007; Maksimovic et al., 2013). My study extends prior studies by investigating both public and private targets.

## 3.2 Analytical framework

### 3.2.1 The efficiency of the acquisition market

Previous literature on mergers and acquisitions (M&A) efficiency mainly focuses on the announcement returns of targets and the short-run and long-run post-acquisition performance of acquirers. On the other hand, I focus on the long-run post-acquisition accounting performance of targets, for two reasons. First, the post-acquisition performance of acquirers, both stock market returns and accounting performance, is influenced by the performance of both the target's business and acquirer's existing business before the acquisition. Investigating the performance of targets helps to understand how acquisitions affect the business of target firms after acquisition and how value is created in the restructuring process. Second, since targets and acquirers are separate legal entities, an acquirer's performance should arguably be more closely related to the acquirer's TMT than that of the target's. Therefore, I expect that the TMT in a target firm should be more responsible for the performance changes of the target instead of the performance changes of the whole group.

There are a few studies investigating the post-acquisition operating performance of target firms in the U.S., U.K. and E.U. countries, and these studies find mixed evidence with regard to any performance improvement (Cannella and Hambrick, 1993; Very et al., 1997; Conn, 1976; Maksimovic et al., 2011; Jang and Reisel, 2015). Cannella and Hambrick (1993) and Very et al. (1997) survey managers in targets and acquirers on their perception of the post-acquisition performance changes. Cannella and Hambrick (1993) investigate 96 public-to-public acquisitions made during 1980-1984 in the U.S. For each acquisition, they select 6 executives from the acquirer and 6 security analysts who specialized in the acquirer's securities and ask them to rate the profitability of the target at the deal time and four years later based on a 7-point scale, from "very poor" to "very good". These people jointly overall suggest that the target profitability scale increase by 0.61 points (t-statistic=1.57) after acquisition (Cannella and Hambrick, 1993).

Very et al. (1997) send surveys to 1,004 individuals in 346 large size targets (acquisition transaction value over $10 million) and generate survey responses from 180 French or British top managers in 106 targets. Very et al. (1997) ask managers to provide their perceptions of earnings, sales and market shares of the target based on 5-point scales, from "1" for greatly deteriorated to "5" for greatly improved. On average, top managers suggest that performance improves slightly with an average score of 3.44 (with a standard deviation of 0.67) for the post-acquisition performance. However, the survey evidence from Cannella and Hambrick (1993) and Very et al. (1997) does not provide a clear picture of whether the target performance improves significantly after acquisitions. Also, the survey responses may suffer from an upward response biased as firms with poor post-acquisition performance might not like to disclosure their failures.

Maksimovic et al. (2011), as discussed in Section 3.1, extend these prior studies based on survey responses by investigating the operating performance of U.S. manufacturing firms. Maksimovic et al. (2011) suggest that acquisitions generally improve the industry-adjusted performance of target plants.

Maksimovic et al. (2011) show that, on average, the plants kept by the acquirer tend to improve in performance with significant increases in productivity and operating margins, while the plants sold within three years after acquisition tends to have flat performance changes. The average change in operating margin for kept plants over the three-year window is 2.1%, while the average change in total factor productivity (TFP) is 6.3%, both significant at the 1% level. The average improvement in operating margin is 0.7% for sold plants, while the TFP change is about 2.7%, both marginally significant at the 10% level. The plants kept experience more improvement than the plants sold.

The above studies provide evidence of performance improvement in target firms or acquired assets post-acquisition. Therefore, if the U.K. acquisition market is efficient, I would expect to observe that the performances of targets improve after acquisitions. This leads to the first hypothesis:

> ***Hypothesis 3-1: Target firms improve performance post-acquisition in comparison to peer firms.***

On the other hand, some studies fail to find evidence of performance improvements in target firms or target assets (Conn, 1976; Jang and Reisel, 2015). Conn (1976) examines 28 European Union (EU) conglomerate mergers during 1964-1968 and states that only 7 targets improve the net income/total assets ratio after merger. The mean profit rate declines from 6.7% in the pre-merger period to 4.2% in the post-merger period, and the difference is significant at the 1% level (t=2.694). The mean of the industry-adjusted profit rate change is -1.8%, though not significant at conventional levels. Thus, Conn

(1976) does not find industry-adjusted improvements in the targets' performance. Similarly, Jang and Reisel (2015) investigate the profitability (the EBIT/Total Asset ratio and the Cash Flow/Total Assets ratio) of 5,707 private targets in the E.U. during 2000-2010, and the peer-adjusted performance shows insignificant improvements (p-value is 0.43) after acquisition.

The discussion above shows that there is no conclusive evidence of performance improvements in target firms post-acquisition. Furthermore, prior studies have limitations. While the survey evidences from Cannella and Hambrick (1993) and Very et al. (1997) provide indication of a small improvement of target performance, the economical and statistical significance of performance changes are not known. The small sample size of 28 acquisitions limits the study of Conn (1976). The focus of manufacturing firms in Maksimovic et al. (2011) makes it hard to apply the results on targets to other industries. My study extends prior literature with analysis of audited post-acquisition operating performance of a large sample of target firms in multiple industries.

### 3.2.2 TMT turnover theories

Economic theory has suggested many sources of value creation in M&As. First, efficiency-related sources often involve "synergies". Synergies could be created by redeploying the combined assets toward higher-valued uses (Bradley et al., 1988; Maksimovic and Phillips, 2001; Erel et al., 2015). M&As could also create cost synergies, such as the reduction in production or distribution costs, by the realization of economies of scales, adjustment to capital structure, and adoption of more efficient production or organizational technology (Eckbo and Langohr, 1989; Campa and Hernando, 2004; Andrade et al., 2004; Bena and Li, 2014). Second, takeovers could increase acquirer firms' market power in product markets to generate sales synergy, perhaps by forming monopolies or oligopolies (Gugler et al., 2003; Maksimovic et al., 2011).

Third, takeovers create value by facilitating change to the new environment such as taking advantage of opportunities for diversification (Mitchell and Mulherin, 1996; Andrade et al., 2001; Harford, 2005). Fourth, acquirers can take advantage of overvaluation and exchange their stock for real assets (Fu et al., 2013; Shleifer and Vishny, 2003). Fifth, M&As can also reduce agency costs by bringing organization-specific assets under common ownership and improve the corporate governance in target firms (Ravenscraft and Scherer, 1988; Conn and Connell, 1990; Holmen and Knopf, 2004; Cai and Vijh, 2007; Danbolt and Maciver, 2012). Finally, the market discipline can create value in M&As by eliminating inefficient target management, which is the main focus of my study.

In this paper, I investigate how a change of TMT in target firms affect the post-acquisition performance changes of target firms. When an acquirer takes over a target, the control rights to the target is transferred to the acquirer. While acquirers' officers retain the top-level control rights, they normally delegate the rights to manage corporate resources to directors in targets (Jensen and Ruback, 1983). The acquirer firm has to decide whether to retain or replace the directors in a target and recruit the most suitable officers to manage the resources of the target firm. There are two potential outcomes of the post-acquisition performance changes in target firms. The market for corporate control theory predicts that TMT turnovers will be positively correlated to target performance improvements, as more efficient TMT replaces less efficient ones to improve firm efficiency. Alternatively, the resource-based management theory suggests that high TMT turnovers may be harmful to target performance improvements, as the target TMT has inside knowledge of their firm.

3.2.2.1: Efficient market for corporate control: the market discipline hypothesis

The market discipline hypothesis assumes that takeovers provide an efficient market for corporate control change and interprets the overall gain in M&As as the value added by the change of ownership, control and management competition (Fama and Jensen, 1983a and b; Jensen and Ruback, 1983). However, empirical studies of the market discipline hypothesis in M&As provide inconclusive results (Martin and McConnell, 1991; Kennedy and Limmack, 1996; Jang and Reisel, 2015; Walsh and Ellwood, 1991; Walsh and Kosnik, 1993; Franks and Mayers, 1996).

Empirical studies on acquisitions support the market discipline hypothesis with the evidence that high post-acquisition TMT turnovers follow target under-performance before acquisitions (Martin and McConnell, 1991; Fich et al., 2016; Jang and Reisel, 2015). Martin and McConnell (1991) examine 253 tender-offers for public targets during 1958-1984 in the U.S. and find that the pre-deal average industry-adjusted CAR (from 48 months before through 3 months before the tender offer) is -21.29% for the 141 targets with post-acquisition CEO change, which is significantly less than the +3.28% CAR of 112 targets without CEO change (t = -3.36). However, Martin and McConnell

(1991) do not investigate the regression coefficient between the TMT turnover and pre-acquisition performance.

With a sample of E.U. private targets, Jang and Reisel (2015) extend Martin and McConnell's (1991) work by investigating the negative correlation between the TMT turnover and the pre-acquisition performance changes. For about 48% of private targets, more than half of the top executives are replaced within a three-year window, from the year before the acquisition to one year after acquisition (Jang and Reisel, 2015). Their regression results show that a one percentage point drop in the EBIT/Total Assets ratio increases the probability of TMT turnovers by 0.14%, significant at the 5% level.

However, showing the negative correlation between the TMT turnover and the pre-acquisition performance may not be sufficient to prove the market discipline hypothesis. It is also necessary to show that replacing inefficient TMTs creates value. The TMT turnovers may not change the post-acquisition performance of the targets. Martin and McConnell (1991) investigate the CARs to acquirers and targets for the period from 20 trading days before, through to 20 trading days after the tender offer announcement day and find that the targets' and acquirers' CARs are not significantly different between targets with CEO replacement and those that retain the CEO.  Although Jang and Reisel (2015) find that targets improve accounting profitability post-acquisition, they do not investigate whether the gains are attributed to the TMT turnover in target firms.

Two studies support the market discipline hypothesis with evidence that target CEO departure increases targets' and acquirers' post-acquisition stock returns (Kennedy and Limmack, 1996; Fich et al., 2016). Kennedy and Limmack (1996) examine 345 U.K. domestic public targets in acquisitions during the 1980-1989 period and show that targets where the CEOs are replaced generate 13.07% higher CAR during the period from 3 months before to 4 months after acquisition announcement than targets retaining CEOs, with the difference in CAR significant at the 10% level.

However, Kennedy and Limmack (1996) acknowledge that caution is required in drawing inferences. The higher gains to targets replacing CEOs are driven by the pre-bid announcement stock increases. In another estimation, from one to four months after the acquisition, the difference drops to 3.95% and it is no longer statistically significant. Kennedy and Limmack (1996) do not discuss why there may be limited differences in the stock performance after the acquisition announcement depending on whether the CEO is retained or replaced. Also, Kennedy and Limmack (1996) find no differences in the annual CAR before the acquisitions for targets replacing or retaining the CEO. When there is no underperformance in targets observed before acquisitions, it is hard to tell whether the target CEO is inefficient. Therefore, the replacement of CEOs could be driven by reasons other than the "disciplinary role of acquisitions".

More recently, Fich et al. (2016) examine 355 U.S. domestic M&As during 1999-2008 and find that retaining a CEO in a target underperforming the industry median is associated with about a 2.7% lower (significant at the 1%

level) acquirer merger announcement returns. Interestingly, their regression analyses indicate that retaining higher-quality target CEOs does not affect the acquirers' announcement returns or long-run operating performance (Fich et al., 2016).

As I discussed in Section 3.1, the acquirer's performance should be more related to the acquirer's CEO rather than the target's CEO. My work extends previous work with evidence of the target TMT turnover and the post-deal performance of the target separated from the acquirer's consolidated performance. My study extends prior studies of the disciplinary role of acquisitions by examining (1) whether there is, as expected, a negative correlation between the TMT turnover and the pre-acquisition performance in targets, and (2) whether there is a correlation between TMT turnover and the post-acquisition performance of targets.

In contrast to the theory of the market for corporate control, some studies suggest that M&As do not perform a disciplining function (Walsh and Ellwood, 1991; Walsh and Kosnik, 1993; Franks and Mayer, 1996). Walsh and Ellwood (1991) examine 102 U.S. targets in 1979 and find that target firms generally outperform their competitors before the acquisition. The TMT turnovers in targets are not correlated with targets' pre-acquisition performance and do not trigger higher announcement returns in targets. Walsh and Ellwood (1991) find the Pearson correlations between the pre-deal target CARs(-2 year, -1 year) and subsequent target TMT turnovers at each of 5 years after M&As range from -0.07 to +0.28 and are not significant at the 10% level. Also, Walsh and Ellwood (1991) observe negative correlations between the acquisition announcement-day CAR and cumulative rates of target TMT turnovers within 5-year post-M&As; the coefficients range from -0.34 to -0.21 and are statistically significant at the 10% level.

Two papers investigate hostile takeovers, the type of M&As which are claimed to perform a disciplining function and suggest that high TMT turnover does not derive from past managerial failure (Walsh and Kosnik, 1993; Franks and Mayer, 1996). Walsh and Kosnik (1993) investigate 59 U.S. firms that were challenged by one of eight notorious raiders between 1979 and 1983 and suggest that while poor performance is associated with higher post-acquisition TMT turnover, turnover is generally high in targets with both good and bad pre-acquisition performance.

Similarly, Franks and Mayer (1996) investigate 35 successful and 23 unsuccessful hostile takeovers in the U.K. between 1985 and 1986 and find that non-merging firms record almost identical performance to successful hostile bids over the five years prior to a bid, although the 90% TMT turnover rate in successful bids are significantly higher than the 19% TMT turnover rate in non-merging firms (significant at the 1% level). In addition, Franks and Mayer (1996) find the bid premiums for targets with and without CEO or chairman turnovers are the same: 25.23% versus 25.25%, which suggests the market does not expect a premium due to change of the top executive in targets.

Walsh and Ellwood (1991) and Walsh and Kosnik (1993) suggest that TMT may depart voluntarily, instead of being involuntarily “disciplinary” turnovers.

Therefore, the TMT turnovers may reflect TMT's psychological attributes and their perceptions of the acquisition rather than the disciplining function of acquisitions (Krug et al., 2015). Factors such as cultural differences between acquirers and targets, the loss of executive power, alternative career opportunities and financial incentives such as golden parachutes are likely to influence voluntary post-acquisition turnover decisions by target firms' executives (Walsh and Kosnik, 1993). Martin and McConnell (1991) find that only three TMT departures are "fired, poor performance cited" among 86 TMT departures. They find that 53% of TMT departures are due to "change in control". "Normal retirement", "accepted high-level position in acquirer", "policy differences", "early retirement", "took similar position with another firm", and "other personal or business interests" are also cited as TMT departure reasons.

In summary, the literature on the market discipline role of takeovers is ambiguous in the correlations between TMT turnovers and pre- and post-acquisition performance. If an acquisition is driven by the market discipline reason, targets with poor pre-acquisition performance would be expected to experience high TMT replacement and post-acquisition firm value increases. On the other hand, if TMT turnovers are triggered by reasons other than takeovers aimed at disciplining poorly performing TMT, the correlations of TMT turnovers and pre- or post-acquisition performance may be weak. This leads to the following two hypotheses:

> ***Hypothesis 3-2: Replacement of target TMT is negatively related to pre-acquisition performance in targets.***

***Hypothesis 3-3: Replacement of target TMT is positively related to post-acquisition performance improvement in targets.***

3.2.2.2 Resource-based management theory: managers with inside information of their firms

The resource-based management theory views TMT as a valuable source of private information in their firms and predicts that retaining target TMT is value additive (Jemison and Sitkin, 1986; Penrose, 1995). Especially in private targets, the information asymmetry makes it difficult for acquirers to accurately estimate the value of targets (Ragozzino and Reuer, 2009). Several studies support the resource-based management theory with the evidence that TMT departures lead to lower post-acquisition performance in targets and acquirers (Cannella and Hambrick, 1993; Krishnan et al., 1997; Zollo and Singh, 2004).

Cannella and Hambrick (1993), as discussed in Section 3.2.1, argue that the acquisitions disrupt targets operations and the replacements from outside executives could incur heavy start-up costs as they are not familiar with their new positions and new networks of contacts. Retaining targets' TMT could prevent the loss of firm-specific knowledge and skills and the continuity of targets' TMT could preserve strategic continuity and operating stability (Cannella and Hambrick, 1993).

Cannella and Hambrick (1993) find that, on average, around 49% of the members of the target management team are replaced within 2 years after acquisition, and that targets' pre-acquisition return on equity ratio (ROE) is significantly positively correlated to TMT departure. The regression results show that a 10% increase of TMT turnover in targets decreases the post-acquisition target performance scale by 0.14-0.15.[16] Cannella and Hambrick (1993) show that acquirers view executive departure as having a significantly negative impact on post-acquisition performance in targets.

Krishnan et al. (1997) extend Cannella and Hambrick's (1993) work by analysing the post-acquisition return on assets (ROA) of the consolidated acquiring firms. Krishnan et al. (1997) investigate 147 acquisitions between U.S. public firms during 1986-1988, and find that on average 47% of targets' TMT depart within 3 years after acquisitions. The regression coefficient suggests that an acquirer replacing the whole target TMT within three years of acquisition generate 2.8% lower ROA than an acquirer retaining all of the target TMT, and the difference is significant at the 5% level.

Furthermore, Krishnan et al. (1997) show that complementary TMT, defined as differences in functional backgrounds between the acquirers' and targets' top managers, reduces target TMT turnovers and has a positive impact on post-acquisition consolidated performance of acquirers, which supports the resource-based management theory. The evidence from these studies indicates that in practice, acquirers tend to retain targets' managers who have different knowledge and skills to acquirers' managers and that retaining such targets' managers creates value to the acquirers.

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[16] The performance change in targets are rated by acquirers' executives and security analysts based on a 7-point scale, from "very poor" to "very good". The regression coefficients are significant at the 5% level.

Similarly, using a sample of 228 acquisitions in the U.S. banking industry, Zollo and Singh (2004) suggest that retaining executives contribute knowledge to the acquirer and minimizes “organizational disruption”. As private target banks do not disclose the TMT replacement information to the public, Zollo and Singh (2004) require top executives in acquirers to classify the level of target TMT replacement with a four-point scale of ‘0’ (no substantial change), ‘1’ (some changes), ‘2’ (many changes), and ‘3’ (virtually all the top management team was changed). They find that the acquirers’ peer-adjusted ROA(-1 year, +3 year) decreases 0.34 (significant at the 1% level) for one level increase in replacement degree.

These resource-based studies also have limitations. Cannella and Hambrick (1993) do not provide a direct measure of post-deal target performance improvements and managers may have different views of “good M&A performance.” Zollo and Singh (2004) use acquirers’ view of the level of TMT replacement, which might be biased if acquirers have a different classification of the replacement level. Krishnan et al. (1997) and Zollo and Singh (2004) examine acquirer’s consolidated performance instead of the separate performance of the target from that of the parent company. Target firm TMT can be expected to have a greater impact on target than on acquiring firm performance; the performance of the bidder is arguably the responsibility of their own TMT than that of the target. I extend previous target TMT turnover research by investigating the level of turnover in targets and the impact of such changes on the accounting performance of target firms separated from the performance of parent companies.

The resource-based management view suggests that TMT turnover harms the profitability of acquisitions and disrupts the integration process. Target firms may suffer from operation disturbance and difficulty in realizing expected synergies. Prior studies suggest that high TMT turnover in targets could reduce the post-acquisition performance in targets and acquirers (Cannella and Hambrick, 1993; Krishnan et al., 1997; Zollo and Singh, 2004). Therefore, the resource-based view predicts that target TMT turnover could be negatively related to target post-acquisition performance, which is alternative to the expectation of the market discipline theory of acquisitions as stated in Hypothesis 3-3. Similarly, the resource-based view predicts that target TMT turnover could be negatively correlated to the acquirer's post-acquisition performance. Therefore, the discussion of the resource-based management theory leads to the following hypothesis:

> ***Hypothesis 3-4: Replacement of target TMT is negatively related to post-acquisition performance improvement in acquirers.***

## 3.3 Sample and Data

I obtain my sample of U.K. domestic acquisitions announced and completed between 1 January 2006 and 31 December 2014 from the SDC Mergers and Acquisitions database. In the U.S., there is no federal statutory requirement for unlisted subsidiaries to have their accounts audited or to make their accounts public (FASB, 2013). However, in the U.K., all registered limited companies, including subsidiaries, small and inactive companies, must file annual financial statements with Companies House, and these are all public records (GOV.UK, 2014). I collect U.K. firms' Companies House filings using FAME. Target companies are public, private, or subsidiaries which have separate financial statements from those of parent companies. Table 3-1 provides details on the sample selection of target companies.

[Insert Table 3-1 here]

I consider acquisitions in which the acquirer obtains at least 50% of the target's shares in the acquisition and the acquirer fully owns the target after the acquisition. These criteria ensure that the control of the target firm is changed to the acquirer and that there is no minority interest in the post-acquisition target firm. The performance of target firms can be fully incorporated into the consolidated statement of the acquirers. I exclude reverse takeovers, leveraged buyouts, and management buyouts, where the acquirer is not the controlling entity of the combined business after the deal.

I restrict the sample to acquisition transactions where the deal value is greater than or equal to one million pounds (£) to exclude small size acquisitions.[17] The focus on large targets increase the probability of financial statements existence, as small firms exemption allows smaller firms to provide abbreviated accounts (basically just a balance sheet) (GOV.UK, 2014). I exclude target companies which cannot be found in the FAME database, cannot be identified as a subsidiary of the acquirer at times years 0 and +1 (where year 0 is the acquisition announcement year), do not have financial statements in years -1 and +1, or have a missing value for sales revenues or

[17] For acquisitions missing transaction values, I restrict the value of targets' total assets to be greater than or equal to one million pounds.

the return on assets (ROA) for years -1 or +1. I also collect longer term accounting performance data in years +2 and +3 if information is available.

From the FAME database, I collect the information on officers in target companies, which includes dates of appointments and resignations, officer position, and the date of birth of officers.[18] Following Kaplan (1994), the TMT includes all directors, managers and other officers as reported to the Companies House.[19] The final sample consists of 498 target companies with financial variables and information about the target TMT available.

## 3.4 Methodology

This section presents the empirical model design and describes the measurement of variables. I also motivate the use of each variable and how it affects the TMT turnover after acquisition and the operating performance of target firms. Alternative variable measurements and models are discussed in Appendix 3-3.

[18] The contractual terms of board members are not available from the Companies House, for either public or private firms. For firms that have staggered board, the anti-takeover defence "increases the difficulty of takeovers, because a hostile acquirer cannot replace an entire staggered board in a single proxy contest" (Thomson Reuters, 2017). In hostile takeovers, the staggered board could affect the TMT turnover post-acquisitions. My sample of takeovers are all friendly deals. Therefore, staggered boards are unlikely to be an issue in my study.

[19] The Companies House discloses information on all officers, both current and those that have resigned. For listed firms, the occupation may identify an officer as "independent director" or "non-executive director". However, for private firms, such board composition and independency data are not disclosed to the Companies House. In addition, there are no requirements with regard to the number of independent directors for private firms. There is no statutory definition of an executive director or a non-executive director, so under the law there is no distinction between the role and responsibilities of a non-executive director and those of an executive director (GOV.UK, 2011). Both types of director are subject to the same statutory obligations, duties and responsibilities.

### 3.4.1 Post-acquisition performance changes of target firms

To examine the efficiency of the market for corporate control in the U.K., I investigate whether the performance of target firms improve after acquisition, which is related to Hypothesis 3-1. I apply three measures of target performance as robustness tests, which are un-adjusted operating performance, peer-adjusted operating performance, and a profitable target dummy.

***Operating performance*** of target firms is measured as the profitability of firms using the return on total assets (ROA) ratio, which is the profit or loss before interest divided by total assets (Maksimovic et al., 2011; Hermalin and Weisbach, 1988; Ravenscraft and Scherer, 1988). I apply three alternative profitability measures, which are NI/TA (profit after tax divided by total assets) following Dickerson et al. (1997) and Gugler et al. (2003), OP/TA (operating profit divided by total assets) following Maury (2006) and Mikkelson and Partch (1997), and EBITDA/TA (EBITDA divided by total assets) following Lin and Switzer (2001) and Ghosh (2001). Following Maksimovic et al. (2011), I measure changes in target operating performance using three windows, (−1, +1), (−1, +2), and (−1, +3), with year 0 being the acquisition announcement year.

***The change of operating performance in a target (-1 year, +i year)= target operating performance in year +i –target operating performance in year -1***

My study includes both accrual accounting and cash flow measurements of firm profitability. Previous research suggests that accrual accounting performance is subject to measurement problems, manipulative and discretionary choice of accounting rules, and the backward-looking perspective of accounting figures (Dickerson et al., 1997; Sudarsanam, 2003). The cash-flow measurements are expected to provide the more reliable performance of firms (Powell and Stark, 2005 among many others). Following Lin and Switzer (2001) and Ghosh (2001), I apply EBITDA/TA as a proxy for the operating cash flow measure. Appendix 3-2 provides more discussion about the choice of operating cash flow measures.

***Peer-adjusted performance:*** Following Powell and Stark (2005), I measure the peer-adjusted performance of targets and acquirers. I compare the performance of targets with peer firms not involved in M&As matched on the industry, firm size, pre-acquisition performance and public status at year t-1.[20] First, in the FAME database, I select peer firms from target industries with the same 2-digit U.S. SIC code.[21] Second, following Powell and Stark (2005), the firm size filter is between 50% and 150% of target size, measured as target total assets at t-1. Third, the performance filter is between 50% and 150% of target ROA at year t-1 (Powell and Stark, 2005). Fourth, I select peer firms with

[20] I match peer firms to sample targets based on financial position and performance in the fiscal year before acquisition announcement, which is year -1 and year 0 is the fiscal year of acquisition announcement. The FAME database selects peer firms and match their accounting position and performance based on fiscal year in the "Peer report" section for undissolved target firms. For dissolved target firms, I manually search the peer firm in the FAME database based on peer selection criteria. Following FAME, I match peer firms to dissolved sample targets in the same fiscal year.

[21] The 2-digit US SIC codes are provided by SDC database. Although all firms in my sample are U.K. firms, the SDC database does not provide the U.K. SIC codes. FAME includes both U.S. SIC and U.K. SIC codes. I use the 2-digit U.S. SIC codes to construct peer firms.

the same public status as the target firms. There are three classifications of public status of targets, which are public, private and subsidiary. From this list of potential matching firms, firms with the closest operating performance (ROA) of the target at t-1 and the same public status are selected as peers.[22] If no match can be found after imposing these filters, I remove the public status filter and match the firm with the closest ROA of the target at t-1.

***The peer-adjusted operating performance of a target (-1 year, +i year) = (target operating performance in year +i – target operating performance at year -1) – (peer firm's operating performance in year +i –peer firm's operating performance in year -1)***

I also use a ***Profitable Target Dummy*** as an alternative measure of firm performance. The Profitable Target dummy equals 1 if the target reports profits in the year t-1, and 0 if it makes losses. Franks et al. (2001) suggest that a profitable dummy provides a clean measure of performance in the TMT replacement decisions. Franks et al. (2001) argue that managers tend to use hidden reserves to smooth earnings and hide earnings losses. Therefore, unprofitable targets are more likely to be firms with severe earning problems as even the management discretion cannot hide the earnings losses.

### 3.4.2 Regression models

I use regression Model 1 to test whether pre-acquisition performance affect the TMT replacement in target firms, which is related to Hypothesis 3-2. When the TMT turnover is the complete replacement of the TMT (a 0-1 dummy

[22] The public status of target firms can be classified as public or private. In my study, I match a public target to a public listed peer firm, and a private target to a private peer firm.

variable) and the proportion of TMT turnover (a continuous and non-negative variable), Model 1 is estimated using logit regression and Tobit regression, respectively.[23] I employ the OLS regression in Model 2 to test whether TMT replacement in target firms affect the post-acquisition performance in targets and acquirers, which is related to Hypotheses 3-3 and 3-4. Following previous literature, I control for the TMT characteristics, target characteristic and deal-specific characteristics on the peer-adjusted performance changes of target firms and the TMT turnover. The variable measurements and motivations for these variables are discussed in Section 3.4.3.

$$\begin{aligned}
Model\ 1{:}\ TMT\ Turnover \\
&= \alpha_0 + \alpha_1 * Targe\ Performance_{t-1} + \alpha_2 * TMT\ characteristics_{t-1} \\
&+ \alpha_3 * Firm\ Financial\ Characteristics_{t-1} + \alpha_4 * industry \\
&+ \alpha_5 * Year\ Dummy\ +\ \varepsilon
\end{aligned}$$

$$\begin{aligned}
Model\ 2{:}\ \Delta\text{peer adjusted Firm } Performance_{(t-1,t+p)} \\
&= \beta_0 + \beta_1 * TMT\ Turnover + \beta_2 * Firm\ Performance_{t-1} \\
&+ \beta_3 * TMT\ characteristics_{t+p} \\
&+ \beta_4 * Firm\ Financial\ Characteristics_{t-1} + \beta_5 * \text{Deal Characteristics}_t \\
&+ \beta_6 * Year\ Dummy\ +\ \varepsilon
\end{aligned}$$

### 3.4.3 Variable measurements and motivation

To examine the market discipline hypothesis, I first examine whether TMT turnovers are driven by the replacement of less efficient managers, and secondly investigate whether the market discipline hypothesis or resource-

[23] I also apply an OLS regression as a robust check of Tobit regression in Model 1 and results are consistent.

based management theory better explain the impact of TMT turnovers on the post-acquisition performance changes of targets and acquirers. The market discipline hypothesis is expected to be more likely to apply to targets that are unprofitable prior to the acquisition, as TMTs in unprofitable targets are more likely to experience a disciplinary TMT turnover than TMTs in profitable targets. By contrast, the resource-based management theory is expected to be more likely to apply to targets with profitable pre-acquisition performance. The profitable targets are more likely to have an efficient TMT than unprofitable targets. These efficient TMTs are expected to hold valuable inside information on firm operations. Therefore, I investigate TMT turnovers in targets with profitable and unprofitable pre-acquisition performance separately.

The ***TMT turnover*** is measured as the annual percentage of officers replaced on the management board (Hermalin and Weisbach, 1988). Following Maury (2006), I measure the TMT turnover as the number of officers that leave the board between the acquisition announcement date (t) and one year after acquisition (t+1) divided by the number of officers on the board at year t+1.

***TMT turnover= (the number of directors resigned between t and t+1)/(the number of directors on the board at t+1)***

***Complete TMT Turnover*** is an alternative TMT replacement variable. Following Morck et al. (1988) and Mikkelson and Partch (1997), I measure the complete change of target officers between the acquisition announcement date and five years after the acquisition. The dummy variable Complete

Turnover equals 1 if none of the officers in the fifth-year after the acquisition was also officers at the announcement, and 0 otherwise.

Following previous literature, I control for factors expected to affect the TMT turnover and change of performance in target firms, which are TMT characteristics, pre-acquisition target characteristics, and deal-specific characteristics (e.g., Core et al., 1999; Boone, 2007; Maksimovic, 2011). The TMT characteristics include TMT size, age of TMT and the tenure of TMT. The target firm characteristics include pre-acquisition firm size and leverage. I also control for cash payment, the relative size of the deal and the related industry of targets and acquirers.

***TMT size:*** I measure the pre-acquisition and post-acquisition TMT size as the number of officers registered in the Companies House at year t-1 and t+1, respectively. Following Yermack (1996), I control for the impact of TMT size on the relationship between TMT turnover and pre-acquisition target performance as firms with smaller boards can be expected to have a stronger relationship between firm performance and CEO turnover than firms with larger boards (Yermack, 1996).

***TMT Age:*** I define the pre-acquisition TMT Age as the average age of officers at t-1 and the post-acquisition TMT Age as the average age of officers at t+1.

***The proportion of TMT over 65:*** as an alternative age measurement, I also measure the pre- (post-) acquisition proportion of TMT member over 65, which is number of officers who are over 65 years old at year -1 (year +1) divided by the number of officer at year -1 (year +1).[24] Although default retirement age (formerly 65) has been phased out (GOV.UK, 2016), empirical studies adopt the 65 years age threshold (Hermalin and Weisbach, 1988; Morck et al., 1988; Warner et al., 1988; Mikkelson and Partch, 1997; Hermalin and Weisbach, 2003; Maury, 2006; Peters and Wagner, 2014). Previous studies suggest that officers who are over 65 are likely to be forced to retire due to lack of effort to monitor and advise the firm operation (Parrino, 1997; Peters and Wagner, 2014). When officers with less monitoring attention are replaced, target firms are more likely to experience performance improvements.

***TMT Tenure:*** I measure the pre-and-post TMT Tenure as the pre-and-post average tenures of officers at year -1 and +1, respectively. The tenure is expected to negatively affect the TMT turnover as it could present the experience and knowledge of target firms. Peters and Wagner (2014) find that older CEOs and those with longer tenure are fired less often and they argue that these CEOs are experienced or more skilled than younger CEOs.

***Firm Size:*** I measure Firm Size as the natural log of the value of total assets of the target in the most recent financial reports before the acquisition announcement. Boone et al. (2007) suggest that target firm size indicates the scope and complexity of operations in targets and that it is likely to be positively related to the proportion of independent outsiders on the board.

***Leverage:*** Following Aivazian et al. (2005), I use two alternative measures of leverage. Leverage1 is the book value of current and long-term debt, divided

[24] I also use other two age thresholds, 60 and 70, and the results are consistent to the age threshold of 65.

by the book value of total assets, while Leverage2 is long-term debt divided by total assets. These leverage ratios measure the pre-acquisition leverage in the most recent financial reports before the acquisition announcement. Renneboog (2000) suggests that high leverage is likely to be associated with a higher level of monitoring and more frequent interventions by creditors as the risk of financial distress increases.

***Cash Payment:*** The dummy of cash payment equals one if more than 50% of the deal is paid in cash. Previous studies find that cash acquirers outperform stock acquirers in long-run stock price performance (Loughran and Ritter, 1997). Ghosh (2001) and Linn and Switzer (2001) find the same relationship for acquirers' long-run operating performance.

Furthermore, Maksimovic et al. (2011) suggest that the method of payment could affect the post-acquisition restructuring decision in target firms. For example, stock financing is more likely to be used in acquisitions that require extensive restructuring of targets as these acquisitions involve more uncertainty about restructuring outcomes and more information asymmetry (Maksimovic et al., 2011). Cash payment is more likely to involve more "buy-and-hold" type of acquisitions. Maksimovic et al. (2011) find that deals that involve cash as a method of payment are less likely to be sold and cash payment is more likely to positively affect the post-acquisition performance improvements.

***Relative Size of the acquisition:*** The relative size ratio is the natural log of the value of the acquirer's total assets divided by the natural log of the value of the target’s total assets in their most recent annual report before the acquisition announcement (at year t-1). Maksimovic et al. (2011) find that the relative size is positively related to improvement in target operating efficiency. By contrast, Beitel et al. (2004) find that deals with small relative size provide significantly higher announcement returns to the target.

***Related Industry:*** The related industry is a dummy variable which equals one if the target and the acquirer have the same 2-digit SIC code. Krishnan et al. (1997) suggest that a difference in functional backgrounds between acquirers’ and targets’ top managers, reduces target TMT turnovers. Acquirers may be more likely to retain targets’ managers who have different knowledge and skills to acquirers’ managers and retaining such targets’ managers creates value to the acquirers. Therefore, I expect the related industry has a positive impact on the TMT turnover of target firms.

I control for general changes in the economy and industry by industry classifications (Hermalin and Weisbach, 2003; Krug et al., 2015; Warner et al., 1988). Firms in an industry which enjoys positive shock is likely to outperform firms in other industries. For example, when an industry or the overall economy performs poorly, it is sometimes efficient for the board to bring on a new CEO to respond to the new industry or market conditions (Kaplan and Minton, 2006). The industry is classified based on the 2-digit SIC codes. For peer-adjusted performance, the industry effect is controlled for in the peer selection process and I do not double-count the industry effect with the 2-digit SIC codes.

## 3.5 Results

### 3.5.1 Descriptive Statistics

Table 3-2 Panel A provides the annual frequency of acquisitions in my final sample. The number of M&As in my sample period reaches the bottom during the Global Financial Crisis in 2008 and 2009, and reaches the peak during the economic recovery period in 2012. [25] Table 3-2 Panel B provides the acquisition frequency breakdown by industry. As prior studies on M&As generally exclude financial firms (e.g., Bruner, 2002), I investigate whether targets in the "finance, insurance and real estate" industry experience different performance from targets in other industries.

[Insert Table 3-2 here]

Table 3-3 Panel A describes the financial characteristics and TMT characteristics of targets, acquirers and peer firms. Table 3 Panel A shows that targets and peer firms have similar total assets, leverage, and average TMT age before acquisitions. Targets have significantly larger TMT size and more officers over 65-year-old than peer firms before acquisitions. Targets on average experience a TMT turnover of 24% within one year after acquisition announcement, which is significantly higher than the 9% in peer firms and 12% in acquirers. Table 3 Panel A suggests that younger directors are brought into the post-acquisition board to replace older directors, as the average TMT age

[25] The number of M&As in 2014 is limited by the data availability of financial information in years +1, +2 and +3. At the time of data collection in 2016, some target firms acquired in 2014 did not release the 2014-2015 financial statement.

decreases significantly from 51 to 49 years and the average TMT size stays the same.

Table 3 Panel B provides the TMT characteristics in subgroups of profitable and unprofitable targets. As predicted by the market discipline hypothesis of acquisitions, unprofitable targets experience higher TMT turnovers than profitable targets. On average, 29.6% of officers are replaced following the acquisition in unprofitable targets while 23.2% in profitable targets, and the difference is significant at the 5% level. Other TMT turnover measurements, such as the complete turnover, the pre-deal TMT turnover, and the TMT turnover adjusted for officer turnovers in the non-M&A period (adj. TMT turnover) provide consistent results. Consistent with Walsh and Kosnik (1993), the TMT turnovers are high in both profitable and unprofitable targets.

[Insert Table 3-3 here]

Table 3-4 provides information on the post-acquisition performance of targets and acquirers. Overall, U.K. acquisitions in my sample do not improve the performance of target firms or the consolidated performance of acquirers. The peer-adjusted target performance changes show that on average, unprofitable targets improve profitability significantly after acquisitions while profitable targets experience a deterioration in performance after the acquisition. The peer-adjusted performance of profitable targets decreases significantly in terms of both EBITDA/total assets and operating profit/total assets.

On average, acquisitions improve the unprofitable targets' peer-adjusted ROA by 3.2% over the period to year +1 (not statistically significantly different from zero), 16.3% over a two-year period to year +2 (significant at the 5% level), and 25.5% over a three-year period to year +3 (significant at the 1% level). The unadjusted (non-peer adjusted) ROAs of target firms show consistent results that the unprofitable targets experience a significant improvement in ROA within three years following the acquisition. Similarly, the median value of post-acquisition peer-adjusted performance provide consistent result that unprofitable targets experience performance improvements post-acquisition. The post-acquisition performance in unprofitable targets support Hypothesis 3-1 that the takeover market is generally efficient and improves the profitability of unprofitable targets. Therefore, acquirers can take over an unprofitable target and improve its efficiency and profitability.

[Insert Table 3-4 here]

By contrast, the performance in profitable targets fail to support Hypothesis 3-1. The unadjusted ROA of profitable targets decreases by 6.3% over the period to year +1 (significant at the 1% level), 4.2% over a two-year period to year +2 (insignificant at the 10% level), and 7.7% over a three-year period to year +3 (significant at the 1% level). After controlling for the performance of peer firms, the changes in net income/total assets and ROA show no improvements in the post-acquisition performance of profitable targets. The peer-adjusted post-acquisition EBITDA/total assets and operating profit/total assets significantly deteriorate in profitable targets. On average, profitable targets' EBITDA/total assets, the cash-flow measurement, decrease by 6% over the period to year +1 (significant at the 1% level), 4% over a two-year period to year +2 (significant at the 5%), and 7.1% over a three-year period to year +3 in comparison to peer firms.

The median value of post-acquisition peer-adjusted performance change is consistent with the mean value of performance. The ratios of net incomes/total assets, EBITDA/total assets and operating profits/total assets tend to decrease in both acquirers and target firms after acquisition. This evidence suggests that acquisitions tend not to increase the peer-adjusted performance of profitable targets within three years post-acquisitions. It is possible that the performance of profitable targets improves after three years post-acquisition, but as my study focuses on post-acquisition performance three years after acquisitions, the long-run performance of profitable targets is not investigated.

The differences in the mean of post-acquisition performance changes show that unprofitable targets generate significantly higher peer-adjusted post-acquisition performance changes than profitable targets. Table 3-4 shows that the peer-adjusted improvement in ROA of unprofitable targets, on average, outperform those of profitable targets by 6.3% over the period to year +1 (insignificant at the 10% level), 17.3% over a two-year period to year +2 (significant at the 1% level), and 29.8% over a three-year period to year +3 (significant at the 1% level). The median of targets' peer-adjusted post-acquisition performance changes provide consistent results that unprofitable targets outperform profitable targets significantly, regardless of how performance change is measured. Similarly, the unadjusted performance changes also show that unprofitable targets tend to generate higher unadjusted ROA changes than profitable targets.

The significant improvement of post-acquisition performance in unprofitable target firms (in Table 3-4) and the higher post-acquisition TMT turnover in unprofitable targets compared to those in profitable targets (in Table 3-3 Panel B) indicate that unprofitable targets experience a higher post-acquisition TMT turnover and more performance improvements than profitable targets. This result seems in line with the view of market discipline hypothesis that the change of control reduces firm inefficiency and creates synergy values in unprofitable targets. As stated in the Section 3.2.2.1, to support the market discipline hypothesis, both negative correlation between the TMT turnover and the pre-acquisition performance and removing inefficient TMTs creating value need to be observed. I analyse the relation between the post-acquisition TMT turnover in targets and the pre- and post-acquisition performance of target firms in Sections 3.5.2 and 3.5.3.

The post-acquisition unadjusted ROAs decrease significantly in profitable firms, which is consistent with Conn's (1976) finding that the unadjusted (not peer-adjusted) ratio of net incomes/total assets declines significantly from 6.7% in year -1 to 4.2% over the period to year +1 and the difference is significant at the 1% level. After adjusting for the industry average performance change between year -1 and +1, Conn (1976) find an insignificantly negative industry-adjusted net income/total assets change in target firms. Jang and Reisel (2015) also find that the industry-adjusted EBIT/total assets (adjusted for industry average EBIT/total assets) are not significantly different before and after acquisition (not significant at the 10% level).

Consistent with Conn (1976) and Jang and Reisel (2015), I find, as reported in Table 3-4, that the negative changes in peer-adjusted post-acquisition net income/total assets ratios and ROAs in target firms are generally not significantly different from zero. These insignificant decreases in peer-adjusted net income/total assets and ROAs may indicate that the TMTs and operation in profitable targets may be efficient and acquisitions may not be expected to significantly improve the post-deal profitability.

As discussed in Appendix 3-2, if cash flow information provides a theoretically more reliable performance measure than accrual accounting data, the significant negative changes in EBITDA/total assets would suggest that the peer-adjusted cash flows of profitable targets decrease significant post-acquisition. The decreasing ratio of operating profit/total assets also suggests that profitable targets experience significant negative profit changes before tax.

There are at least two potential explanations of the significant decrease in performance of profitable targets post-acquisition. First, the profits of profitable targets could be transferred to acquirers, which leads to the negative change in performance. Second, the performance improvements in profitable targets could be observed in other performance measurements such as market expansion rather than in earnings during the three-year time period after the acquisition.

Previous studies observe that after acquisitions, acquirers transfer funds and reallocate assets across targets and their existing business units (Erel et al., 2015). Erel et al. (2015) suggest that after acquisitions, targets become a subsidiary of a larger organization and do not need to hold more cash for future investments and that targets' investment depend less on targets' own financial resources as capital can be provided by the bigger acquirers. Erel et al. (2015) show that the fund transfer from acquirers to the targets. If the cash flows and profits are transferred from targets to acquirers, we would not be surprised to see the negative change in target performance.

However, un-tabulated results of targets' firm size growth show that profitable targets enjoy a higher growth rate of total assets comparing to unprofitable targets. On average, the firm size of profitable (unprofitable) targets grows 22% (2%) during (-1 year, +1 year), 39% (15%) during (-1 year, +2 year), and 53% (20%) during (-1 year, +3 year). Both profitable and unprofitable targets experience significant firm size growth post-acquisition (significant at the 1% level). The differences in firm size growth rates between profitable and unprofitable targets are significant at the 5% level. The growths of sales revenue provide consistent results. This evidence suggests that acquirers are in general not applying an asset-stripping strategy for the targets in my sample.

Furthermore, although there are no significant improvements in post-acquisition peer-adjusted profits, the performance improvements in profitable targets could be observed in other performance measurements such as expansion in organization (e.g., firm size growth) and market shares (e.g., sales growth). This evidence is consistent with Bruner's (2004) suggestion that acquirers could be motived by a strategic purpose to obtain strategic resources to improve the firm's competitive position and to seek future growth opportunities. Although their profitability drops after acquisitions, these profitable targets enjoy a quicker expansion than unprofitable targets.

In addition, Table 3-4 shows that the post-acquisition unadjusted performance changes of acquirers taking over profitable targets is not significantly different from those of acquirers taking over unprofitable targets (un-tabulated P-value>0.5 at least). This evidence, combined with the evidence of an insignificant negative changes in the unadjusted ROA of acquirers after acquisition, suggests that the consolidated performance of acquirers appears not to be harmed by the decreasing performance of the profitable targets they bought.

[Insert Table 3-5 here]

Table 3-5 presents the correlations between each variable. Table 3-5 shows that the acquirers' ROA changes are not significantly correlated to the peer-adjusted ROA changes of target firms post-acquisition, which is consistent with the results in Table 3-4 that post-acquisition unadjusted performance changes of acquirers taking over a profitable target is not significantly different from those of acquirers taking over an unprofitable target. Table 3-5 shows that, on average, the post-acquisition TMT turnovers (complete TMT turnover and TMT turnover) are in general not significantly correlated to the peer-adjusted performance changes of target firms post-acquisition.[26]

[26] The various performance measures give consistent conclusions. The un-tabulated correlation coefficients between other performance measurements, such as NI/TA, EBITDA/TA and OP/TA and the TMT turnover variables shows that the acquirers' ROAs are not significantly correlated to the peer-adjusted ROA of target firms post-acquisition and that the TMT turnover variables are not correlated to the peer-adjusted performance of target firms post-acquisition, which is consistent with the correlation coefficients between ROAs and the TMT turnover variables.

Table 3-5 shows that Leverage1 ((long-term debt + current debt) / total assets) is significantly positively correlated to the peer-adjusted performance changes of target firms post-acquisition. The leverage ratio of a firm could affect the corporate governance and indirectly affect the operating performance. This result is consistent with Renneboog's (2000) suggestion that high leverage is likely to be associated with a higher level of monitoring and more frequent interventions by creditors as the risk of financial distress increases.

Table 3-5 also shows that whether target and acquirer are in the related industry appears to not affect the post-acquisition peer-adjusted performance changes of target firms and the unadjusted performance changes of acquirers. However, cash payment is significantly positively correlated to the peer-adjusted performance changes of target firms over the period to year +1 (significant at the 10% level). These results are consistent with the finding of Maksimovic et al. (2011) that deals that involve cash as a method of payment are less likely to be sold and cash payment is more likely to positively affect the post-acquisition performance changes. The relative size is in general positively correlated to post-acquisition peer-adjusted performance improvements of target firms, which is consistent with Maksimovic et al's (2011) finding that deals with larger relative size provide significantly higher announcement returns to the target.

### 3.5.2 Market Discipline Turnovers

This section provides the regression results of factors affecting the TMT turnover post-acquisition. As I discussed in Section 3.2.2, the market disciplinary theory suggests that TMTs in poorly performing target firms are more likely to be replaced than TMTs in well-performing target firms. This section discusses the analyses related to Hypothesis 3-2 that replacement of target TMT is negatively related to pre-acquisition performance in targets.

Table 3-6 Panel A Columns 1 shows that ROA(-1) does not affect the TMT turnover. However, Table 3-6 Panel A Column 2 shows that profitable targets on average experience 10% lower TMT turnovers than unprofitable targets and that the regression coefficients are significant at the 5% level. As discussed in Section 3.4.3, the pre-acquisition profitable target dummy is argued to be a cleaner measure of performance in the TMT replacement decisions compared to the pre-acquisition ROA (Franks et al., 2001). Since managers tend to use hidden reserves to smooth earnings and hide losses, Franks et al. (2001) suggest that unprofitable targets are more likely to be firms with severe earning problems. Ball et al. (1997) also suggest that losses may be the most relevant signal of managerial failure.

Consistent results are provided for the complete TMT turnover, showing that TMT replacement decisions tend to be affected by the profitable target dummy, but not by the level of pre-acquisition performance (Table 3-6 Panel A Columns 3 and 4). Therefore, results for the profitable target dummy support Hypothesis 3-2 that target TMT turnover is negatively related to the pre-acquisition performance of targets and in particular to whether or not the target firm is profitable (Table 3-6 Panel A Columns 2 and 4).

To investigate the subsample of financial targets which are generally excluded from prior studies on M&As (e.g., Bruner, 2002), I examine factors affecting the TMT turnover in a subsample of Finance, insurance and real estate target firms (2-digit SIC codes range from 60 to 70). Table 3-6 Panel A Columns 5 and 6 provide consistent results that ROA(-1) does not affect the post-acquisition TMT turnover. However, Table 3-6 Panel A Columns 7 and 8 show that the profitable target dummy does not affect the post-acquisition TMT turnover in the subsample of financial firms. Therefore, in financial firms, the pre-acquisition profitability of target firms appears to have no significant impact on the post-acquisition TMT turnover.

[Insert Table 3-6 here]

As I discussed in Section 3.2.2, the market discipline theory suggests that a firm with a poor pre-acquisition performance is more likely to experience a high TMT replacement than a well-performing firm, which indicates that unprofitable targets are more likely to experience a higher TMT turnover than profitable targets. On the other hand, a high TMT turnover is more likely to harm the post-acquisition performance improvements in profitable targets than in unprofitable targets, as replacement of TMTs who have private knowledge and information about the target disturbs the firm's operations. Therefore, I investigate TMT turnovers in targets with profitable and unprofitable pre-acquisition performance separately in Table 3-6 Panel B.

Consistent to the results in Table 3-6 Panel A, Table 3-6 Panel B Columns 1-4 show that the pre-acquisition performance ROA(-1) tends not to be significantly correlated to the post-acquisition TMT Turnover and the Complete TMT Turnover in either profitable or unprofitable target firms. By contrast,

Table 3-6 Panel B Columns 5-8 shows that ROA(-1) appears to affect the pre-acquisition TMT Turnover during (-1, 0) and the adjusted TMT Turnover. In profitable targets, a high ROA(-1) appears to reduce the pre-deal TMT Turnover, which supports the resource-based management theory (Table 3-6 Panel B Column 5). The replacement of TMT in target firms, especially profitable targets, appear to harm the future performance improvements of target firms. In unprofitable targets, firms with a larger loss experience a higher TMT replacement, which supports the market discipline theory (Table 3-6 Panel B Column 6).

These results show that the pre-deal performance appears to affect the pre-deal TMT turnover during year (-1, 0) but not the post-deal TMT turnover (0, +1), which indicates that a poorly performing target TMT (measured by the pre-deal performance of target firms) is more likely to be replaced in the pre-deal period and a well-performing TMT is more likely to continue work as a TMT. These results support Hypothesis 3-2 that a firm performing well before becoming a takeover target experience a lower TMT turnover around the acquisition announcement and poorly performed targets experience a higher TMT replacement.

Table 3-6 Panel B Column 7 shows that in profitable targets, a higher pre-deal ROA is positively correlated to the adjusted TMT Turnover. This result suggests that after controlling for the average TMT turnovers during the non-M&A period (-5, 0), well-performing target firms experience a higher proportion of TMT replacements within one year post-acquisition, which fails to support either the market discipline theory or the resource-based management theory.

The ROA(-1) appears to not affect the Adjusted TMT Turnover in unprofitable firms. Results of adjusted TMT Turnover are not consistent to results of pre- and post-deal TMT turnovers, and therefore, the interpretation of adjusted TMT Turnover requires caution.

Table 3-6 Panel A also presents the impact of TMT characteristics and deal-specific characteristics on the post-acquisition TMT turnover in target firms. Table 3-6 Panel A shows that the pre-acquisition TMT age does not affect the post-acquisition TMT turnover. Similarly, un-tabulated regression results show that the proportion of TMTs over 65 years old does not affect the post-acquisition TMT turnover. These results indicate that retirement may not be the main concern of post-acquisition TMT turnover or that target TMT age is not a concern to acquirers. Table 3-6 Panels B in general provide consistent results, excepting for pre-deal TMT Turnover in unprofitable targets. Table 3-6 Panel B Column 6 shows that pre-deal TMT age is positively correlated to the pre-deal TMT Turnover (significant at the 1% level), which indicates that target TMTs who want to retire may choose to leave the target board before the acquisition.

Table 3-6 Panel A Columns 3 and 4 show that the pre-deal TMT size of target firms has a significantly negative impact on the complete TMT turnover in target firms post-acquisition (significant at the 1% level), which suggests that target firms with larger TMT size are less likely to experience a complete TMT turnover. However, the pre-deal TMT size does not affect the complete TMT turnover in financial firms (Table 3-6 Panel A Columns 7 and 8). The sub-sample regression results in Table 3-6 Panel B Columns 1 and 2 provide consistent results that in both profitable and unprofitable targets, pre-deal TMT size has a significantly negative impact on the complete TMT turnover post-acquisition. The TMT size appears to not affect the TMT Turnover within one year post-acquisition (Table 3-6 Panel A Columns 1, 2, 5, and 6, and Panel B Columns 3 and 4). On the other hand, a larger TMT size is more likely to experience a higher pre-acquisition TMT turnover in both profitable and unprofitable firms (Table 3-6 Panel B Columns 5 and 6). This result, consistent with the impact of pre-deal TMT age on TMT turnovers, indicates that the pre-deal and post-deal TMT turnovers appear to be affected by different factors.

These results suggest that in a target with large TMT size, TMTs are more likely to leave in the pre-acquisition period and acquirers are more likely to retain some TMTs post-acquisition when the target TMT is large than when it is small. As TMT size may be indicative of the complexity of the business, acquirers seem less likely to fully replace the target's TMTs when targets business is complex.

Furthermore, Table 3-6 Panel A Columns 3, 4, 7 and 8 show that acquirers are more likely to completely replace target TMT when acquirers are in a related industry as targets' and acquirers are more likely to have knowledge of the target's business. When acquirers and targets are in different industries, acquirers are more likely to retain target TMTs, maybe because they have valuable information about the target's business. Table 3-6 D provide consistent results in the subsample of financial targets. These results support the resource-based management theory with the positive coefficient of related industry on TMT turnovers.

Table 3-6 Panel B Columns 5 and 6 show that the pre-deal average tenure of target TMTs has a significant negative impact on the pre-deal TMT turnover (significant at the 1% level), which suggests that TMT with a longer working experience in targets are less likely to leave in the pre-acquisition period. This result is consistent with the finding in Peters and Wagner (2014) that TMTs with longer tenure are fired less often as these TMTs are argued to be more experienced or more skilled than TMTs with shorter tenure. However, Table 3-6 Panel B Columns 7 shows that the pre-acquisition average tenure of target TMTs has a significant positive impact on the adjusted TMT turnover post-acquisition (significant at the 1% level), which suggests that TMTs with a long tenure are more likely to leave in the post-acquisition period compared to pre-acquisition period. Target TMTs with longer tenure may decide to stay in the target management team to facilitate the completion of acquisitions, but they are more likely to leave the firm within five years post-acquisition.

### 3.5.3 Target performance improvements and mean-reversion effect

This section provides the regression results of factors driving post-acquisition peer-adjusted performance changes of target firms. Section 3.5.3 discusses the analyses related to Hypothesis 3-3, which is whether TMT replacement is positively correlated to the target performance improvements.

Table 3-7 Panel A shows that Target TMT turnovers do not affect the non-peer adjusted ROA change in targets within three years after acquisitions. Furthermore, Table 3-7 Panel A Columns 1-3 also show that the unadjusted ROA(-1) has a significant negative impact, ranging from -1.1 to -0.8, on the post-acquisition ROA improvements, which is significant at the 1% level. For example, the target firms with a 10% ROA(-1) would experience a ROA change decrease by 8% over the period to year +1, 9% over a two year period to year +2, and 11% over a three year period to year+3. Therefore, the ROA appears to be mean-reverting: the performance of target firms with high ROA before the acquisition appears to revert after acquisition. Similarly, Table 3-7 Panel A Columns 4-6 show that profitable targets generate lower post-deal unadjusted ROA than unprofitable targets, which is consistent to the mean-reverting results of ROA(-1).

[Insert Table 3-7 here]

However, this mean-reversion of unadjusted ROA may be driven by the economic or industry trend of ROA changes or the firm-specific acquisition effect. Barber and Lyon (1996) suggest that the accounting-based measures of performance tends to be mean-reverting and recommend matching sample firms to control firms on the pre-event performance, for example, matching on industry, or industry and size could reduce the mean-reversion. To control for the economic and industry performance, I therefore use peer firms' performance as a benchmark to evaluate post-acquisition performance of target firms.[27] Following Healy et al. (1992), I focus on the peer-adjusted ROA changes in Table 3-7 Panel B and examine whether TMT turnover affects the post-acquisition performance changes. Table 3-7 Panel B shows that neither the post-acquisition TMT turnover nor the complete TMT turnover has a significant impact on the peer-adjusted ROA improvements in target firms

[27] The peer firm sample selection process is discussed in Section 3.4.1.

post-acquisition. This result is consistent with the finding in Table 3-7 Panel A with the unadjusted ROA.

As a robustness check of the analysis of the impact of TMT turnover on post-acquisition peer-adjusted performance improvements of target firms, I examine factors affecting the post-acquisition peer-adjusted performance of target firms using alternative performance measures in terms of net income/total assets (NI/TA), EBITDA/total assets (EBITDA/TA), and operating profit/total assets (OP/TA), respectively. The un-tabulated regressions provide consistent result that the post-acquisition TMT turnover and the complete TMT turnover do not have a significant impact on the alternative post-acquisition peer-adjusted performance changes of target firms. These results fail to support Hypothesis 3-3 that replacement of target TMT is positively related to post-acquisition performance improvement in targets. In addition, these results fail to support the resource-based management theory that replacement of target TMT is negatively related to post-acquisition performance improvement in targets.

Table 3-7 Panel B Columns 2, 3, 5 and 6 also show that the profitable target dummy has a significant negative impact on the post-acquisition peer-adjusted ROA of target firms in years +2 and +3, which suggests that profitable targets appear to generate less peer-adjusted ROA improvements than unprofitable targets. This result is consistent with the finding in Table 3-4 that the post-acquisition peer-adjusted performance improve significantly in unprofitable targets but deteriorates insignificantly in profitable targets. Un-tabulated regressions with alternative performance measures provide consistent result that the profitable target dummy has a significant negative impact on different measurements of post-acquisition peer-adjusted performance changes of target firms (net income/total assets, EBITDA/total assets, and operating profit/total assets).

Hypotheses 3-2 and 3-3 expect that target TMT turnover is negatively related to targets' pre-acquisition performance and positively related to targets' post-acquisition performance improvement. Combing the two hypotheses, the market discipline theory of acquisitions suggests that the target TMT turnover is expected to have a larger impact on the post-acquisition performance improvements of target firms where the pre-acquisition performance was poor. In Table 3-8, I investigate the post-acquisition performance improvements in profitable and unprofitable targets and examine the impact of target TMT turnover on the post-acquisition performance improvements of profitable and unprofitable targets.

[Insert Table 3-8 here]

The sub-group regression results in Table 3-8 Panels A to D suggest that the TMT turnover during (0, +1 year) in targets does not affect the unadjusted and peer-adjusted ROA changes in target firms. These results fail to support Hypothesis 3-3 that target TMT turnover is positively related to targets' post-acquisition performance improvement. Although Table 3-8 Panels A and C Column 5 show that a complete TMT turnover has a negative impact on the ROA(-1, +2) in profitable targets, the general results fails to support the resource-based management view as there is no consistent pattern of the significant impact of a complete TMT turnover on either unadjusted or peer-adjusted target performance improvements within three years post-acquisition.

The sub-group regression results in Table 3-8 Panels A to D also show that the pre-acquisition ROA has a significant negative impact on post-acquisition ROA improvements in both profitable and unprofitable targets. These regression results suggest that profitable targets appear to underperform unprofitable targets in terms of profitability after acquisitions. The regression results are consistent with the descriptive statistics in Table 3-4 that profitable targets experience lower performance improvements than unprofitable targets. As I control for the potential industry performance trends by using peer-adjusted target performance, the additional mean-reversal in performance changes could be driven by the acquisition effect. As discussed in Section 3.5.1, the acquisition motivations behind acquisitions of profitable and unprofitable targets may be different. The profitable targets do not experience higher profit growths, but they could enjoy a quicker expansion than unprofitable targets.

Overall, the regression results fail to support Hypothesis 3-3 that replacement of target TMT is positively related to post-acquisition performance improvement in targets. My results suggest that neither the market discipline theory of acquisition nor the resource-based management appear to explain the impact of TMT turnover on post-acquisition target performance improvements.

### 3.5.4 Target TMT turnover versus Acquirer Performance

This section provides the regression results of factors driving post-acquisition performance of acquiring firms. Section 3.5.4 discusses the analyses related to Hypothesis 3-4, which is whether TMT replacement is negatively related to the post-acquisition performance changes of acquirers.

As I stated in Section 3.1, targets are subsidiaries of acquirers and the TMT Turnovers in acquirers should be more important to acquirers than the subsidiaries' TMT turnovers. In my sample, targets are small relatively to acquirers. The median of target's total assets divided by acquirer's total assets is 0.06 (un-tabulated). In Table 3-9, I investigate whether target TMT turnover or acquirer TMT turnover significantly affect the post-acquisition performance improvements of acquirers.

[Insert Table 3-9 here]

Table 3-9 Panel A shows that the target TMT turnover has a significant negative impact on ROA(-1, +2) of acquirers, which support Hypothesis 3-4 and the resource based theory that target TMT turnover is negatively related to post-acquisition performance improvement in acquirers (Table 3-10 Panel A Columns 1-3 and 7-9). However, target TMT turnover does not affect the post-acquisition performance improvements of acquirers over the period to years +1 and +3. There is thus no consistent pattern of target TMT turnover's impact on acquirers' performance changes. Furthermore, Table 3-9 Panel B shows that acquirers with a complete TMT turnover in targets on average have lower ROAs over the three-year post-acquisition period by 3% to 4%, and the coefficients are significant at the 5% level, which supports Hypothesis 3-4. Thus, while not unequivocal, the results provide some indication to suggest that the change of the TMT in profitable targets may not be beneficial for acquirers, and the replacement of the whole team may be harmful to the acquirer.

Table 3-9 Panels A and B show that acquirers' TMT turnover in the first year post-acquisition is negatively correlated to the acquirers' ROA(-1, +1) and the coefficients are significant at the 1% level. A 10% increase in acquirer TMT turnovers is associated with a reduction in the ROA(-1, +1) of 1.8% to 1.9% and the coefficients are significant at the 1% level. The interpretation of the negative correlation between the acquirer TMT turnover and the post-acquisition unadjusted performance improvements of acquirers requires caution. As discussed in Section 3.5.3, acquirers' unadjusted performance changes post-acquisition appears to be mean-reverting. Table 3-9 Panels A and B show that Acquirer ROA(-1) has a significantly negative impact on the unadjusted performance improvements of acquirers post-acquisition (significant at the 1% level).

Comparing the coefficients and their significance, the acquirers' post-acquisition unadjusted ROA improvements are more strongly correlated to acquirers' TMT turnover than targets' TMT turnover (Table 3-9 Panel A). Although the target complete TMT turnover is significantly correlated to acquirers' post-acquisition ROA improvements from year +1 to year +3, its impact is less than that of acquirer TMT turnover (Table 3-9 Panel B). For example, acquirers with a 100% target TMT turnover over the period of (0, +1 year) is on average associated with a reduction in the ROA by 3% to 4%, while acquirers with a 30% TMT turnover over the same period is on average associated with a reduction in the ROA(-1, +1) of 5.5% to 5.7%. These results are consistent with my expectation that the acquirers' post-acquisition performance improvement is more strongly correlated to changes in their own TMT than that of the target.

As discussed in Section 3.4.3, the target pre-acquisition profitability could affect the post-acquisition TMT turnover. The market discipline hypothesis suggests that a firm with a poor performance are more likely to experience a high TMT replacement than a well-performing firm, which indicates that unprofitable targets are more likely to experience a higher TMT turnover than profitable targets. Furthermore, the resource-based management theory suggests that target TMTs have private knowledge and information about the target firm, and a high TMT turnover is more likely to disturb the firm operation and harm the post-acquisition performance improvements in profitable targets than in unprofitable targets. Therefore, I investigate whether target TMT turnover, combined with the impact of target profitability, affect acquirer's post-acquisition performance improvements in Table 3-10.

[Insert Table 3-10 here]

Table 3-10 Panel A controls for the interactions between TMT turnovers and pre-acquisition target profitability (the profitable target dummy), as unprofitable targets are more likely to experience a higher TMT turnover than profitable targets. Table 3-10 Panel A shows that target TMT turnover in unprofitable targets are negatively correlated to acquirer's unadjusted ROA(-1, +3), which supports the Hypothesis 3-4. However, target TMT turnover is not significantly correlated to acquirer's performance changes over the periods to years +1 and +2. Therefore, there is no consistent pattern that the replacement of target TMTs is negatively correlated to the post-acquisition performance improvements in acquirers.

In profitable targets, the correlation between target TMT turnover and acquirer's ROAs combines the impact of target TMT turnover and the interaction term of target TMT turnover and profitable target dummy. Overall, the combined effects show that target TMT turnover is positively correlated to acquirers' ROA(-1, +3). For example, Table 3-10 Panel A Column 6 shows that in profitable targets, the regression coefficient of target TMT turnover on acquirers' ROA is +0.025 (-0.177+0.202), which is smaller than the -0.085 coefficient of acquirer TMT turnover on acquirer's ROA(-1, +3). These results are consistent with my finding in Table 3-9 that the acquirers' post-acquisition performance is stronger correlated to TMT turnovers in acquirers than those in targets.

Table 3-10 Panel B shows that after controlling for target profitability, Target Complete TMT Turnover overall has a negative impact on acquirer's ROAs within three years post-acquisition, which is consistent to the findings in Table 3-9 Panel B. To consider the whole impact of the complete TMT turnover in target firms, I combine the impact of complete TMT turnover and the interaction term of complete TMT turnover and profitable target dummy. For example, Table 3-10 Panel B Columns 1 to 3 show that in profitable targets, a complete

TMT turnover in target firms reduce acquirers' ROA(-1, +1) by -0.025 (-0.038+0.013), ROA(-1, +2) by -0.025 (-0.046+0.021), ROA(-1, +1) by -0.051 (-0.017-0.034), which supports Hypothesis 3-4 that a complete TMT target in targets is harmful to acquirer's performance post-acquisition.

Consistent with the findings in Table 3-10 Panel A, the regression coefficients in Table 3-10 Panel B show that the acquirers' post-acquisition performance improvement is stronger correlated to TMT turnovers in acquirers than those in targets. Table 3-10 Panels A and B Columns 4 also show that after controlling for the target profitability, acquirer's TMT turnover within the first year post-acquisition is negatively correlated to the acquirers' ROA(-1, +1) (significant at the 1% level), which is consistent with the results in Table 3-9 Panels A and B.[28]

Overall, results in Tables 3-9 and 3-10 show that although the replacement of target TMTs is significantly negatively correlated to acquirers' ROA changes over a three-year period to year +3, irrespective of whether the target firm is profitable or loss-making, there is no consistent pattern in the coefficients of target TMT turnovers, which fails to support Hypothesis 3-4 that TMTs in profitable targets are a valuable source of inside information and that replacing target's TMT could lead to the loss of the firm-specific knowledge and harm the profitability of the combined business post-acquisition. However, results in Tables 3-9 and 3-10 show that a complete TMT turnover in targets is negatively correlated to acquirer's ROAs within three years post-acquisition, which

[28] As a robustness check, I control for the cash payment and relative size of the acquisition. The un-tabulated regressions provide consistent results to Tables 3-9 and 3-10, which fails to support Hypothesis 3-4.

supports Hypothesis 3-4 that that replacement of target TMT is harmful to post-acquisition performance improvements of acquirers. These results are consistent with the findings in previous studies (Cannella and Hambrick, 1993; Krishnan et al., 1997; Zollo and Singh, 2004) and support the resource-based management theory with the evidence that a complete TMT replacement in target firms, especially profitable targets, lead to lower post-acquisition performance improvements in acquirers.

## 3.6 Conclusion

My results suggest that, on average, acquisitions significantly improve the peer-adjusted performance of unprofitable targets but leads to a small and insignificant deterioration in the performance of profitable targets. Unprofitable targets are more likely to experience “disciplinary top management team (TMT) turnovers,” but both profitable and unprofitable targets experience high TMT turnover post-acquisition. On average, the TMT turnovers do not improve the post-acquisition target performance.

My results do not provide evidence to support the market discipline hypothesis expectation that disciplinary TMT turnovers improve the operation and performance of target firms. Instead, my results tend to support the resource-based management theory, with some evidence to suggest that a complete change of the target TMT is harmful to the profits of acquirers.

The reasons for TMT turnovers around acquisitions could be complex, and disciplinary TMT turnover does not appear to be the main reason for officer turnovers in my U.K. sample. Krug et al. (2015) suggest that cultural fit and the age of directors could also affect the TMT turnover in target firms. Other sources of value-creation, such as the increasing financing capacity provided by acquirers to targets, may explain the value creation in unprofitable targets.

For profitable targets, generating superior profits appears not to be the main motive of the acquisitions, at least not within a three-year post-acquisition period as covered in this study. Profitable targets are more likely to grow faster in firm size and sales revenues than unprofitable firms, indicating that expansion may have been the main medium-term aim for targets post-acquisition. The expansion could finally be converted into profits in the future. On average, acquirers experience significant negative changes in unadjusted performance post-acquisition, but target firm TMT post-acquisition does not appear to affect acquirer’s unadjusted ROA. The negative changes of acquirers’ ROA could be reduced if controls for the peer performance changes. Although TMTs in profitable targets are valuable resources of inside knowledge, the post-acquisition performance changes in acquirers are more affected by acquirers’ TMT turnovers than target TMT turnovers.

**Table 3-1**
**Sample selection of target firms**

The sample includes 498 target firms acquired in the U.S. between 2006 and 2014. Financial statements information includes total assets, sales revenue, and return on assets (ROA). ROA=Profit & Loss Before Interest/Total Assets (FAME, 2016). Sample sizes for alternative measurements of the profitability in targets are 413 for NI/TA=Profit and Loss after Tax/Total Assets, 411 for EBITDA/TA=EBITDA/Total Assets, and 496 for OP/TA=Operating Profit/Total Assets. N stands for number of observations.

| | | N |
|---|---|---|
| Completed U.K. domestic M&As during 2006-2014 | | 15,332 |
| Less: deals with missing value for transaction size | 9,396 | 5,936 |
| Plus: deals with missing value for transaction size but have value of target's total assets one-year prior the acquisition ($m) | 1,716 | 7,652 |
| Less: acquirers are government owned (20), investor owned (98), joint ventures (38), or mutually owned (3) | 159 | 7,493 |
| Less: targets are government owned (6), joint ventures (79), investor owned or mutually owned (0) | 85 | 7,408 |
| Less: deals with missing values for target percentage shares acquired in the deal | 633 | 6,775 |
| Less: deals with missing values for target percentage shares owned by acquirers post-deal | 0 | 6,775 |
| Less: acquirers obtain less than 50% of target shares in the transaction | 557 | 6,218 |
| Less: acquirers own less than 100% of target shares after the deal | 294 | 5,924 |
| Less: reverse takeovers (61), leveraged and/or management buyout (847) | 908 | 5,016 |
| Less: transaction value less than £1 million | 635 | 4,381 |
| Less: deals with missing value for transaction size and the value of target's total assets is less than £1million | 302 | 4,079 |
| Less: targets which cannot be found in FAME | 792 | 3287 |
| Less: targets for which it is not possible to identify the parent-subsidiary relation from year +1 onwards | 1,078 | 2209 |
| Less: deals with no balance sheets or profits & loss statements information in FAME for years -1 and +1 | 326 | 1883 |
| Less: targets which have missing values for pre-acquisition sales revenue | 1,228 | 655 |
| Less: targets which have missing values for ROA at the year -1 and +1, | 157 | 498 |
| Less: targets which have missing data for officer information | 0 | 498 |
| **Final Sample Size** | | **498** |

**Table 3-2 Frequency Distribution**

Panel A. Number of acquisitions describes the number of acquisition transactions in the final sample. The data comprise whole-firm acquisitions listed in the SDC M&A database for which the announcement date is between 1 January 2006 and 31 December 2014, the deal is complete, acquirers fully own the target after acquisition, and targets and acquirers are domestic U.K. firm which has financial reports at years -1 and +1, and years +2 and +3 if data available, where year 0 is the acquisition announcement year.

**Table 3-2 Panel A. Number of acquisitions**

| **Acquisition announcement year** | Frequency |
|---|---|
| **2006** | 65 |
| **2007** | 68 |
| **2008** | 49 |
| **2009** | 43 |
| **2010** | 57 |
| **2011** | 59 |
| **2012** | 82 |
| **2013** | 62 |
| **2014** | 13 |
| **Total** | 498 |

**Table 3-2 Panel B. Industry Frequency**

Industry Frequency reports the industry distribution of targets and acquirers. The industry 2-digit SIC is from the SDC M&A database.

| Industry | 2-Digit SIC | Frequency of Target | Frequency of Acquirer |
|---|---|---|---|
| Agriculture, Forestry and Fishing | 01-09 | 0 | 0 |
| Mining | 10-14 | 3 | 1 |
| Construction | 15-17 | 6 | 7 |
| Printing | 18-19 | 15 | 16 |
| Manufacturing | 20-39 | 0 | 0 |
| Transportation, Communications, Electric, Gas and Sanitary service | 40-49 | 92 | 92 |
| Wholesale Trade | 50-51 | 35 | 43 |
| Retail Trade | 52-59 | 30 | 19 |
| Finance, Insurance and Real Estate | 60-67 | 116 | 168 |
| Services | 70-89 | 198 | 151 |
| Public Administration | 91-97 | 3 | 1 |
| Total | | 498 | 498 |

**Table 3-3 Panel A**
**Target characteristics**

Panel A reports the average of selected financial characteristics for targets, peer firms and acquirers: firm size, leverage and firm performance before and after acquisition and the changes of performance. Panel A also reports the TMT turnovers around acquisitions. All financial variables are winsorized at the 1% and 99% level. The unit of Total Assets is thousand GBP. The difference is the mean difference between target and peer (acquirer) and I provide the significance of t-test whether the difference is significantly different from zero. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Target | | Peer | | Target vs. Peer | Acquirer | | Target vs. Acquirer |
|---|---|---|---|---|---|---|---|---|
| VARIABLES | Mean | N | Mean | N | Difference | Mean | N | Difference |
| Total Assets | 57,418 | 498 | 63,825 | 498 | -6,407 | 1,550,183 | 410 | -1,502,424*** |
| Leverage1 | 0.682 | 498 | 0.700 | 498 | -0.018 | 0.595 | 410 | 0.099*** |
| Leverage2 | 0.134 | 498 | 0.174 | 498 | -0.040 | 0.194 | 410 | -0.060*** |
| Pre_deal TMT Age | 51.000 | 498 | 51.240 | 489 | -0.172 | 52.100 | 472 | -1.130*** |
| Post_deal TMT Age | 49.110 | 497 | 50.620 | 490 | -1.486*** | 51.550 | 483 | -2.436*** |
| Pre_deal proportion of TMT over 65 | 0.484 | 498 | 0.341 | 498 | 0.143*** | 0.567 | 476 | -0.088*** |
| Post_deal proportion of TMT over 65 | 0.390 | 498 | 0.437 | 497 | -0.046 | 0.777 | 485 | -0.388*** |
| Pre-deal TMT size | 7.480 | 498 | 4.958 | 498 | 2.522*** | 7.105 | 486 | 0.381* |
| Post-deal TMT size | 7.460 | 498 | 4.904 | 498 | 2.556*** | 7.449 | 486 | 0.051 |
| Post-deal New TMT No. | 2.129 | 498 | 0.526 | 498 | 1.602*** | 1.255 | 486 | 0.885*** |
| TMT Turnover | 0.244 | 498 | 0.092 | 497 | 0.152*** | 0.120 | 485 | 0.123*** |
| Complete Turnover | 0.430 | 498 | 0.554 | 202 | -0.079 | 0.376 | 101 | 0.376 |
| Pre-deal TMT Turnover | 0.239 | 498 | 0.092 | 498 | 0.147*** | 0.115 | 476 | 0.125*** |
| NI/TA(-1) | 0.052 | 413 | 0.061 | 407 | -0.008 | 0.055 | 332 | 0.010 |
| ROA(-1) | 0.089 | 498 | 0.095 | 496 | -0.006 | 0.081 | 396 | 0.023* |
| EBITDA/TA (-1) | 0.117 | 412 | 0.102 | 407 | 0.016* | 0.104 | 329 | 0.021 |
| OP/TA (-1) | 0.071 | 497 | 0.067 | 496 | 0.004 | 0.070 | 394 | 0.026 |

**Table 3-3 Panel B**
**Breakdown of target characteristics and acquisition deal-specific characteristics by pre-acquisition profitability**

Panel B reports the target pre-acquisition financial characteristics, pre-and-post acquisition TMT characteristics, deal characteristics, change of target and acquirer performance, and change of target performance adjusted for peer performance. Target firms are classified as profitable firms if they generate a positive ROA(-1) and as unprofitable firms if they generate a ROA(-1) smaller than or equal to zero. The peer firm is firstly matched to 2-digit SIC of target firms and then matched to the closest value of total assets and closest value of ROA in the most recent financial statements before the acquisition announcement. Private target firms are matched with private peer firms and public target firms are matched with public peer firms. Both target firms and peer firms are U.K. or Irish firms in the FAME database. All variables, if not specified, measure the target firms. The difference is the mean difference between unprofitable and profitable target and I provide the significance of t-test whether the difference is significantly different from zero. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Unprofitable Target | | Profitable Target | | t-test Difference |
|---|---|---|---|---|---|
| VARIABLES | N | Mean | N | Mean | Mean |
| Total Assets | 92 | 37,339 | 406 | 61,968 | -24,628 |
| Leverage1 | 92 | 0.927 | 406 | 0.626 | 0.300*** |
| Leverage2 | 92 | 0.240 | 406 | 0.110 | 0.130*** |
| Related Industry | 92 | 0.511 | 406 | 0.480 | 0.031 |
| Relative Size | 71 | 1.207 | 339 | 1.291 | -0.084* |
| Firm Age | 92 | 18.731 | 406 | 22.424 | -3.693 |
| Cash Payment | 71 | 0.563 | 315 | 0.670 | -0.107* |
| Pre_deal Tenure | 92 | 5.247 | 406 | 6.255 | -1.001*** |
| Post_deal Tenure | 92 | 3.261 | 406 | 3.477 | -0.216 |
| TMT Turnover | 92 | 0.296 | 406 | 0.232 | 0.064** |
| Complete _Turnover | 92 | 0.500 | 406 | 0.414 | 0.086 |
| Pre-deal TMT Turnover | 92 | 0.257 | 406 | 0.235 | 0.022 |
| Adjusted TMT Turnover | 82 | 0.152 | 373 | 0.124 | 0.027 |
| Pre-deal TMT size | 92 | 7.870 | 406 | 7.392 | 0.478 |
| Post-deal TMT size | 92 | 7.576 | 406 | 7.433 | 0.143 |
| Pre-deal TMT Age | 91 | 51.133 | 406 | 50.974 | 0.158 |
| Post-deal TMT Age | 92 | 49.827 | 406 | 48.949 | 0.878* |
| Pre-deal proportion of TMT over 65 | 92 | 0.489 | 406 | 0.483 | 0.006 |
| Post-deal proportion of TMT over 65 | 92 | 0.467 | 406 | 0.372 | 0.095 |

**Table 3-4**

**Breakdown of peer-adjusted performance after acquisitions by pre-acquisition target profitability**

This table reports the target post-acquisition performance in target firms and the performance is peer-adjusted. Target firms are classified as profitable firms if they generate a positive ROA(-1) and as unprofitable firms if they generate a ROA(-1) smaller than or equal to zero. The peer firm is firstly matched to 2-digit SIC of target firms and then matched to the closest value of total assets and closest value of ROA in the most recent financial statements before the acquisition announcement. Private target firms are matched with private peer firms and public target firms are matched with public peer firms. Both target firms and peer firms are U.K. or Irish firms in the FAME database. All variables, if not specified, measure the target firms. I provide the t-test statistic of whether mean value is significantly different from zero. The t-test (ranksum test) difference is the mean (median) value of difference between unprofitable and profitable target and I provide the statistical significance of t-test (ranksum test) whether the difference is significantly different from zero. For acquirers' ROA, the difference tests examine whether acquirers taking over profitable targets generate different ROAs to those taking over unprofitable targets. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Full Sample | | | Unprofitable Target | | | Profitable Target | | | Difference | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VARIABLES | N | Mean | Median | N | Mean | Median | N | Mean | Median | Mean | Median |
| NI/TA(-1, +1) | 403 | -0.029 | -0.014 | 78 | 0.028 | 0.057 | 325 | -0.043** | -0.019 | 0.071 | 0.076** |
| NI/TA(-1, +2) | 319 | 0.032 | 0.014 | 62 | 0.212*** | 0.136 | 257 | -0.012 | -0.001 | 0.225*** | 0.137*** |
| NI/TA(-1, +3) | 244 | 0.019 | 0.016 | 46 | 0.276*** | 0.145 | 198 | -0.041 | -0.005 | 0.317*** | 0.150*** |
| ROA(-1, +1) | 494 | -0.020 | -0.009 | 91 | 0.032 | 0.041 | 403 | -0.032 | -0.015 | 0.063 | 0.056* |
| ROA(-1, +2) | 405 | 0.022 | 0.016 | 75 | 0.163** | 0.101 | 330 | -0.010 | 0.007 | 0.173*** | 0.094*** |
| ROA(-1, +3) | 325 | 0.011 | 0.017 | 58 | 0.255*** | 0.125 | 267 | -0.042 | 0.004 | 0.298*** | 0.121*** |
| EBITDA/TA(-1,+1) | 401 | -0.057*** | -0.030 | 78 | -0.048 | -0.026 | 323 | -0.060*** | -0.030 | 0.012 | 0.004 |
| EBITDA/TA(-1,+2) | 314 | -0.010 | -0.006 | 61 | 0.115* | 0.065 | 253 | -0.040** | -0.019 | 0.155*** | 0.084*** |
| EBITDA/TA(-1,+3) | 237 | -0.027 | -0.017 | 45 | 0.163** | 0.149 | 192 | -0.071*** | -0.037 | 0.234*** | 0.186*** |
| OP/TA(-1, +1) | 492 | -0.049*** | -0.019 | 91 | -0.032 | 0.034 | 401 | -0.053*** | -0.028 | 0.020 | 0.062 |
| OP/TA(-1, +2) | 399 | -0.013 | 0.001 | 74 | 0.118** | 0.081 | 325 | -0.043** | -0.014 | 0.161*** | 0.095*** |
| OP/TA(-1, +3) | 319 | -0.015 | 0.001 | 57 | 0.187* | 0.124 | 262 | -0.059*** | -0.019 | 0.247*** | 0.143*** |
| Unadj. ROA(-1,+1) | 498 | -0.033** | -0.017 | 92 | 0.100* | 0.091 | 406 | -0.063*** | -0.031 | 0.163*** | 0.122*** |
| Unadj. ROA(-1,+2) | 414 | 0.018 | 0.010 | 77 | 0.284*** | 0.148 | 337 | -0.042 | -0.018 | 0.327*** | 0.166*** |
| Unadj. ROA(-1,+3) | 333 | -0.006 | -0.002 | 62 | 0.304*** | 0.211 | 271 | -0.077*** | -0.032 | 0.381*** | 0.243*** |
| Acq. ROA(-1,+1) | 393 | -0.011 | -0.010 | 68 | -0.012 | -0.014 | 325 | -0.011 | -0.010 | -0.002 | -0.004 |
| Acq. ROA(-1,+2) | 358 | -0.018** | -0.015 | 62 | -0.031* | -0.018 | 296 | -0.015 | -0.015 | -0.015 | -0.003 |
| Acq. ROA(-1,+3) | 294 | -0.025** | -0.018 | 53 | -0.032 | -0.011 | 241 | -0.023** | -0.020 | -0.009 | 0.009 |

**Table 3-5 Correlation Matrix**

This table provides the pairwise correlation coefficients of target board characteristics, target financial characteristics, and deal-specific characteristics. All variables, if not specified, measure the target firms. I provide the significance of t-test whether the correlation coefficient is significantly different from zero. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | ROA (-1,+1) | ROA (-1,+2) | ROA (-1,+3) | Acq_ROA (-1,+1) | Acq_ROA (-1,+2) | Acq_ROA (-1,+3) | TMT turnover | Complete TMT turnover | Pre TMT size | Post TMT size | Pre TMT age | Post TMT age | Post TMT tenure |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acq_ROA (-1,+1) | 0.08 | 0.04 | -0.02 | | | | | | | | | | |
| Acq_ROA (-1,+2) | 0.06 | 0.04 | -0.07 | | | | | | | | | | |
| Acq_ROA (-1,+3) | 0.08 | 0.06 | -0.01 | | | | | | | | | | |
| TMT turnover | -0.06 | 0.03 | 0.01 | -0.09 | -0.12** | -0.09 | 1 | | | | | | |
| Complete TMT turnover | 0 | -0.04 | -0.01 | -0.04 | -0.05 | -0.03 | 0.37*** | 1 | | | | | |
| Pre TMT size | -0.03 | 0.05 | 0.13** | -0.03 | -0.02 | 0.06 | 0.04 | -0.23*** | 1 | | | | |
| Post TMT size | -0.06 | 0.03 | -0.06 | -0.1* | -0.07 | -0.10 | 0.63*** | 0.2*** | 0.34*** | 1 | | | |
| Pre TMT age | 0.03 | -0.08 | -0.04 | -0.09* | -0.04 | 0.04 | 0.06 | 0.03 | -0.01 | 0.06 | 1 | | |
| Post TMT age | 0 | -0.02 | -0.04 | -0.04 | 0.06 | -0.01 | 0.05 | -0.09** | 0 | 0.06 | 0.69*** | 1 | |
| Post TMT tenure | 0.05 | -0.02 | -0.06 | 0 | -0.03 | 0.03 | 0.2*** | -0.07 | -0.09* | 0.19*** | 0.23*** | 0.27*** | 1 |
| Pre TMT tenure | 0.08* | -0.06 | -0.08 | -0.01 | -0.07 | 0.07 | 0.06 | 0.12** | -0.24*** | 0 | 0.42*** | 0.25*** | 0.64*** |
| Ln(Total assets) | 0.02 | -0.05 | 0.12** | -0.05 | -0.02 | 0.04 | 0.31*** | 0.04 | 0.18*** | 0.38*** | 0.21*** | 0.19*** | 0.14*** |
| leverage1 | 0.16*** | 0.18*** | 0.10 | -0.06 | -0.01 | 0.07 | -0.07 | 0.03 | -0.01 | -0.02 | -0.07 | -0.08* | -0.14*** |
| leverage2 | 0.09* | 0.03 | 0.01 | -0.03 | -0.06 | -0.02 | 0.08 | 0.03 | 0.03 | 0.10** | 0 | 0 | -0.05 |
| Related industry | 0.03 | -0.01 | -0.05 | 0 | -0.03 | 0.03 | -0.04 | 0.08* | 0.01 | -0.03 | -0.03 | -0.02 | -0.06 |
| Cash payment | 0.10* | -0.05 | 0.02 | 0.03 | -0.02 | -0.01 | 0.06 | -0.07 | 0.03 | 0 | 0.05 | 0.01 | 0.05 |
| Relative size | 0.04 | 0.13* | 0.02 | -0.05 | -0.05 | -0.11** | -0.10** | 0.03 | 0.01 | -0.03 | -0.10** | -0.11** | -0.10** |

**Table 3-5 Correlation Matrix continued**

| | Pre TMT tenure | Ln(Total assets) | leverage1 | leverage2 | Related industry | Cash payment | Relative size |
|---|---|---|---|---|---|---|---|
| Pre tenure | 1 | | | | | | |
| Ln(Total assets) | 0.04 | | | | | | |
| leverage1 | -0.16*** | -0.06 | 1 | | | | |
| leverage2 | -0.09** | 0.22*** | 0.36*** | 1 | | | |
| Related industry | 0 | -0.09 | 0 | 0.06 | 1 | | |
| Cash payment | 0.07 | 0.07 | -0.2*** | 0 | 0.06 | 1 | |
| Relative size | -0.03 | -0.34*** | 0.08 | -0.03 | -0.05 | 0 | 1 |

**Table 3-6 Panel A Factors affecting the TMT Turnover and Complete Turnover**

This panel presents factors affect TMT turnovers. Column 1-4 are applied to the full sample of target firms. Column 5-8 is applied to the sub-sample of Finance, Insurance and Real Estate target firms. The target firms in Finance, Insurance and Real Estate has the 2-digit SIC codes range from 60 to 67. The dependent variable for models in Columns 1, 2, 5 and 6 is TMT Turnover and Tobit regressions are applied. The dependent variable for models in Columns 3, 4, 7 and 8 is Complete Turnover and logit regressions are applied as Complete Turnover is a dummy variable. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | TMT Turnover | TMT Turnover | Complete Turnover | Complete Turnover | TMT Turnover | TMT Turnover | Complete Turnover | Complete Turnover |
| $ROA_{-1}$ | -0.035 | | -0.436 | | 0.003 | | -0.349 | |
| | (0.064) | | (0.413) | | (0.101) | | (0.741) | |
| Pre-deal TMT Age | -0.003 | -0.004 | -0.011 | -0.012 | -0.002 | -0.002 | -0.006 | -0.005 |
| | (0.003) | (0.003) | (0.020) | (0.020) | (0.006) | (0.006) | (0.042) | (0.042) |
| Pre-deal TMT Tenure | 0.007 | 0.008 | 0.049 | 0.055 | 0.000 | 0.001 | 0.100 | 0.108* |
| | (0.005) | (0.005) | (0.034) | (0.035) | (0.008) | (0.008) | (0.064) | (0.064) |
| Pre-deal TMT size | -0.001 | -0.002 | -0.183*** | -0.186*** | -0.002 | -0.003 | -0.044 | -0.049 |
| | (0.005) | (0.005) | (0.038) | (0.038) | (0.009) | (0.009) | (0.066) | (0.066) |
| Ln(Total Asset) | 0.066*** | 0.066*** | 0.131** | 0.136** | 0.064*** | 0.065*** | 0.026 | 0.034 |
| | (0.010) | (0.010) | (0.063) | (0.063) | (0.016) | (0.016) | (0.114) | (0.115) |
| Leverage1 | -0.047 | -0.071* | 0.186 | 0.140 | -0.147 | -0.164* | 0.398 | 0.299 |
| | (0.043) | (0.042) | (0.273) | (0.269) | (0.091) | (0.092) | (0.654) | (0.666) |
| Related Industry | -0.011 | -0.012 | 0.402** | 0.395** | -0.028 | -0.021 | 0.770* | 0.814** |
| | (0.030) | (0.029) | (0.190) | (0.191) | (0.055) | (0.054) | (0.398) | (0.403) |
| Profitable Target Dummy | | -0.106** | | -0.464* | | -0.072 | | -0.507 |
| | | (0.039) | | (0.257) | | (0.070) | | (0.508) |
| Constant | -0.260 | -0.141 | -0.181 | 0.170 | -0.136 | -0.087 | -1.025 | -0.725 |
| | (0.170) | (0.171) | (1.080) | (1.107) | (0.312) | (0.314) | (2.257) | (2.284) |
| N | 498 | 498 | 498 | 498 | 116 | 116 | 116 | 116 |
| r2_a or r2_p (Pseudo R2) | 0.100 | 0.114 | 0.0584 | 0.0616 | 0.186 | 0.196 | 0.0494 | 0.0542 |
| F or chi2 | 51.53 | 58.45 | 39.77 | 41.90 | 18.65 | 19.70 | 7.930 | 8.705 |
| p | 7.23e-09 | 3.07e-10 | 1.39e-06 | 5.43e-07 | 0.00937 | 0.00626 | 0.339 | 0.275 |

**Table 3-6 Panel B Factors affecting the TMT Turnover, Complete TMT Turnover, pre-deal TMT Turnover and adjusted TMT Turnover in profitable and unprofitable targets**

This panel describes factors affect different measurements of TMT turnover in subgroups of profitable and unprofitable targets. The dependent variable is the Complete TMT Turnover for Logit models in Columns 1 and 2, the TMT Turnover for Tobit models in Columns 3 and 4, the Pre-deal TMT Turnover during (-1, 0) for Tobit models in Columns 5 and 6, and the adjusted TMT Turnover for OLS models in Columns 7 and 8 as the adjusted TMT Turnover is between -1 and +1. Adjusted TMT Turnover is the TMT Turnover (0, +1) subtracting the average pre-deal TMT turnover during (-5, 0). The adjusted R square (r2_a) and Pseudo R square are for Tobit and Logit regressions respectively. The F statistics and Chi square are for Tobit (OLS) and Logit regressions respectively. All financial variables are winsorized at the 1% and 99% level. This panel presents factors affect TMT turnovers. and OLS regressions are applied. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Profitable | Unprofitable | Profitable | Unprofitable | Profitable | Unprofitable | Profitable | Unprofitabl |
| $ROA_{-1}$ | -0.651 | 0.215 | 0.133 | -0.050 | -0.256*** | 0.209* | 0.176** | 0.039 |
| | (0.742) | (0.751) | (0.111) | (0.117) | (0.094) | (0.111) | (0.081) | (0.114) |
| Pre-deal TMT Age | -0.010 | -0.044 | -0.003 | -0.008 | 0.001 | 0.021*** | -0.001 | -0.004 |
| | (0.022) | (0.052) | (0.003) | (0.007) | (0.003) | (0.007) | (0.002) | (0.006) |
| Pre-deal TMT Tenure | 0.064* | 0.028 | 0.010* | 0.003 | -0.027*** | -0.037*** | 0.019*** | 0.020 |
| | (0.038) | (0.089) | (0.006) | (0.015) | (0.005) | (0.013) | (0.004) | (0.012) |
| Pre-deal TMT size | -0.166*** | -0.285*** | -0.001 | -0.006 | 0.046*** | 0.046*** | -0.000 | -0.003 |
| | (0.042) | (0.095) | (0.006) | (0.013) | (0.005) | (0.011) | (0.004) | (0.011) |
| Ln(Total Asset) | 0.086 | 0.288** | 0.063*** | 0.101*** | -0.051*** | -0.072*** | 0.038*** | 0.082*** |
| | (0.073) | (0.173) | (0.011) | (0.025) | (0.009) | (0.021) | (0.008) | (0.022) |
| Leverage1 | 0.200 | 0.115 | -0.018 | -0.129* | -0.028 | -0.005 | -0.029 | -0.088 |
| | (0.368) | (0.441) | (0.058) | (0.066) | (0.047) | (0.058) | (0.040) | (0.055) |
| Related Industry | 0.384* | 0.271 | 0.002 | -0.065 | 0.035 | 0.035 | -0.009 | -0.023 |
| | (0.212) | (0.467) | (0.032) | (0.070) | (0.027) | (0.059) | (0.023) | (0.062) |
| Constant | -0.073 | 1.469 | -0.350* | -0.131 | 0.457*** | -0.318 | -0.317** | -0.404 |
| | (1.268) | (2.632) | (0.197) | (0.372) | (0.163) | (0.340) | (0.144) | (0.323) |
| N | 406 | 92 | 406 | 92 | 406 | 92 | 373 | 82 |
| r2_a (Pseudo R2) | 0.0529 | 0.111 | 0.0923 | 0.220 | 0.404 | 0.406 | 0.128 | 0.128 |
| F (Chi2) | 29.11 | 14.11 | 37.46 | 22.55 | 153.2 | 35.16 | 7.669 | 3.002 |
| p | 0.000138 | 0.0492 | 3.84e-06 | 0.00204 | 0 | 1.04e-05 | 1.19e-08 | 1.19e-08 |

**Table 3-7 Panel A**
**Factors affecting unadjusted ROA in target firms post-acquisition (TMT Turnover)**

This panel presents factors affect target ROA post-acquisitions. The dependent variable Π(-i,+j) stands for the unadjusted (not peer-adjusted) target ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| TMT Turnover | -0.058 | 0.034 | 0.065 | -0.038 | 0.022 | 0.059 |
| | (0.087) | (0.080) | (0.094) | (0.099) | (0.093) | (0.113) |
| $ROA_{-1}$ | -0.823*** | -0.894*** | -1.079*** | | | |
| | (0.068) | (0.065) | (0.078) | | | |
| Profitable Target Dummy | | | | -0.135*** | -0.280*** | -0.350*** |
| | | | | (0.048) | (0.046) | (0.058) |
| Post-deal TMT Size | -0.008 | 0.001 | -0.006 | -0.011* | -0.001 | -0.011 |
| | (0.006) | (0.005) | (0.006) | (0.007) | (0.006) | (0.007) |
| Post-deal TMT Age | -0.007** | -0.005 | -0.007* | -0.004 | -0.003 | -0.005 |
| | (0.004) | (0.003) | (0.004) | (0.004) | (0.004) | (0.005) |
| Post-deal TMT Tenure | 0.014** | 0.005 | -0.005 | 0.017** | 0.008 | 0.001 |
| | (0.007) | (0.007) | (0.008) | (0.008) | (0.008) | (0.010) |
| Ln(Total Asset) | 0.001 | -0.013 | 0.033*** | 0.016 | 0.000 | 0.045*** |
| | (0.011) | (0.010) | (0.012) | (0.012) | (0.011) | (0.014) |
| Leverage1 | -0.012 | 0.060 | -0.089* | 0.128** | 0.164*** | 0.067 |
| | (0.044) | (0.042) | (0.048) | (0.050) | (0.048) | (0.056) |
| Related Industry | 0.013 | -0.043 | -0.021 | 0.016 | -0.045 | -0.004 |
| | (0.031) | (0.029) | (0.034) | (0.035) | (0.033) | (0.041) |
| Constant | 0.410** | 0.395** | 0.242 | 0.040 | 0.274 | 0.096 |
| | (0.192) | (0.174) | (0.207) | (0.222) | (0.208) | (0.254) |
| N | 497 | 413 | 332 | 497 | 413 | 332 |
| r2_a | 0.251 | 0.355 | 0.400 | 0.0389 | 0.137 | 0.144 |
| F | 21.78 | 29.30 | 28.58 | 3.508 | 9.146 | 7.937 |
| P | 0 | 0 | 0 | 0.000590 | 0 | 9.18e-10 |

**Table 3-7 Panel B**

**Factors affecting peer-adjusted ROA in target firms post-acquisition (TMT turnover and complete TMT turnover)**

This panel presents factors affect target peer-adjusted ROA post-acquisitions. The dependent variable Π(-i,+j) stands for the peer-adjusted target ROA performance change between year +j and –I, which is the target ROA performance change subtracted the matched firm's ROA performance change. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| TMT Turnover | -0.062 | 0.020 | 0.013 | | | |
| | (0.113) | (0.108) | (0.129) | | | |
| Complete Turnover | | | | 0.009 | -0.048 | -0.006 |
| | | | | (0.042) | (0.040) | (0.048) |
| Profitable Target Dummy | -0.012 | -0.132** | -0.298*** | -0.007 | -0.136** | -0.301*** |
| | (0.055) | (0.053) | (0.068) | (0.055) | (0.052) | (0.067) |
| Post-deal TMT Size | -0.010 | 0.005 | -0.015* | -0.013** | 0.007 | -0.014* |
| | (0.008) | (0.007) | (0.008) | (0.006) | (0.006) | (0.007) |
| Post-deal TMT Age | -0.001 | -0.001 | -0.008 | -0.001 | -0.002 | -0.008 |
| | (0.005) | (0.004) | (0.005) | (0.005) | (0.004) | (0.005) |
| Post-deal TMT Tenure | 0.01* | 0.003 | -0.006 | 0.017* | 0.003 | -0.006 |
| | (0.009) | (0.009) | (0.011) | (0.009) | (0.009) | (0.011) |
| Ln(Total Asset) | 0.019 | -0.017 | 0.050*** | 0.019 | -0.017 | 0.050*** |
| | (0.014) | (0.013) | (0.016) | (0.014) | (0.013) | (0.016) |
| Leverage1 | 0.206*** | 0.136** | -0.016 | 0.209*** | 0.135** | -0.017 |
| | (0.057) | (0.055) | (0.064) | (0.057) | (0.055) | (0.064) |
| Related Industry | 0.036 | -0.010 | -0.017 | 0.036 | -0.005 | -0.016 |
| | (0.040) | (0.039) | (0.047) | (0.040) | (0.039) | (0.047) |
| Constant | -0.244 | 0.202 | 0.337 | -0.251 | 0.231 | 0.338 |
| | (0.257) | (0.245) | (0.297) | (0.259) | (0.246) | (0.297) |
| N | 493 | 404 | 324 | 493 | 404 | 324 |
| r2_a | 0.0272 | 0.0312 | 0.0761 | 0.0267 | 0.0346 | 0.0761 |
| F | 2.723 | 2.623 | 4.325 | 2.690 | 2.804 | 4.326 |
| P | 0.00607 | 0.00830 | 5.81e-05 | 0.00668 | 0.00495 | 5.79e-05 |

**Table 3-8 Panel A**
**Factors affecting unadjusted ROA in profitable target firms post-acquisition**

This panel presents factors affect target unadjusted ROA post-acquisitions in profitable targets. ROA is the operating profits divided by total assets. The dependent variable Π(-i,+j) stands for the unadjusted target ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| TMT Turnover | 0.054 | 0.007 | 0.088 | | | |
| | (0.086) | (0.090) | (0.107) | | | |
| Complete Turnover | | | | -0.014 | -0.096*** | -0.048 |
| | | | | (0.031) | (0.033) | (0.040) |
| ROA(-1) | -0.772*** | -0.719*** | -0.993*** | -0.778*** | -0.756*** | -1.011*** |
| | (0.104) | (0.129) | (0.152) | (0.104) | (0.128) | (0.152) |
| Post-deal TMT Size | -0.010 | 0.000 | -0.008 | -0.008* | 0.004 | -0.004 |
| | (0.006) | (0.006) | (0.007) | (0.005) | (0.005) | (0.006) |
| Post-deal TMT Age | -0.004 | -0.003 | -0.009** | -0.004 | -0.004 | -0.009** |
| | (0.003) | (0.004) | (0.004) | (0.003) | (0.004) | (0.004) |
| Post-deal TMT Tenure | 0.010 | 0.011 | -0.002 | 0.010 | 0.010 | -0.001 |
| | (0.007) | (0.007) | (0.009) | (0.007) | (0.007) | (0.009) |
| Ln(Total Asset) | 0.009 | -0.008 | 0.044*** | 0.009 | -0.011 | 0.044*** |
| | (0.011) | (0.011) | (0.014) | (0.011) | (0.011) | (0.014) |
| Leverage1 | -0.045 | 0.104* | -0.068 | -0.046 | 0.103* | -0.070 |
| | (0.052) | (0.059) | (0.070) | (0.052) | (0.058) | (0.070) |
| Related Industry | 0.041 | -0.038 | -0.027 | 0.042 | -0.032 | -0.023 |
| | (0.030) | (0.032) | (0.039) | (0.030) | (0.032) | (0.039) |
| Constant | 0.189 | 0.194 | 0.178 | 0.201 | 0.272 | 0.193 |
| | (0.192) | (0.205) | (0.247) | (0.194) | (0.204) | (0.248) |
| N | 406 | 337 | 271 | 406 | 337 | 271 |
| r2_a | 0.145 | 0.0892 | 0.212 | 0.145 | 0.112 | 0.215 |
| F | 9.603 | 5.114 | 10.10 | 9.575 | 6.323 | 10.22 |
| P | 0 | 5.12e-06 | 0 | 0 | 1.25e-07 | 0 |

**Table 3-8 Panel B**
**Factors affecting unadjusted ROA in unprofitable target firms post-acquisition**

This panel presents factors affect target unadjusted ROA post-acquisitions in unprofitable targets. ROA is the operating profits divided by total assets. The dependent variable Π(-i,+j) stands for the unadjusted target ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| TMT Turnover | -0.067 | 0.164 | 0.031 | | | |
| | (0.285) | (0.192) | (0.218) | | | |
| Complete Turnover | | | | -0.004 | -0.005 | 0.014 |
| | | | | (0.107) | (0.071) | (0.078) |
| ROA(-1) | -1.061*** | -1.077*** | -1.022*** | -1.062*** | -1.071*** | -1.022*** |
| | (0.170) | (0.104) | (0.123) | (0.170) | (0.104) | (0.122) |
| Post-deal TMT Size | -0.021 | -0.002 | 0.007 | -0.025 | 0.007 | 0.008 |
| | (0.023) | (0.015) | (0.015) | (0.018) | (0.012) | (0.012) |
| Post-deal TMT Age | -0.020 | -0.012 | 0.004 | -0.020 | -0.012 | 0.004 |
| | (0.012) | (0.008) | (0.009) | (0.012) | (0.008) | (0.009) |
| Post-deal TMT Tenure | 0.014 | -0.037** | -0.038* | 0.014 | -0.037** | -0.038* |
| | (0.025) | (0.018) | (0.020) | (0.025) | (0.018) | (0.019) |
| Ln(Total Asset) | -0.002 | -0.006 | -0.029 | -0.004 | -0.003 | -0.029 |
| | (0.038) | (0.024) | (0.030) | (0.038) | (0.024) | (0.029) |
| Leverage1 | 0.062 | -0.025 | -0.110 | 0.068 | -0.039 | -0.112* |
| | (0.100) | (0.063) | (0.070) | (0.097) | (0.061) | (0.065) |
| Related Industry | -0.079 | -0.020 | 0.069 | -0.079 | -0.016 | 0.067 |
| | (0.104) | (0.068) | (0.075) | (0.105) | (0.069) | (0.077) |
| Constant | 1.021 | 0.847** | 0.269 | 1.042 | 0.814** | 0.250 |
| | (0.631) | (0.400) | (0.439) | (0.634) | (0.405) | (0.439) |
| N | 91 | 76 | 61 | 91 | 76 | 61 |
| r2_a | 0.390 | 0.630 | 0.597 | 0.389 | 0.626 | 0.597 |
| F | 8.185 | 16.97 | 12.12 | 8.173 | 16.70 | 12.13 |
| P | 4.48e-08 | 0 | 1.40e-09 | 4.59e-08 | 0 | 1.39e-09 |

**Table 3-8 Panel C**

**Factors affecting peer-adjusted ROA in profitable target firms post-acquisition**

This panel presents factors affect target peer-adjusted ROA post-acquisitions in profitable targets. ROA is the operating profits divided by total assets. The dependent variable Π(-i,+j) stands for the peer-adjusted target ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| TMT Turnover | 0.040 | 0.002 | 0.050 | | | |
| | (0.106) | (0.099) | (0.123) | | | |
| Complete Turnover | | | | 0.005 | -0.086** | -0.036 |
| | | | | (0.038) | (0.036) | (0.045) |
| ROA(-1) | -0.540*** | -0.501*** | -0.582*** | -0.540*** | -0.533*** | -0.594*** |
| | (0.128) | (0.140) | (0.173) | (0.129) | (0.139) | (0.173) |
| Post-deal TMT Size | -0.010 | 0.008 | -0.010 | -0.009 | 0.011** | -0.007 |
| | (0.007) | (0.006) | (0.008) | (0.006) | (0.005) | (0.007) |
| Post-deal TMT Age | 0.001 | -0.001 | -0.012** | 0.001 | -0.002 | -0.012** |
| | (0.004) | (0.004) | (0.005) | (0.004) | (0.004) | (0.005) |
| Post-deal TMT Tenure | 0.016* | 0.009 | -0.005 | 0.016** | 0.007 | -0.005 |
| | (0.008) | (0.008) | (0.010) | (0.008) | (0.008) | (0.010) |
| Ln(Total Asset) | 0.010 | -0.025** | 0.048*** | 0.011 | -0.027** | 0.048*** |
| | (0.014) | (0.013) | (0.016) | (0.014) | (0.012) | (0.016) |
| Leverage1 | 0.158** | 0.118* | -0.077 | 0.158** | 0.116* | -0.079 |
| | (0.065) | (0.064) | (0.079) | (0.065) | (0.063) | (0.079) |
| Related Industry | 0.033 | -0.048 | -0.052 | 0.032 | -0.041 | -0.049 |
| | (0.037) | (0.035) | (0.045) | (0.037) | (0.035) | (0.045) |
| Constant | -0.205 | 0.215 | 0.316 | -0.209 | 0.281 | 0.329 |
| | (0.237) | (0.223) | (0.280) | (0.239) | (0.222) | (0.280) |
| N | 403 | 330 | 267 | 403 | 330 | 267 |
| r2_a | 0.0654 | 0.0376 | 0.100 | 0.0652 | 0.0542 | 0.102 |
| F | 4.519 | 2.607 | 4.709 | 4.502 | 3.357 | 4.776 |
| P | 2.85e-05 | 0.00894 | 2.11e-05 | 3.00e-05 | 0.00104 | 1.73e-05 |

**Table 3-8 Panel D**
**Factors affecting peer-adjusted ROA in unprofitable target firms post-acquisition**

This panel presents factors affect target peer-adjusted ROA post-acquisitions in unprofitable targets. ROA is the operating profits divided by total assets. The dependent variable Π(-i,+j) stands for the peer-adjusted target ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| TMT Turnover | -0.290 | 0.162 | -0.014 | | | |
| | (0.372) | (0.342) | (0.432) | | | |
| Complete Turnover | | | | -0.029 | 0.094 | 0.094 |
| | | | | (0.139) | (0.124) | (0.152) |
| ROA(-1) | -0.845*** | -1.091*** | -0.806*** | -0.848*** | -1.091*** | -0.791*** |
| | (0.218) | (0.180) | (0.235) | (0.219) | (0.179) | (0.233) |
| Post-deal TMT Size | -0.009 | -0.002 | -0.021 | -0.023 | 0.001 | -0.023 |
| | (0.030) | (0.027) | (0.030) | (0.024) | (0.020) | (0.024) |
| Post-deal TMT Age | -0.026 | -0.008 | 0.001 | -0.027 | -0.006 | 0.003 |
| | (0.017) | (0.014) | (0.019) | (0.017) | (0.014) | (0.019) |
| Post-deal TMT Tenure | -0.007 | -0.063* | -0.069* | -0.006 | -0.060* | -0.070* |
| | (0.032) | (0.032) | (0.038) | (0.033) | (0.032) | (0.038) |
| Ln(Total Asset) | 0.023 | -0.016 | 0.006 | 0.017 | -0.013 | -0.002 |
| | (0.049) | (0.042) | (0.058) | (0.049) | (0.041) | (0.055) |
| Leverage1 | 0.024 | -0.090 | -0.226 | 0.048 | -0.101 | -0.220 |
| | (0.128) | (0.109) | (0.139) | (0.125) | (0.106) | (0.131) |
| Related Industry | 0.085 | 0.224* | 0.168 | 0.089 | 0.212* | 0.151 |
| | (0.133) | (0.118) | (0.149) | (0.135) | (0.119) | (0.151) |
| Constant | 1.048 | 0.613 | 0.475 | 1.189 | 0.486 | 0.450 |
| | (0.891) | (0.781) | (1.009) | (0.882) | (0.772) | (0.989) |
| N | 90 | 74 | 57 | 90 | 74 | 57 |
| r2_a | 0.164 | 0.333 | 0.145 | 0.158 | 0.337 | 0.151 |
| F | 3.187 | 5.564 | 2.184 | 3.095 | 5.638 | 2.248 |
| P | 0.00342 | 2.28e-05 | 0.0455 | 0.00426 | 1.95e-05 | 0.0397 |

**Table 3-9 Panel A**
**Target TMT Turnover and Acquirer's performance**

This panel presents factors affect the unadjusted ROA post-acquisitions in acquirers. ROA is the operating profits divided by total assets. The dependent variable Π(-i,+j) stands for the unadjusted acquirer ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| Target TMT Turnover | -0.035 | -0.062** | -0.030 | -0.013 | -0.054* | -0.024 |
| | (0.028) | (0.028) | (0.039) | (0.028) | (0.029) | (0.040) |
| Acquirer TMT Turnover | | | | -0.185*** | -0.073 | -0.068 |
| | | | | (0.048) | (0.050) | (0.072) |
| Acquirer ROA(-1) | -0.729*** | -0.748*** | -0.855*** | -0.725*** | -0.748*** | -0.856*** |
| | (0.047) | (0.047) | (0.067) | (0.046) | (0.047) | (0.067) |
| Acquirer Post-deal TMT Size | -0.003 | -0.002 | -0.002 | -0.001 | -0.001 | -0.002 |
| | (0.002) | (0.002) | (0.003) | (0.002) | (0.002) | (0.004) |
| Acquirer Post-deal TMT Age | -0.001 | 0.000 | -0.003 | -0.002 | -0.000 | -0.003 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Acquirer Post-deal TMT Tenure | 0.006** | 0.004 | 0.008** | 0.004* | 0.003 | 0.008** |
| | (0.003) | (0.003) | (0.004) | (0.003) | (0.003) | (0.004) |
| Acquirer Ln(Total Asset) | 0.002 | 0.001 | 0.003 | 0.002 | 0.001 | 0.004 |
| | (0.004) | (0.004) | (0.005) | (0.003) | (0.004) | (0.005) |
| Acquirer Leverage1 | 0.027 | 0.032 | 0.034 | 0.023 | 0.031 | 0.033 |
| | (0.025) | (0.027) | (0.038) | (0.025) | (0.027) | (0.038) |
| Related Industry | -0.010 | -0.020 | 0.007 | -0.006 | -0.018 | 0.008 |
| | (0.013) | (0.013) | (0.018) | (0.013) | (0.013) | (0.018) |
| Constant | 0.060 | 0.016 | 0.101 | 0.111 | 0.035 | 0.117 |
| | (0.077) | (0.077) | (0.110) | (0.077) | (0.078) | (0.111) |
| N | 387 | 352 | 289 | 387 | 352 | 289 |
| r2_a | 0.405 | 0.442 | 0.367 | 0.425 | 0.444 | 0.367 |
| F | 33.81 | 35.79 | 21.89 | 32.75 | 32.15 | 19.55 |
| P | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 3-9 Panel B**
**Target Complete TMT Turnover and Acquirer's performance**

This panel presents factors affect the unadjusted ROA post-acquisitions in acquirers. ROA is the operating profits divided by total assets. The dependent variable Π(-i,+j) stands for the unadjusted acquirer ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| Target Complete Turnover | -0.027** | -0.029** | -0.043** | -0.028** | -0.030** | -0.044** |
| | (0.013) | (0.013) | (0.018) | (0.013) | (0.013) | (0.018) |
| Acquirer TMT Turnover | | | | -0.191*** | -0.093* | -0.083 |
| | | | | (0.047) | (0.049) | (0.070) |
| Acquirer ROA(-1) | -0.741*** | -0.758*** | -0.876*** | -0.735*** | -0.758*** | -0.877*** |
| | (0.047) | (0.047) | (0.066) | (0.046) | (0.047) | (0.066) |
| Acquirer Post-deal TMT Size | -0.004 | -0.003 | -0.003 | -0.001 | -0.002 | -0.002 |
| | (0.002) | (0.002) | (0.003) | (0.002) | (0.002) | (0.003) |
| Acquirer Post-deal TMT Age | -0.001 | 0.000 | -0.003 | -0.002 | -0.000 | -0.003 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Acquirer Post-deal TMT Tenure | 0.005** | 0.004 | 0.008** | 0.004 | 0.003 | 0.007* |
| | (0.003) | (0.003) | (0.004) | (0.003) | (0.003) | (0.004) |
| Acquirer Ln(Total Asset) | 0.003 | 0.001 | 0.005 | 0.003 | 0.001 | 0.005 |
| | (0.004) | (0.004) | (0.005) | (0.003) | (0.004) | (0.005) |
| Acquirer Leverage1 | 0.025 | 0.033 | 0.028 | 0.020 | 0.031 | 0.026 |
| | (0.025) | (0.027) | (0.038) | (0.025) | (0.027) | (0.038) |
| Related Industry | -0.009 | -0.019 | 0.011 | -0.004 | -0.017 | 0.013 |
| | (0.013) | (0.013) | (0.018) | (0.013) | (0.013) | (0.018) |
| Constant | 0.070 | 0.014 | 0.112 | 0.130* | 0.041 | 0.134 |
| | (0.077) | (0.077) | (0.109) | (0.077) | (0.078) | (0.110) |
| N | 387 | 352 | 289 | 387 | 352 | 289 |
| r2_a | 0.409 | 0.442 | 0.378 | 0.432 | 0.447 | 0.379 |
| F | 34.39 | 35.80 | 22.87 | 33.64 | 32.47 | 20.52 |
| P | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 3-10 Panel A Target TMT Turnover and Acquirer's performance with interaction variable**

This panel presents factors affect the unadjusted ROA post-acquisitions in acquirers. The dependent variable Π(-i,+j) stands for the unadjusted acquirer ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| Target TMT Turnover | -0.069 | -0.011 | -0.176** | -0.066 | -0.011 | -0.177** |
| | (0.057) | (0.057) | (0.077) | (0.056) | (0.057) | (0.077) |
| Profitable Target Dummy | -0.013 | 0.018 | -0.069** | -0.017 | 0.016 | -0.071** |
| | (0.024) | (0.025) | (0.035) | (0.024) | (0.025) | (0.035) |
| Target TMT Turnover * Profitable Target Dummy | 0.044 | -0.066 | 0.190** | 0.072 | -0.056 | 0.202** |
| | (0.064) | (0.065) | (0.088) | (0.064) | (0.065) | (0.089) |
| Acquirer TMT Turnover | | | | -0.191*** | -0.068 | -0.085 |
| | | | | (0.049) | (0.050) | (0.072) |
| Acquirer ROA(-1) | -0.729*** | -0.749*** | -0.855*** | -0.724*** | -0.749*** | -0.856*** |
| | (0.047) | (0.047) | (0.066) | (0.046) | (0.047) | (0.066) |
| Acquirer Post-deal TMT Size | -0.003 | -0.002 | -0.002 | -0.001 | -0.002 | -0.001 |
| | (0.002) | (0.002) | (0.003) | (0.002) | (0.002) | (0.003) |
| Acquirer Post-deal TMT Age | -0.001 | 0.000 | -0.003 | -0.002 | 0.000 | -0.003 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Acquirer Post-deal TMT Tenure | 0.006** | 0.004 | 0.008** | 0.004 | 0.003 | 0.007* |
| | (0.003) | (0.003) | (0.004) | (0.003) | (0.003) | (0.004) |
| Acquirer Ln(Total Asset) | 0.002 | 0.001 | 0.003 | 0.002 | 0.001 | 0.003 |
| | (0.004) | (0.004) | (0.005) | (0.003) | (0.004) | (0.005) |
| Acquirer Leverage1 | 0.027 | 0.032 | 0.036 | 0.022 | 0.031 | 0.034 |
| | (0.025) | (0.027) | (0.038) | (0.025) | (0.027) | (0.038) |
| Related Industry | -0.010 | -0.019 | 0.007 | -0.006 | -0.018 | 0.009 |
| | (0.013) | (0.013) | (0.018) | (0.013) | (0.013) | (0.018) |
| Constant | 0.073 | -0.001 | 0.168 | 0.127 | 0.018 | 0.189 |
| | (0.081) | (0.081) | (0.115) | (0.080) | (0.082) | (0.116) |
| N | 387 | 352 | 289 | 387 | 352 | 289 |
| r2_a | 0.402 | 0.441 | 0.374 | 0.424 | 0.442 | 0.375 |
| F | 26.99 | 28.65 | 18.20 | 26.86 | 26.28 | 16.69 |
| P | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 3-10 Panel B Target Complete TMT Turnover and Acquirer's performance with interaction variable**

This panel presents factors affect the unadjusted ROA post-acquisitions in acquirers. The dependent variable Π(-i,+j) stands for the unadjusted acquirer ROA performance change between year +j and –i. All financial variables are winsorized at the 1% and 99% level. I provide the significance of t-test whether the regression coefficient is significantly different from zero. Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) | Π(-1,+1) | Π(-1,+2) | Π(-1,+3) |
| Target Complete Turnover | -0.038 | -0.046 | -0.017 | -0.039 | -0.049 | -0.020 |
| | (0.030) | (0.031) | (0.042) | (0.030) | (0.031) | (0.043) |
| Profitable Target Dummy | -0.009 | -0.008 | 0.002 | -0.008 | -0.009 | 0.001 |
| | (0.024) | (0.024) | (0.035) | (0.024) | (0.024) | (0.035) |
| Target Complete Turnover * Profitable Target Dummy | 0.013 | 0.021 | -0.034 | 0.014 | 0.023 | -0.032 |
| | (0.033) | (0.034) | (0.047) | (0.033) | (0.034) | (0.047) |
| Acquirer TMT Turnover | | | | -0.191*** | -0.094* | -0.080 |
| | | | | (0.047) | (0.049) | (0.070) |
| Acquirer ROA(-1) | -0.740*** | -0.756*** | -0.881*** | -0.734*** | -0.756*** | -0.882*** |
| | (0.047) | (0.047) | (0.067) | (0.046) | (0.047) | (0.067) |
| Acquirer Post-deal TMT Size | -0.004 | -0.003 | -0.002 | -0.001 | -0.002 | -0.002 |
| | (0.002) | (0.002) | (0.003) | (0.002) | (0.002) | (0.003) |
| Acquirer Post-deal TMT Age | -0.001 | 0.000 | -0.003 | -0.002 | -0.000 | -0.003 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Acquirer Post-deal TMT Tenure | 0.005** | 0.004 | 0.008** | 0.004 | 0.003 | 0.007* |
| | (0.003) | (0.003) | (0.004) | (0.003) | (0.003) | (0.004) |
| Acquirer Ln(Total Asset) | 0.003 | 0.001 | 0.005 | 0.003 | 0.001 | 0.005 |
| | (0.004) | (0.004) | (0.005) | (0.004) | (0.004) | (0.005) |
| Acquirer Leverage1 | 0.025 | 0.033 | 0.029 | 0.021 | 0.031 | 0.027 |
| | (0.025) | (0.027) | (0.038) | (0.025) | (0.027) | (0.038) |
| Related Industry | -0.009 | -0.019 | 0.012 | -0.004 | -0.016 | 0.014 |
| | (0.013) | (0.013) | (0.018) | (0.013) | (0.013) | (0.018) |
| Constant | 0.078 | 0.020 | 0.114 | 0.136* | 0.047 | 0.136 |
| | (0.080) | (0.081) | (0.114) | (0.080) | (0.081) | (0.115) |
| N | 387 | 352 | 289 | 387 | 352 | 289 |
| r2_a | 0.406 | 0.440 | 0.376 | 0.429 | 0.444 | 0.377 |
| F | 27.40 | 28.55 | 18.34 | 27.41 | 26.50 | 16.81 |
| P | 0 | 0 | 0 | 0 | 0 | 0 |

## Appendix 3-1. The Sampling Period

My sample period ranges from 1 January 2006 to 31 December 2014 for three reasons. First, the FAME subscription of University of Edinburgh Business School, including the website version of FAME database and FAME discs, provides financial statements between 2003 and 2015.[29] Targets and acquirers in my sample must have financial statements in years -1 and +1, where year 0 stands for the acquisition announcement year. Therefore, I restrict the latest acquisitions to be conducted in 2014.

Second, all U.K. listed groups are required to switch to IFRS from January 2005 onwards. Excluding financial statement before 2005 ensures that all financial statements of listed firms are under the constant accounting standards. Private limited firms must meet either International Financial Reporting Standards (IFRS) or U.K. Generally Accepted Accounting Practice (UK GAAP) (GOV.UK, 2014). I exclude acquisitions before 2006 to ensure that targets and acquirers meet consistent reporting requirements (either IFRS or UK GAAP) from years -1 and +3.

Third, all U.K. listed groups are obliged to use acquisition accounting in their accounting reports starting on or after 1 January 2005 (FRS 6 Acquisition and Merger Accounting; IFRS 3 Business Combinations). Although subsidiaries' financial data are not affected directly, acquirers

[29] The website version of FAME database only provides the most recent 10-years financial statements, which ranges from 2006 to 2016. The FAME discs include financial information between 2003 to 2010. I collected my sample between March and June 2016 and no 2016 financial statement are available at the sample collection time.

adopting acquisition accounting will show lower M&A profit than those using merger accounting (Ravenscraft and Scherer, 1988). Excluding financial statement before 2005 ensures that all listed acquirers must adopt the same accounting treatement in the post-acquisition consolidation statement.

Acquisitions conducted within non-listed groups (e.g., private to private acquisition) may allow merger accounting under FRS 6 Acquisition and Merger Accounting. I randomly select 40 private-to-private acquisitions and all private acquirers adopt acquisition accounting which does not allow goodwill amortization. The random selection result of purchase accounting suggests that at least some private acquirers do adopt purchase accounting after 2005.

## Appendix 3-2. The performance measurements: estimated operating cash flows versus accrual accounting-based performance

Literature on M&A operating performance suggests that accrual accounting-based performance measures are less reliable than cash flow measures (Healy et al., 1992; Sudarsanam, 2003; Lin and Switzer, 2001; Ghosh, 2001; Barber and Lyon, 1996; Powell and Stark, 2005). The cash flow measures avoid many of the distortions caused by the discretionary accounting rule choices that companies can make. For example, where acquisition accounting (also called purchase accounting) is applied, the performance is worse than when merger accounting (also called pooling accounting) is applied (Sudarsanam, 2003). Cash flow measures are also conceptually better related to valuation, since the value of a company is the present value of its future cash flows (Healy et al., 1992). The cash flows are not available for most target firms post-acquisition, since FRS 101 Para 8(h) enables a qualifying entity to take advantage of the disclosure exemptions of IAS 7 Statement of Cash Flows. Previous studies estimate operating cash flows using financial information from annual reports (Powell and Stark, 2005).

Powell and Stark (2005) present three operating cash flow (OCF) measurements, which are Lawson's OCF, Healy's OCF and Lin's OCF. I follow the OCF definition in Lin and Switzer (2001) and Ghosh (2001) which is EBITDA. There are 326 firms/observations with EBITDA information available from at least year -1 and +1. However, the values of variables are missing for the other two OCF measures. The accrual accounting-based performance measures do not suffer the missing values in most cash flow measures. Therefore, I apply three accrual accounting-based performance measures and one OCF measurement, which are profit and loss after tax/total assets, profit and loss before Interest/total assets, operating profit/total assets and EBITDA/total assets.

***Performance(-i, +j)= Performance at year +j – Performance at year -i***

Where the performance could be measured as profit and loss after tax/total assets, profit and loss before Interest/total assets, operating profit/total assets and EBITDA/total assets.

I tried to use the other two OCF measures following Lawson (1985) and Healy et al. (1992). However, the variables are missing for most cash flow measures. Due to missing values of variables used in Lawson's and Healy's OCF definitions, there is 1 observation of Lawson's OCF and 12 of Healy's OCF available. Furthermore, I assume that the value of ExGainLoss, TotalOtherIncome, and ExceptionalItems can be zero. However, Depreciation and TotalAmortization cannot be zero for an operational firm. With the additional assumptions, I have 41 firms with Lawson's OCF values available, and 57 firms with Healy's OCF values available.

Lawson (1985) define operating cash flow (OCF), as pre-depreciation profit adjusted for changes in working capital.

***Lawson OCF= Profit & Loss for Period – Ex Gain & Loss + Depreciation + Total Amortisation – Total Other Income – Exceptional Items – deltaWC + Taxation + Interest Paid***

The deltaWC is the change of WC. WC stands for WorkingCapitalneeds accounting data from FAME. *The WorkingCapitalneeds =Stock&WIP* + *Trade Debtors (A)* + *trade creditors (L)*.

***Healy OCF= Operating Profit + Depreciation + Total Amortisation***

## Appendix 3-3. Alternative variable measurements and alternative models

I apply alternative variable measurements in Models 1 and 2, and results hold consistently. The alternative variables are described as follows.

***Pre-deal TMT turnover:*** As target managers involved in the acquisition can choose to resign before the acquisition announcement, I also measure the pre-acquisition TMT turnover, following Franks and Mayer (1996). The pre-acquisition TMT turnover is measured as the proportion of target officers departing during the year prior to the acquisition announcement (Franks and Mayer, 1996; Hermalin and Weisbach, 1988; Kaplan, 1994). Pre-deal TMT turnover is the number of directors resigned between year -1 and 0 divided the number of directors on the board at year -1.

***Adjusted TMT Turnover:*** I also measure the TMT turnover adjusted for officer turnovers in the non-M&A period (adj. TMT turnover) as the post-acquisition TMT turnover during the (0, +1 year) minus the pre-acquisition five-year average TMT turnover during (-5, -1).

***Cash payment and relative size of the deal:*** As a robustness check of analysis in Table 3-7 Panel B, I controll for cash payment and relative size of the acquisition. Similarly, the un-tabulated regression results provide consistent results that the TMT turnover and the complete TMT turnover have no significant impact on the post-acquisition peer-adjusted ROA of target firms. These results are consistent with the results in Table 3-7 Panels B to E and fail to support Hypothesis 3-3 that replacement of target TMT is positively related to post-acquisition performance improvement in targets.

The un-tabulated regression result also shows that cash payment has a significant positive impact on the peer-adjusted target ROA over a period to year +1 post-acquisition (significant at the 5% level), which is consistent with the expectation that cash deals generate higher returns than stock deals (Loughran and Ritter, 1997; Ghosh, 2001; Linn and Switzer, 2001). The un-tabulated regression result also shows that the relative size has a positive impact on the peer-adjusted target ROA over a two-year period to year +2 post-acquisition (significant at the 5% level), which is consistent with the finding in Maksimovic et al. (2011) that acquisitions with larger relative size provide significantly higher announcement returns to the target.

***Subsample of financial targets:*** The un-tabulate regression in a subsample of financial firms provide consistent results with Table 3-7 Panels B to E. In financial firms, the TMT turnover does not have a significant impact on the post-acquisition unadjusted ROA of target firms. The un-tabulate regression of financial targets also shows that the TMT turnover and the complete TMT turnover have no significant impact on the peer-adjusted ROA of target firms post-acquisition. These results fail to support Hypothesis 3-3 that the replacement of TMT has a negative impact on the post-acquisition performance of target firms.

# Chapter 4. Identifying leaders among IPO firms: a content analysis of analyst coverage reports

## 4.1 Introduction

In a coverage report, financial analysts provide quantitative outputs, such as stock recommendations, earnings forecasts and target prices, as well as text content. Francis and Soffer (1997) and Tsao (2002) argue that the textual content merely provides justifications for the quantitative outputs issued contemporaneously. In contrast, Twedt and Rees (2012) classify report sentences into those with positive and negative tone and find that after controlling for earnings forecasts and stock recommendations, the tone of analyst reports has a significant positive impact on price reactions. Huang et al. (2014) also find that the positive or negative tone of text provides greater predictive power economically on earnings growth in the subsequent five years than do quantitative summary measures. These results suggest that text content may reflect predictive information of firm future performance.

In this chapter, I investigate the informativeness of textual information in analyst reports. The main aims of Chapter 4 are firstly to examine whether analysts, at the time of initial coverage release, can accurately identify leader IPO firms with superior post-IPO operating performance and secondly whether the Global Settlement (GS) and underwriter affiliation of analysts affect the accuracy of their leadership identification.

While the prior literature generally examines the informativeness of analysts' quantitative outputs and the sentiment of text, I extend the literature by focusing on firms' leadership position identified by analysts. Using a content analysis approach, I extract sentences including the keyword "lead" from initial coverage reports (ICRs) and pick out sentences where the IPO firm is identified as either an "industry leader" or "partial leader". My study empirically examines the post-IPO performance of firms identified as "leaders". If financial analysts have superior information about the industry or accurately interpret a firm's competitive position, I would expect to observe that leader firms provide superior performance to non-leaders in the same industry.

Prior empirical studies generally suggest that the conflicts of interest arising from a lead-underwriter (LUW) affiliation of analysts affect the informativeness of analysts' research outputs. LUW analysts have been found to be more optimistic in their recommendations than non-LUW analysts (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber et al., 2007). Furthermore, Michaely and Womack (1999) find that firms recommended by LUWs generate lower long-run stock returns than those recommended by non-LUWs. James and Karceski (2006) also find that LUWs tend to provide "booster shots" (stronger coverage) for underwriting firms that perform poorly after the IPOs. Therefore, I expect that a lead-underwriter affiliation could drive analysts to issue more optimistic leadership identification, and that LUW analysts provide less accurate leadership identification than non-LUWs.

On the other hand, some studies find that LUWs are not necessarily more optimistic or less accurate in their forecasts than non-LUWs, Jacob et al. (2008) suggest that LUWs can provide more accurate earnings forecasts than non-LUWs, as LUWs may get inside information from the due-diligence process.

When providing recommendations and earnings forecasts, LUWs need to consider the trade-off between investment and underwriting business. James and Karceski (2006) suggests that LUWs are likely to provide an honest stock valuation to maintain long-term relations with their investing clients, especially large institutional clients. Furthermore, both LUWs and non-LUWs have economic incentives to issue favourable recommendations in an attempt to attract future investment banking revenues (Bradley et al., 2008).

Furthermore, the conflicts of interest arising from a lead-underwriter (LUW) affiliation of analysts are likely to have been affected by regulatory reforms, such as the Global Analyst Research Settlement (GS) in 2003. The GS regulates the quantitative outputs of analysts. For example, analysts are required to disclose the proportion of favourable recommendations to the public (Kandan et al., 2009). While the GS require financial analysts, especially affiliated analysts, to disclose conflicts of interest and limit relations between research and investment banking departments, these regulations do not regulate the text of analyst reports (Kadan et al., 2009; Corwin et al., 2017). It is not clear, therefore, that the GS should have had an impact on the text in analyst reports. This is an open empirical question that is addressed in this chapter. I hypothesize that the GS has not affected the leadership identification reported in the text of analysts' reports.

I also examine the impact of analyst affiliation on the optimism and accuracy of leadership identification sentences of IPO firms in ICRs. Irvine (2003) suggests that ICRs reflect valuable information, as they represent the commitment of resources by financial analysts. Early studies also show that significant positive abnormal stock returns are associated with the initiation of coverage (Peterson, 1987; Kim et al., 1997; Branson et al., 1998). An ICR may contain more information than subsequent coverage reports. McNichols and O'Brien (1997) indicate that ICRs are more accurate than subsequent coverage in terms of the absolute value of the price-deflated forecast error. Similarly, Irvine (2003) finds that ICR recommendations on average generate 0.98% higher abnormal price returns than subsequent recommendations. Using a content analysis approach, I explore ICRs to test whether a firm is identified as a leader (existence), the number of leadership sentences (frequency) per report and the number of leadership sentences per page of report (intensity).

If the text content in ICRs have valuable information on firms' competitive position, leadership identification sentences should be associated with leader firms' future superior performance. However, although some regression coefficients of the industry or partial leader identifications are significant, I find that there is no consistent pattern in the impact of leadership identification on peer-adjusted firm performance within three years post-IPO. The leadership identification may not capture superior peer-adjusted performance but rather reflect the financial characteristics of the firms. Un-tabulated regression results suggest that leader firms generate significantly higher un-adjusted (not adjusted for peer firms' performance) profit margin and net sales than non-leader firms and that leadership identifications are significantly positively correlated to the post-IPO un-adjusted performance. However, matching the firms with peer firms, there is no consistent evidence of leader firms outperform non-leader firms. How analysts identify leader firms are black boxes. If analysts' leadership identification captures the size effect, after controlling for the performance of peer firms with similar pre-listing size and performance, the peer-adjusted operating performance of leaders may not necessarily be superior to that of non-leaders.

Contrary to the expectation that LUWs are optimistic and biased, I find that LUWs are not more likely to identify their IPO clients as leaders than non-LUWs. Although LUWs appear to state more leadership sentences than non-LUWs, LUWs issue longer reports. Analyst affiliation does not affect the number of leadership sentences per page of ICR. Furthermore, neither leader firms identified by LUWs or non-LUWs generate superior peer-adjusted operating performance to non-leader firms. Therefore, it is not clear whether LUWs or non-LUWs are more accurate. One possible explanation is that both LUWs and non-LUWs need to weigh the costs and benefits between providing honest leadership identification to that of maintaining long-term relations with their investing clients and providing more optimistic leadership identification to attract potential underwriting business.

My results suggest that the GS reduced the optimism of leadership identification by financial analysts, especially in partial leader firms. After the GS, analysts tend to be less likely to identify a firm as a partial leader, and reduce the number of partial leadership sentences per report and per page of report. The GS appears to affect analysts' optimism in their leadership identifications, as well as in quantitative outputs. Kandan et al. (2009) observe that analysts are less likely to provide positive recommendations after the GS.

Corwin et al. (2017) find that the GS led to a substantial reduction in the difference between forecast and actual earnings for sanctioned banks. Although the text content in analyst reports is not subject to regulatory requirements, I find that analysts tend to be more conservative in the leadership identification of IPO firms after the GS.

My study extends the prior literature in three ways. First, I investigate the informativeness of analysts' text. According to *Institutional Investor* magazine's annual survey of nearly 3,500 institutional investors since 1998, analysts' report content is consistently ranked as far more important than stock recommendations and earnings forecasts (Huang et al., 2014). However, much less attention has been paid to the information released in analysts' text content (Ramnath et al., 2008; Bradshaw, 2011; Huang et al., 2014).

Prior studies on the role of analysts' information generally focus on the informativeness of analysts' quantitative outputs such as recommendations, target prices and earnings forecasts. Evidence on analysts' research generally shows that quantitative outputs are informative. For example, Michaely and Womack (1999) show that investors on average react positively to a "buy" recommendation and negatively to a "sell" recommendation. Brav and Lehavy (2003) find that investors also show large and significant stock price reactions to target prices and earning forecast announcements. However, these prior studies fail to consider the informativeness of analyst report text, which may help develop a more comprehensive understanding of the role of analysts' information (Bradshaw 2011; Huang et al., 2014).

Text content could include non-financial information which is not yet recognised by the financial reporting system (Stocken and Verrecchia, 2004; Huang et al., 2014). Some sentiment studies suggest that the positive or negative tone of analysts' report text could provide incremental information beyond quantitative outputs (Hirst et al., 1995; Asquith et al., 2005; Twedt and Rees, 2012; Huang et al., 2014). Prior literature suggests that non-financial measures, such as customer satisfaction, brand recognition and corporate social responsibility, determine firm value (Barth et al., 1998; Ittner and Larcker, 1998; Dhaliwal et al., 2011; Huang et al., 2014). Analyst report text may reflect non-financial information undisclosed by managers due to proprietary cost (Verrecchia, 1983). These value determinants can be discussed in the text content of analyst reports.

Second, text content in an ICR could reflect analysts' understanding of IPO firms and industries. Huang et al. (2014) argue that non-financial information on topics such as an industry's competitive landscape is challenging for investors to process. In this case, this text, which is a product of analysts' superior industry knowledge and analytical skills, offers valuable information to investors. Michaely and Womack (1999) discuss that most analysts specialise in an industry. These analysts interpret information and value a firm's position relative to its competitors (Michaely and Womack, 1999). Industry-specific analysts interpret financial performance and deliver their understanding and private information on firms to their customers. Furthermore, an investor could use analysts' research ideas expressed in text content to form his or her own investment decision, instead of simply following a stock recommendation (Huang et al., 2014).

Third, my study extends the research on qualitative analyst outputs with a focus on firms' leadership positions, a "tone" representing analysts' view of the competitive advantages in a firm. A leadership position in an industry likely gives a firm the competitive advantage of scanning opportunities, building on strengths, and committing resources to serve consumers effectively (Golder and Tellis, 1993). Stock recommendations are generally short-lived, but the leadership identification may provide an idea of the firms' long-term competitive advantage and can be expected to help predict long-run operating performance.

My leadership identification is different from the "first-mover" identification in prior literature. Previous studies generally identify leaders as the "first or early mover in the market" based on the order of market entry (Tufano, 1989; Szymanski et al., 1995; Murthi et al., 1996; Kalyanaram and Wittink, 1994), the proportion of market share (Tufano, 1989; Kalyanaram and Wittink, 1994; Szymanski et al., 1995; Murthi et al., 1996), and self-reported pioneers in the PIMS and ASSESSOR databases (Robinson, 1988; Lambkin, 1988; Miller et al., 1989). Golder and Tellis (1993) suggest that these databases classify firms which entered the market first as leaders.

Eisenmann (2006) suggests that these previous studies of first-movers typically focus on the impact of entry order on market share, rather than underlying determinants of firms' competitive advantages. First-mover positions can only provide a firm with opportunities to gain positional advantages (Kerin et al., 1992). The actual competitive advantages of a firm, as argued by Kerin et al. (1992), depend more on product-market contingencies and the actions of all entrants rather than market entry order. In addition, Kerin et al. (1992) and Lieberman and Montgomery (1988) argue that a later entrant may benefit from lower imitation costs, free-rider effects, scope economies, and learning from the pioneer's mistakes. Similarly, firms enjoying “leadership advantage” are not necessarily the “first-mover” but may have resources and capabilities to generate competitive advantages. If financial analysts accurately interpret the competitive advantages, the leadership position identified in the coverage reports could provide valuable information to investors.

The rest of the chapter is organized as follows. Section 4.2 describes the research framework and develops hypotheses. Section 4.3 discusses the sample selection and data collection process and presents the models of leadership identification and firm performance. Section 4.4 examines the accuracy of leadership identification by investigating operating performance of leader and non-leader firms identified by analysts, and examines factors affect the leadership identification. Section 4.5 provides the robustness tests results. Section 4.6 concludes the paper.

## 4.2 Research Framework and Hypothesis Development

### 4.2.1 Leadership position and firm performance

Unlike prior literature on the quantitative outputs in analyst reports, the text content in coverage reports is unstructured data, which varies from report to report. The factors discussed around "leadership position" sentences can be anything from general economic conditions, such as industry prospects, to firm-specific competitive advantages and risks, such as market share, technology, and bargaining power with consumers and suppliers. The content analysis approach transfers these unstructured data into numerical data.[30]

To investigate analysts' view of the leadership position in IPO firms, I extract all sentences mentioning the keyword "lead" from initial coverage reports. The cognate words including "lead", "leads", "leader", "leaders", "leading" and "leadership", are identified with the "lead" keyword. To investigate the tone of analysts' leadership identification, I quantify each leadership position with leader sentences mentioned by analysts in ICRs. I measure the existence of two types of leaders. The existence of leadership position is presented as a dummy variable, which equals one if the IPO firm is identified as a leader at least once in an ICR, and zero otherwise.

Following "first-mover" and "pioneer" studies, I classify analysts' leadership identification into two types:[31]

> *Type 1 leader describes IPO firms that are explicitly identified as "a market leader" or "an industry leader", and*

[30] See Appendix 4-1 for examples of how financial analysts provide evidence to support their leadership identification.

[31] I also identify statements in ICRs referring to firms having the potential to become leaders and firms aiming to become leaders. I classify these as Type 3 (leader-to-be) and Type 4 (leaders aim to be) leaders, which are discussed in Appendix 4-2.

*Type 2 leader describes IPO firms that hold a "partial leading position" in a particular product or asset.*

Type 1 and Type 2 leaders are firms which are perceived by analysts to hold a competitive advantage at the time of the IPOs. Previous studies generally compare first-movers or pioneers to followers in the same product category (Buzzell and Gale 1987; Lieberman and Montgomery, 1988). Similarly, Type 1 leaders are expected to hold competitive advantages over other firms in the same industry or market.

Some studies suggest that a first-mover position could provide some elements of competitive advantage such as cost-efficient innovations or leading products (Tufano, 1989; Golder and Tellis, 1993). Type 2 leaders are expected to capture some competitive advantages, because they do one specific thing really well or in an innovative way. For example, Type 2 leaders are identified by analysts to have cost-efficiency, leading technology, or a leading product. Although there is no prior study examining the difference between market leaders and "partial leaders", I expect market leaders to have stronger competitive advantages and influences in a market than partial leaders.

My leadership position is different from the first-mover or pioneer position discussed in prior literature. Prior studies generally suggest that innovative pioneers, self-reported first-movers and future S&P 500 ranking firms capture some kind of benefits arising from the competitive position of firms (Urban et al., 1986; Lieberman and Montgomery, 1988; Tufano, 1989; Colak and Gunay, 2011). Tufano (1989) investigates the compensation of 58 financial innovators during 1974-1986 and finds that these innovative investment banks capture a larger share of underwritings business compared to followers with imitative products. These innovative pioneers do not charge higher “monopoly” prices before imitative products appear, and even charge lower price than imitative rivals. Tufano (1989) conjectures that innovators enjoy lower costs of trading, underwriting, and marketing, although there is no direct examination of cost data. The innovative pioneer appears to capture market share, but it is not clear whether the pioneer can generate superior performance to that of followers.

Early studies investigating the self-reported pioneers in PIMS (Profit Impact of Market Strategy) and Assessor databases generally suggest that pioneering manufacturing firms enjoy first-mover advantages, such as long survival time and large market share (Robinson and Fornell, 1985; Urban et al., 1986; Lambkin, 1988; Robinson, 1988; Miller et al., 1989; Robinson et al., 1992). However, Golder and Tellis (1993) state that the self-reported pioneer positions could be exaggerated due to respondents’ self-perception bias, as 52% of firms in the PIMS database classify themselves as pioneers, including multiple competitors in the same product category (Buzzell and Gale 1987; Lieberman and Montgomery, 1988). Golder and Tellis (1993) suggest that these databases identify not competitive leaders but early movers, as the pioneers are classified based on the year a firm entered the market.

First-movers may not hold a competitive position. Colak and Gunay (2011) find that IPOs firms that are later included in the S&P 500 index are not the first to issue in their own industry. IPOs of future S&P 500 firms tend to strategically delay their IPO processes and issue in the mid-stages of an expanding IPO cycle, which suggests that "first movers" may not necessarily be the best performing firms and first movers and leaders are not necessary the same thing (Colak and Cunay, 2011). Furthermore, it is hard for investors to predict future S&P 500 IPOs. Thus, the leadership identification in Colak and Gunay (2011) does not help investors to make any profit-making strategy before firms get into the S&P 500 index.

Evidence from earlier studies suggests that first movers and pioneers are not necessarily the ones to capture the competitive advantages of a leader. If an early follower learns from the mistakes of the first-mover and dominates the market, it would be inappropriate to classify the first-mover as "an industry leader" (Golder and Tellis, 1993). My leadership identification reflects the analysts' view of competitive advantages in the IPO firm, which is arguably more likely to capture leadership advantages than would a first-mover identification.

If financial analysts accurately interpret competitive advantages and correctly identify the leadership position of an IPO firm, these "leader" firms should experience superior operating performance in my event window of three years. This leads to the first two hypotheses:

> ***Hypothesis 4-1a: IPO firms identified as Type 1 leaders generate better operating performance post-listing than non-leader firms.***

***Hypothesis 4-1b: IPO firms identified as Type 2 leaders generate better operating performance post-listing than non-leader firms.***

#### 4.2.2 Conflicts of interest and regulatory reforms

The Dotcom crash in 2000 raised the concern that analysts' biased research outputs could mislead investors (Gao et al., 2013). Changes in the regulatory environment such as the Global Analyst Research Settlement (GS) aimed to address analysts' conflicts of interest (Kadan et al., 2009). The purpose of the GS was to require strict disclosure of knowable conflicts of interest by securities analysts, to substantially limit relations between research and investment banking departments, and to regulate analysts to provide more meaningful research (Kadan et al., 2009).

However, the regulations may have started to have an impact earlier than the GS in 2003. Changes in the regulatory environment began with the Regulation on Fair Disclosure, implemented in October 2000; NASD rule 2711 and NYSE rule 472, enacted in May 2002; the Sarbanes–Oxley Act of 2002 (SOX), enacted on July 30, 2002; and the Settlement and Regulation Analysts Certification (RAC) and Global Analyst Research Settlement (GS), both implemented in 2003 to address analyst conflicts of interest (Kadan et al., 2009). For example, Barber et al. (2007) find that after the May 2002 implementation of NASD Rule 2711, which requires the disclosure by rating agencies the distributions of their ratings to the public, the proportion of buy recommendations started to decline.

Before regulatory reforms, prior empirical studies generally suggested that due to conflicts of interest, LUWs appear to provide more optimistic and less accurate forecasts than non-LUWs (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber et al., 2007). Michaely and Womack (1999) investigate 360 recommendations of 200 IPOs issued in 1990 and 1991 and find that LUW ratings are more optimistic than non-LUW ratings. Michaely and Womack (1999) find that stocks recommended by LUWs perform worse than stocks recommended by non-LUWs prior to, at the time of, and subsequent to the recommendation date. James and Karceski (2006) also find that IPO firms with a strong coverage from LUWs perform poorly post-IPO.

Dechow et al. (2000) investigate common equity offerings issued during 1981-1990 and find that firms with a higher level of earnings growth forecast by LUWs suffer lower stock returns and greater forecast errors, especially compared to firms covered by non-LUWs. Dechow et al. (2000) find that underwriting fees are positively correlated to the level of earnings growth forecasts of LUWs. Therefore, LUWs are likely to provide overly optimistic forecasts compared to non-LUWs.

Furthermore, Barber et al. (2007) find that independent analysts' buy portfolios significantly outperform LUWs' buy portfolios and their hold/sell portfolios significantly underperform those of LUWs during the February 1996-June 2003 period, especially in the early 2000s bear market. Barber et al. (2007) argue that LUWs' underperformance and outperformance compared to independent analysts could both partially be due to LUWs' reluctance to downgrade stocks issued during the early 2000s bear market. Lin et al. (2005) use duration models of the time between an equity issue and the first downgrade and provide downgrading evidence consistent with Barber et al. (2007). Therefore, LUWs' buy (hold/sell) recommendations were likely to be less (more) informative than those of independent analysts in the early 2000s bear market. This evidence suggests that before the GS, LUWs perhaps suffered conflicts of interest between their fiduciary responsibility to investing clients and their sales incentive to underwriting clients.

Studies of regulatory reforms suggest that the implications of regulations tend to affect the optimism/pessimism tone of analysts and improve the accuracy of analysts' forecasts (Barniv et al., 2009; Kadan et al., 2009; Corwin et al., 2017). Barniv et al. (2009) investigate analysts' behaviour during 1993-2005, and find that after the regulatory reforms, analysts' earnings forecasts are more positively correlated to firms' future stock returns. The correlations between analysts' stock recommendations and analysts' earnings-based valuation change from negative in the pre-regulation period to zero or even positive after the regulatory reforms (Barniv et al., 2009).

Furthermore, Kadan et al. (2009) investigate analysts' stock recommendations in the pre-regulation (November 2000-August 2002) and post-regulation periods (September 2002-December 2004) and find that both LUWs and non-LUW analysts are less likely to issue favourable recommendations in the post-GS period than pre-GS. Kadan et al. (2009) find that LUWs were 22% more likely to issue favourable recommendations compared to non-LUWs before the GS, but as likely to provide favourable recommendations as non-LUWs after the GS.

Corwin et al. (2017) further explore the investment banks-firm affiliation relationship with M&As and issues of equity and debt by listed firms during 1996-2009. They investigate a large sample of 216,242 recommendation observations involving 4,628 analysts and 5,111 stocks. Corwin et al. (2017) find that the GS led to a substantial reduction in analyst affiliation bias[32] for sanctioned banks, but did not affect non-sanctioned banks. Corwin et al. (2017) find that analysts at both types of banks exhibit significant affiliation bias in the pre-GS period, which is consistent with early empirical studies that LUWs are more optimistic and less accurate in the forecasts than non-LUWs in the pre-GS period (e.g., Michaely and Womack, 1999).

On the other hand, regardless of the impact of regulatory reforms, some studies suggest that LUWs are neither necessarily more optimistic nor less accurate in their forecasts than non-LUWs (Aggarwal et al., 2002; Bradley et al., 2004; Reuter, 2006; James and Karceski, 2006; Jacob et al., 2008; Bradley et al., 2008). Jacob et al. (2008) investigate recommendations during 1995-2003 and suggest that LUWs provide more accurate earnings forecasts compared to non-LUWs, as LUWs may get inside information from the due-diligence process. Furthermore, to maintain long-term relations with their investing clients, especially large institutional clients, LUWs are likely to make an effort to provide an honest appraisal of the stock's value (James and Karceski, 2006).

[32] Affiliation bias is measured as the relative forecast accuracy of the analyst which is the absolute value of the difference between the analyst's most recent forecast of fiscal-year earnings and actual earnings, scaled by stock price the year before (Corwin et al., 2017).

In addition, both LUWs and non-LUWs have economic incentives to issue favourable recommendations in an attempt to attract future investment banking revenues (Bradley et al., 2008). Bradley et al. (2004) compare stock recommendations issued by LUW analysts and non-LUW analysts from January 2001 to mid-July 2002, and find that although LUW recommendations are modestly more favourable in magnitude, they are neither statistically nor economically different from non-LUW recommendations. Groysberg et al. (2011) find that analysts are not compensated for the accuracy of forecasts but are compensated for actions that increase brokerage and investment-banking revenues. Therefore, both LUW and non-LUW analysts may be likely to issue more favourable recommendations to attract potential underwriting business and earn higher personal compensation. Analysts may also be more likely to align their forecasts with that of management to attract potential investment-banking business (Das et al., 1998; Lim, 2001; Libby et al., 2008; Mayew, 2008).

These discussions above suggest that the impact of investment banking affiliation on the tone and accuracy of analysts' research outputs is inconclusive. I investigate whether the affiliation position affect the accuracy of leadership identification and analysts' optimism in leadership identification with the following hypotheses:[33]

[33] I also conduct a robustness test to examine whether LUWs or non-LUWs provide more accurate leadership identification when they have contradictory opinions of an IPO firm's leadership position. This is discussed in Appendix 4-3.

***Hypothesis 4-2a: Firms identified as leaders are less likely to outperform if the leadership advantage is identified by LUWs.***

***Hypothesis 4-2b: Firms identified as leaders are more likely to outperform if the leadership advantage is identified by non-LUWs.***

***Hypothesis 4-3a: LUWs are more likely to identify an IPO firm as a leader than non-LUWs are.[34]***

As discussed in Section 4.1, although prior studies of the regulatory changes generally suggest that the GS reduced optimistic recommendations and forecasts in analyst reports, whether the GS affected the qualitative text content has not, to the best of my awareness, been investigated in prior studies. Bradley et al. (2008) conjecture that analysts' text content is not subject to the same regulatory restrictions that limit the information content of earnings forecasts and stock recommendations. Alternatively, financial analysts may still be cautious in their tone after the GS, and less optimistic in the leadership identification. I extend the literature by controlling for the impact of the GS on the optimism of analysts.

***Hypothesis 4-4a: The Global Settlement does not affect analysts' likelihood of identifying a firm as a leader.[35]***

[34] I also investigate whether LUWs are more frequently or intensely to identify an IPO firm as a leader than non-LUWs are. Hypotheses 4-3b and 4-3c are discussed in Section 4.5 for.

[35] I also investigate whether the Global Settlement affect analysts' frequency and intensity of leadership identification. Hypotheses 4-4b and 4-4c is discussed in Section 4.5.

## 4.3 Data and Methodology

### 4.3.1 Data

I obtain my IPO sample from the Thomson SDC New Issue database. Following Banerjee et al. (2016), I exclude closed-end funds, REITs, acquisition companies, depository institutions (banks, savings and loans), limited partnerships, American depositary receipts (ADR), unit offers (packages of shares and warrants), best effort issues and auctions. Furthermore, I require that IPO firms operating performance data is available from the Center for Research in Securities Prices (CRSP) and that trading starts no later than ten days after the IPO date (Banerjee et al., 2016). These exclusions result in an initial sample of 1,850 completed IPOs issued between 1 January 1999 and 31 December 2012. The sample period covers both economic boom and bust periods.

I eliminate IPOs without ICRs within six-months after the IPOs, following Breton and Taffler (2001) and Das et al. (2006). The six-months cutoff period is chosen for two reasons. First, six-months is longer than the quiet period and thus covers ICRs issued by LUWs after the quiet period.[36] Second, Barber et al. (1999) show that the average time between sequential recommendations for a firm is around 200 days. Therefore, a cutoff period of six-months is likely to capture most ICRs.

ICRs are manually collected from Investext (via Thomson One). I manually search for “initiating coverage” reports released within six months of the IPO.

[36] The SEC requires a quiet period in which insiders and affiliated underwriters are restricted from issuing reports on newly issued firms.

When an IPO firm has duplicate ICRs issued by the same analyst on the same date, I compare the content and keep the longer ICR. I exclude 299 IPO firms that have no initial coverage reports (ICRs) in Investext and 37 IPO firms that do not have ICRs within six months of the IPO.[37] The remaining 1,514 IPOs have 4,068 ICRs in Investext.

Furthermore, as ICRs are analysed by statistical software R, I exclude 47 ICRs that cannot be read by R.[38] My final sample of IPOs consists of 1,501 IPOs going-public during 1999-2012 that have 4,021 ICRs issued by 180 analysts within six months of IPOs.

As stated in Section 4.2.1, I extract all sentences including the keyword “lead” from initial coverage reports. The cognate words, including “lead”, “leads”, “leader”, “leaders”, “leading” and “leadership” are identified with the “lead” keyword. I manually check 33,384 sentences with the keyword “lead” in the final sample of 4,021 ICRs and exclude 23,558 sentences mentioning the phrases “lead to” (6,740), leading person (2,946), lead/main products or assets or departments in the IPO firm (626), “lead” metal (703), “leads/referral” (205), “lead times” (479), IPO firms used to be a leader (25), un-lead (51), “misleading” (512), leadership advantage in the IPO competitors (11,271), “leader to be” (638) and “leader aim to be (628)”.[39] The remaining 8,560 sentences mention

[37] As stated in Asquith et al. (2006), some LUWs could not be included in my study because their analyst reports are not provided to Investext (e.g., Goldman Sachs). In my initial sample of 1850 IPOs, there are 299 IPOs where no analyst reports are provided to Investext. I realise the potential bias arising from the uncovered investment banks, and discuss this further in Section 4.4.1. In the remaining 1,551 IPOs having initial coverage reports in Investext, initial coverage reports of 37 IPOs were issued more than six months after the IPO and are excluded from the analysis.

[38] For example, the report is in a picture format instead of text format. Or, the text in an ICR is encrypted and cannot be copied and pasted.

[39] Type 3 (leader-to-be) and Type 4 (leaders aim to be) leaders are discussed in Appendix 4-2.

the IPO firm's "leadership advantage" and the sentences are classified into two types of "leader" IPOs.[40] There are 859 sentences mentioning Type 1 leaders and 7,701 mentioning Type 2 leaders.

I use the software R to generate information from the ICRs, which includes IPO firm names, financial analyst firm names, dates of ICR release, the number of pages in an ICR, the number of sentences in an ICR and stock recommendations.

Following Banerjee et al. (2016), I collect IPO data from Thomson SDC, firms' financial data from Compustat (in millions of U.S. dollars), price data from the CRSP, data on firm foundation years from the Field-Ritter dataset, and underwriter reputation rankings from Jay Ritter's webpage. The variable measurements and motivations for these variables are discussed further in Section 4.3.2 below.

### 4.3.2 Methodology

I use an OLS regression model to test whether firms identified as Type 1 or Type 2 leaders generate superior on-going operating performance post-IPO and whether LUWs or non-LUWs provide more accurate leadership identification. Model 1 use the firm-level data of leadership identification, which means that each IPO firm is observed once in my sample. An un-tabulated robustness test uses the report-level data of leadership identification and controls for the clustering of IPO firms, and regression results hold. The

[40] I manually check the renamed IPO firms and make sure both the previous name and the current name are recognised as the same IPO firm across different databases (SDC and Investext).

following regression Model 1 examines the accuracy of analysts' leadership identification:

$$\begin{aligned} Model\ 1\text{: } Firm\ Performance_{(t+p)} \\ &= \beta_0 + \beta_1 * Leadership\ Identification \\ &+ \beta_2 * Recommendation \\ &+ \beta_3 * Firm\ Financial\ Characteristics_{t-1} \\ &+ \beta_4 * Firm\ nonfinancial\ Charactristics \\ &+ \beta_5 * Market\ Condition_t + \beta_6 * IPO\ Charactristics + \ \varepsilon \end{aligned}$$

Model 1 investigates hypotheses 4-1 and 4-2. I control for firm characteristics, market conditions, IPO characteristic and ICR characteristics on the unadjusted and peer-adjusted performance of IPO firms, following previous literature.

Model 2 examines whether the affiliation position and the GS affect analysts' leadership identification, which tests hypotheses 4-3 and 4-4. I use logit regression in Model 2 as the leadership existence is a 0-1 dummy variable. As an IPO firm can be observed several times in the report-level leadership identification, the Model 2 regressions control for the clustering of IPO firms.

$$\begin{aligned} Model\ 2\text{: } Leadership\ Identification \\ &= \beta_0 + \beta_1 * GS\ dummy + \beta_2 * Affiliation \\ &+ \beta_3 * Affiliation * GS\ dummy \\ &+ \beta_4 * Firm\ Financial\ Characteristics_{t-1} \\ &+ \beta_5 * Firm\ nonfinancial\ Charactristics \\ &+ \beta_6 * Market\ Condition_t \ + \beta_7 * ICR\ Charactristics + \ \varepsilon \end{aligned}$$

Following Jain and Kini (1994) and Banerjee et al. (2016), I focus on the peer-adjusted profit margin (EBITDA/total assets) of IPO firms, as a leader firm should take advantage of its leadership position to earn positive profits (Lieberman et al., 1988; Barber et al., 2001).[41] EBITDA is earnings before interest, taxes, depreciation and amortization. Peer firms are listed for at least three years (36 months) matched in the same industry (3-digit SIC code), similar firm size (sales revenue at t-1 between 50% and 200% of IPO firm size), and the closest performance (EBITDA at t-1), and the peer firm must have a stock price of at least $5 during the fiscal year that precedes the IPO.[42] For the full sample of 1,501 IPOs, I find peer firms for 1,010 IPOs. IPO firms without a peer are generally small firms.

For firms with negative earnings the year prior to going public, an alternative performance measure is the peer-adjusted net sales. Jain and Kini (1994) observe that IPO firms with declining operating profits (compared to their pre-listing profits) experience high growth in sales and capital expenditures post-listing. Ritter and Welch (2002) also observe the changing composition of IPO issuers and note a growing number of firms with negative earnings the year prior to going public, especially in the technology industries. Therefore, for example, a technology leader firm may not be expected to earn positive earnings for years after going public, but could raise money from NASDAQ and use the capital to expand operations and product market share.

[41] Peer-adjusted growth of profit margin and net sales have also been analysed as alternative measures of firm performance. The results are discussed in Appendix 4-4.
[42] The peer firm of a profitable IPO firm must be positive. I relax the restriction of positive EBITDA for unprofitable IPO firms.

I control for the impact of ICR characteristics, the firm's pre-IPO financial and non-financial characteristics, and economic conditions on analysts' tone of leadership identification and IPO firms' performance. ICR characteristics include recommendation, analyst affiliation and the regulatory changes.[43] Firm pre-IPO financial characteristics include firm size and leverage. Firm non-financial characteristics include firm age at the time of IPO, the existence of venture capital or private equity investment in the IPO firm at the time of IPO, and the reputation of underwriters. The economic conditions control for the market timing of IPOs and industry effect of firm performance. The expected impact of each factor on the leadership identification and operating performance is discussed below:

***Recommendation*** has three ratings in my sample of ICRs: +1 stands for a "buy" recommendation, 0 stands for a "hold" recommendation and -1 stands for a "sell" recommendation.[44] I expect that financial analysts are more likely to identify leaders in a "buy" firm than in a "sell" firm and a positive correlation between stock recommendation and IPO firms' operating performance.

***Affiliation*** captures the lead-underwriting relation between analysts and IPO firms. I classify an ICR as LUW affiliated if it is issued by an investment bank involved as one of the top four leading underwriters in an IPO; otherwise, an ICR is classified as a non-LUW ICR. For an IPO firm, the affiliation dummy equals one if the IPO firm was covered by at least one lead underwriter from

[43] I also control for investment bank fixed effect of investment banks in the regressions, as discussed in Section 4.5.
[44] Kadan et al. (2009) find that following the GS, most leading investment banks moved from the traditional five-tier rating system to a three-tier rating system. I use a three-tier rating system as my sample covers initial coverage reports issued before and after the GS.

Investext within six months after the IPO, and zero otherwise. As discussed in Section 4.2.2, analyst affiliation could have a positive or negative impact on the likelihood and accuracy of leadership identification.

The ***GS*** dummy equals one if an ICR was issued after the Global Settlement in 2003, and zero otherwise. Hypothesis 4-4 expects no impact of the GS on analysts' leadership identification. The GS only directly regulated the quantitative information of ICRs. Therefore, it is not clear whether GS should have had an impact on the leadership identification. The GS should not affect firm performance but could affect analysts' valuation of firm performance via leadership identification. For example, if the GS regulates analysts to provide more accurate leadership identification, I would observe that leader identification has a larger impact on firm performance in the post-GS than pre-GS period.

***Ln(firm age)*** and ***ln(TA)*** are the natural log of the number of years between when the firm was founded and the IPO issue date and the natural log of the value of total assets of the IPO firm in the financial reports before the IPO issue, respectively. Banerjee et al. (2016) suggest that smaller/younger IPOs are more likely to have valuable growth opportunities than larger/older IPO firms, as smaller/younger IPOs are more likely to be early-stage firms. Therefore, I expect a negative relationship between operating performance changes and size/age.

***Leverage*** is defined as long-term debts divided by total assets. The leverage ratio of a firm could affect its corporate governance and indirectly affect its operating performance post-IPO. Renneboog (2000) suggests that high leverage is likely to be associated with a higher level of monitoring and more frequent interventions by creditors as the risk of financial distress increases.

These pre-IPO financial characteristics such as firm age, firm size (total assets) and leverage could also affect the leadership identification as firms with a solid financial position are expected to perform well in the future and these firms are more likely to be identified as leaders.

***VC*** and ***PE*** are dummy variables which equals 1 if an IPO firm has a venture capital or private equity backing, respectively. Prior literature suggests a positive correlation between sponsorship and stock returns (Coakley et al., 2007; Banerjee et al., 2016). Similarly, I expect a positive correlation between VCs and PEs' sponsorship and operating performance. The intuition is that screening activities of reputable sponsors are more likely to lead to improved operating performance as a prestigious sponsor may protect their reputation by sponsorship IPOs that have relatively better long-run stock performance (Chemmanur and Fulghieri, 1994; Coakley et al., 2007). For example, Jain and Kini (1995) suggest that VC sponsorship has a positive impact on firm's stock market performance. Similarly, I control for the effects of PE backing with the dummy variable PE (Banerjee et al., 2016).

***Underwriters' reputations*** (UW reputation) is a nine-point scale ranking following Loughran and Ritter (2004). An investment bank with a ranking of nine is treated as a high-prestige bank; one with a lower ranking is treated as a low-prestige bank. When there is more than one lead underwriter involved in an IPO, following Banerjee et al. (2016), I use the highest-ranking of the underwriters. UW reputation are expected to be positively correlated to IPO firms' stock performance (Michaely and Shaw, 1994; Carter et al., 1998). Measuring the underwriters' reputation with the size of capital, Michaely and Shaw (1994) show that IPOs handled by prestigious underwriters tend to have higher excessive stock returns within two years post-listing than IPOs handled by smaller underwriters. Similarly, using a four-tier reputation ranking, Carter et al. (1998) find that IPOs handled by more prestigious underwriters suffer less from underperformance relative to the market over a three-year holding period. Therefore, I expect a positive correlation between UW reputation and firm operating performance.

***Hot market*** is a dummy variable which equals 1 if the IPO was issued in rising IPO cycles (Banerjee et al., 2016).[45] Banerjee et al. (2016) suggest that IPO firms issued in a hot or cold market have different qualities, as high-growth firms tend to lead the IPO cycle and low-growth firms tend to wait for the certainty over economic conditions. In contrast, Helwege and Liang (2004) observe that IPOs issued in hot and cold markets have similar post-IPO operating performance.[46]

[45] Rising IPO cycles are identified as periods during which the 4-quarter moving average of IPO volume has risen for at least three quarters in a row (Banerjee et al., 2016).
[46] I also have two alternative measures of market timing, which are bubble period and early mover following Banerjee et al. (2016). This is discussed in Appendix 4-4.

## 4.4 Results

### 4.4.1 Descriptive statistics: characteristics of ICRs and IPO firms

Table 4-1 provides the annual frequency of ICRs written by LUW and non-LUW analysts. Both IPOs' and ICRs' frequencies show a cyclical nature. On average, 14% of LUW ICRs identify the industry leadership position in an IPO firm, while non-LUW ICRs show a proportion of 13% Type 1 leaders. There is a sharp drop in Type 1 and Type 2 leader identifications after the GS introduced in 2003. The proportion of Type 1 leader ICRs drops from more than 20% in 2001-2002 to 6% in 2003 according to LUW analysts. Similar trends are observed in non-LUW ICRs for Type 2 leaders. Unlike the conjecture in Stocken and Verrecchia (2004) and Bradley et al. (2008), although there are no explicit rules on the text content of analysts' reports, analysts appear to identify firms' leadership position less often after the GS.

Type 2 leadership is characterised by a looser definition of competitive advantage than Type 1. My proportion of Type 2 leaders (57% in LUW reports and 60% in non-LUW reports) is similar to the proportion of self-reported pioneers in the PIMS database (52%) (Buzzell and Gale, 1987; Lieberman and Montgomery, 1988). Overall, financial analysts identify Type 1 leaders in 13.4% of ICRs and Type 2 leaders in 59.1% of ICRs (un-tabulated).

[Insert Table 4-1 here]

Table 4-2 Panel A describes the leadership identification by analysts in ICRs. LUWs appear not to be more likely to identify a firm as a Type 1 or 2 leader than non-LUWs. LUWs tend to mention Type 1 leaders significantly more frequently than non-LUWs, but LUWs are not significantly more intense in the discussion of the leadership they identified than non-LUWs. Although LUWs on average use 0.05 more Type 1 leader sentences per ICR than non-LUWs, the result is driven by the report length. LUWs appear to have the same number of Type 1 leadership sentences per page of ICR (intensity) as non-LUWs.

Table 4-2 Panel A shows that ICRs by LUWs are on average 6.5 pages longer than those by non-LUWs. The longer reports either reflect a significant amount of firm-specific and industry knowledge obtained by LUW analysts from the due-diligence and book building processes (Michaely and Womack, 1999), or reflect LUW's effort to reduce conflicts of interest with more text to support or justify recommendations (Huang et al., 2014). In my sample, LUWs are slightly more likely to make a favourable recommendation than non-LUWs. Overall, the descriptive statistics suggest that LUWs are not more optimistic than non-LUWs in leadership identification.

[Insert Table 4-2 here]

Table 4-2 Panel A also shows that 13% of ICRs on both profitable and unprofitable IPO firms are Type 1 leaders and 56% are Type 2 leaders. Table 4-2 Panel A shows that analysts tend to issue longer reports for profitable firms than for unprofitable firms, and that unprofitable firms on average are more highly recommended than profitable firms.

Table 4-2 Panel B shows that the GS significantly reduced analyst optimism, including leadership identification and recommendation, in both LUWs and non-LUWs. Although the proportion and frequency of Type 1 leaders have not changed, both LUWs and non-LUWs use longer reports after the GS, and the intensity of Type 1 leadership identification significantly decreases in LUW reports. Furthermore, the existence, frequency and intensity of Type 2 leadership identification are significantly reduced after the GS. The GS subgroup results indicate that Type 1 “industry or market leader” is used more rigidly by financial analysts than Type 2 leader identification, as a stricter regulation environment after the GS does not reduce the proportion and frequency of Type 1 leadership identification.

After the GS, both LUWs and non-LUWs tend to increase their report length significantly, which suggests that analysts began to provide more explanation and information to investors. Table 4-2 Panel B also shows that the proportion of favourable recommendation reduced significantly after the GS, in ICRs by both LUWs and non-LUWs. Type 1 leader identification could provide incremental value beyond recommendations, especially in the post-GS period when analysts significantly reduced their favourable recommendations.

Table 4-3 presents the post-listing performance, pre-listing firm characteristics of IPO firms and firm-level ICR characteristics. The firm-level leadership identification is the average of the report-level leadership identification for each IPO firm. Table 4-3 shows that both profitable and unprofitable IPO firms tend to generate significantly positive peer-adjusted profit margin and net sales, which suggests that IPO firms experience higher growth in profit and net sales compared to peer firms that are listed for more than three years. As discussed in Section 4.3.2, profitable firms and unprofitable firms appear to have different short- to- medium-term performance aims. Unprofitable IPO firms, such as technology leaders, may raise money from the stock market and use the capital to expand their product market share. Therefore, in the following discussions, I focus on profit-related performance measurements in profitable IPOs and sales-related performance measurements in unprofitable IPOs.

[Insert Table 4-3 here]

Table 4-3 shows that the firm characteristics are different between profitable and unprofitable IPO firms. Unprofitable IPO firms are generally younger and smaller than profitable IPOs. On average, unprofitable IPO firms are 16.5 years younger and total assets are $863 million less than profitable IPO firms. These results are consistent with the evidence in Loughran and Ritter (2004) that an increasing number of young and unprofitable companies went public during the internet bubble period. The median differences provide consistent results to the mean difference.

Table 4-3 shows that unprofitable IPO firms have a lower proportion of long-term debts to total assets compared to profitable IPO firms. The average leverage ratio is 13.4% in unprofitable IPO firms, which is significantly lower than the 27.4% in profitable IPO firms (significant at the 1% level). However, this result is driven by some extreme leverages in IPO firms. The median difference in leverage shows that profitable IPO firms have 4.9% lower leverage than unprofitable IPO firms, which is consistent with Rajan and Zingales' (1995) finding that small firms generally have higher leverage than large firms.

Table 4-3 also shows that the differences of firm-level leadership identification between profitable and unprofitable IPOs are generally consistent with those differences of report-level leadership identification in Table 4-2 Panel A. In Section 4.4.2, I further use the report-level leadership identification in Model 1, to examine the accuracy of leadership identification in profitable and unprofitable IPO firms separately.[47]

Table 4-4 presents the correlations between each variable. The leadership identifications appear to not be significantly correlated to the peer-adjusted performance. Table 4-4 shows that the GS is negatively correlated to Type 2 leadership identification, which is consistent with the result in Table 4-1 that analysts are less optimistic to identify Type 2 leadership position. Table 4-4 shows that LUW coverage is positively correlated to Type 1 leadership existence and frequency, which suggests that LUWs are more likely to and more frequently to identify IPO firms as Type 1 leaders than non-LUWs. Furthermore, Table 4-4 finds that IPO firms with VC sponsorship or a high UW ranking are more likely to be identified as leaders.

[Insert Table 4-4 here]

Table 4-4 also shows that, on average, smaller/younger IPOs appear to have lower profit margins but higher net sales, which is consistent with the finding in Banerjee et al. (2016) that smaller/younger IPOs are more likely to be early-stage firms and have valuable growth opportunities than their larger/older IPO

[47] As a robustness check, I also use the report-level leadership identification in Model 1 to examine the accuracy of leadership identification, controlling for the cluster of ICRs for each IPO firm. This is discussed in Appendix 4-4.

counterparts (Banerjee et al., 2016). Underwriter's ranking and the sponsorship of venture capital (VC) are positively correlated with the peer-adjusted net sales of IPOs (significant at the 1% level), with is consistent with the findings in Carter et al. (1998) and Jain and Kini (1995). Carter et al. (1998) suggests that IPOs handled by more prestigious underwriters earn higher stock returns within three years post-listing than IPOs handled by less prestigious underwriters. Jain and Kini (1995) find that VC sponsorship has a positive impact on firms' stock market performance.

### 4.4.2 The accuracy of analysts' leadership identification

This section provides the regression results of factors driving post-IPO peer-adjusted performance and investigates whether firms identified as leaders by analysts outperform non-leaders. Section 4.4.2.1 discusses the analyses related to Hypotheses 4-1a and 4-1b. Section 4.4.2.2 discusses the analyses related to Hypotheses 4-2a and 4-2b.

#### 4.4.2.1 Leadership positions and post-listing performance

As I discussed in Section 4.3.2, profitable firms and unprofitable firms appear to have different short- to- medium-term performance aims, although, presumably, firms with rapid sales growth may still hope to deliver high profits eventually. I focus on profit-related performance in profitable IPOs and sales-related performance in unprofitable firms.

Table 4-5 investigates whether leadership identification by analysts accurately predicts IPO firms' peer-adjusted performance post-listing. Table 4-5 provides the regression results with the firm-level leadership identification, which means that each IPO firm is observed once in my regression sample. If Type 1 and 2 leaders are likely to hold competitive positions at the time initial coverage reports are issued, the identified competitive advantages could help to predict future superior operating performance. As the correlation coefficients of control variables are generally consistent with the finding in Table 4-5 Panel A, I simply show the correlation coefficients of Type 1 and 2 leadership identification in the following panels. The full tables are available upon request.

Table 4-5 provides the regression results of peer-adjusted profit margin and net sales. Table 4-5 Panel A Columns 1-3 show that in profitable IPOs, Type 1 leaders do not generate superior peer-adjusted profits compared to non-Type 1 leaders. Table 4-5 Panel B Columns 1-3 show that in profitable IPOs, Type 2 leadership position has a significant positive impact on post-listing peer-adjusted profits over a two-year period to year +2 (significant at the 5% level). However, there is no consistent pattern of the impact of leadership identification on profit margins within three years post-IPO. Similarly, Table 4-5 Panels C and D Columns 1-3 shows that although Type 1 and Type 2 leadership positions have some positive impact on the peer-adjusted net sales of unprofitable IPO firms, there is no evidence that firms with Type 1 or Type 2 leadership position consistently generate superior post-IPO performance to firms without leadership identification. Therefore, evidence from Type 1 and Type 2 leadership position fails to support Hypotheses 4-1a and 4-1b in profitable IPOs.[48]

[48]As a robustness check of analysis of firm-level leadership identification in Table 4-5, I examine the accuracy of leadership identification with the report-level leadership identification and controlling for the clustering by IPO firms. In the report-level data, each IPO firm could be observed several times in

[Insert Table 4-5 here]

Table 4-5 also examines other factors that affect the post-listing peer-adjusted performance of IPO firms. Table 4-5 Panel A Columns 1-3 suggests that leadership identification by analysts provides information beyond stock recommendations, as leader firms sometimes generate higher peer-adjusted profit margins or net sales post-listing than non-leaders, while recommendation appears to have no impact on the post-listing performance in neither profitable nor unprofitable firms. Irvine (2003) suggests that, although stock recommendations can predict stock returns, this is generally short-lived and appears not to affect post-listing operating performance.

Table 4-5 Panel A Columns 1-3 suggest that VC sponsorship have a significant positive impact on profitable firms' profit margin changes over the period to year +1 (significant at the 1% level). This result is consistent with the findings in previous studies that having a prestigious sponsorship appears to have a significant positive impact on stock returns (Chemmanur and Fulghieri, 1994; Michaely and Shaw, 1994; Jain and Kini, 1995; Carter et al., 1998; Coakley et al., 2007).

#### 4.4.2.2 Lead underwriter affiliation and post-listing performance

I find that analysts' leadership identification tends not to accurately predict leader firms with superior on-going performance post-IPO. A possible explanation is that analyst affiliation affects the accuracy of leadership

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my regression sample, as there could be more than one analyst issuing ICRs for each IPO firm. With the report-level data of leadership identification, the un-tabulated regressions generally provide results consistent with Table 4-5 (firm-level leadership identification) on the impact of leadership identification on firms' peer-adjusted performance post-listing.

identification. Prior literature generally suggests that LUWs appear to provide more optimistic and less accurate forecasts than non-LUWs (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber et al., 2007). I investigate whether IPO firms identified as leaders are more likely to outperform non-leaders if the leadership advantage is identified by LUWs or non-LUWs. I use aggregated leadership identification by LUWs (non-LUWs) to examine the accuracy of LUWs' (non-LUWs') leadership prediction. Analyses in Table 4-5 Panels A to D Columns 4-9 do not compare the accuracy of leadership identification by LUWs and non-LUWs, but test them separately in Hypotheses 4-2a and 4-2b.[49]

Table 4-5 Panels A and B Columns 4-6 show that in profitable IPO firms, Type 1 and 2 leaders identified by LUWs generally do not enjoy significantly higher peer-adjusted profit margins than firms not identified as leaders by LUWs. These results support Hypothesis 4-2a that firms identified as leaders are less likely to outperform if the leadership advantage is identified by LUWs. Table 4-5 Panels A and B Columns 7-9 show Type 1 and Type 2 leadership identification by non-LUWs generally do not have a significant positive impact on post-listing peer-adjusted profits in profitable firms, which fails to support Hypothesis 4-2b that firms identified as leaders are more likely to outperform if the leadership advantage is identified by non-LUWs

Similarly, Table 4-5 Panels C and D Columns 4-6 show that in unprofitable firms, Type 1 and 2 leadership identification by LUWs do not consistently affect

[49] I also investigate the accuracy of LUWs versus non-LUWs when they have contradictory opinions of leadership positions of an IPO firm. This is discussed in Appendix 4-3.

the peer-adjusted net sales post-listing. These results support Hypothesis 4-2a. Furthermore, Type 1 and Type 2 leader firms identified by non-LUWs do not tend to consistently generate higher peer-adjusted net sales than firms not identified as leaders by non-LUWs (Table 4-5 Panels C and D Columns 7-9), which fails to support Hypothesis 4-2b.

Overall, results in Table 4-5 Panels A to D Columns 4-9 suggest that neither LUWs nor non-LUWs provide leadership identifications which accurately predict firms with constantly superior on-going performance within three years post-listing, which is consistent with the findings in Table 4-5 Panels A to D Columns 1-3 that analysts generally fail to provide informative leadership identification to pick out IPO firms with superior post-listing operating performance. These results are consistent with the finding in prior studies that LUWs are not necessarily less accurate in their forecasts than non-LUWs (Aggarwal et al., 2002; Bradley et al., 2004; Reuter, 2006; James and Karceski, 2006; Jacob et al., 2008; Bradley et al., 2008).

Analyst affiliation could have a positive or negative impact on the accuracy of leadership identification. On one hand, LUWs could have information advantages over non-LUWs, with a significant amount of firm-specific information obtained from the due-diligence and book building processes (Michaely and Womack, 1999; Jacob et al., 2008). On the other hand, the conflicts of interest theory suggests that the analyst affiliation could lead LUWs to provide more favourable opinions and reduce the quality of LUWs' research outputs (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber et al., 2007).

Moreover, analyst affiliation may affect LUWs as well as non-LUWs. As discussed in Section 4.2.2, the compensation structure of analysts and the relation between investment banks and investing clients, could affect the accuracy of leadership identification by LUWs and non-LUWs. For example, if analysts are not compensated for the accuracy of forecast but are compensated for actions that increase brokerage and investment-banking revenues, LUWs may not have the incentive to take advantage of their insider information, if any, to enhance the accuracy of their leadership identification (Groysberg et al., 2011). Furthermore, both LUWs and non-LUWs may need to weigh the cost of issuing honest leadership identification to maintain long-term relations with their investing clients, and the benefit of issuing more optimistic and less accurate leadership identification to attract future underwriting business (Das et al., 1998; Lim, 2001; James and Karceski, 2006; Libby et al., 2008; Mayew, 2008). Non-LUWs may be as likely as LUWs to align their forecasts to those of management and issue favourable forecasts to attract potential future underwriting business (Das et al., 1998; Lim, 2001; Libby et al., 2008; Mayew, 2008; Groysberg et al., 2011).

In my study, neither LUWs nor non-LUWs tend to provide informative leadership identification, at least not as reflected in the IPO firms' three-year post-IPO performance. LUWs appear to not have, or are unable to use, the private information of their clients to issue more accurate leadership identification than non-LUWs. Both LUWs and non-LUWs may need to consider the trade-off between providing more optimistic and less accurate coverages to attract future underwriting business and more accurate forecasts to maintain investing business.

If the uninformative leadership identification in LUWs are driven by optimistic forecasts, I would be more likely to observe that LUWs are more likely to provide leadership identifications than non-LUWs. If both LUWs and non-LUWs tend to issue optimistic forecasts to attract future underwriting business, I would be more likely to observe that LUWs tend to have the same tone of leadership identification as non-LUWs. In Section 4.4.3, I investigate whether analyst affiliation tend to affect the optimistic leadership identifications.

As discussed in Section 4.2.2, the GS aimed to address analysts' conflicts of interest and require analysts to provide more meaningful research (Kadan et al., 2009). If the GS requirements are implemented effectively after 2003, I would be more likely to observe that LUWs are more optimistic before the GS than non-LUWs and that LUWs and non-LUWs tend to have the same tone of firm leadership after the GS.

My study does not rule out other possible explanations of uninformative leadership identification by analysts, in terms of identify leader firms with superior operating performance. For example, the leadership identification in ICRs may capture the size effect of IPO firms and therefore, leader firms identified by financial analysts are not necessary to provide superior performance to non-leader firms after controlling for firm size.

### 4.4.3 Factors affecting analysts' leadership identification

Table 4-6 investigates whether analyst affiliation and the GS affect the tone of analysts' leadership identification at the report-level. Table 4-6 also presents the conditions under which an IPO firm is more likely to be identified as a leader by financial analysts and discusses factors that affect the frequency and the intensity of leadership positions.

[Insert Table 4-6 here]

Table 4-6 Columns 1 and 2 show that LUW analysts do not tend to be more likely to identify an IPO firm as a leader than non-LUW analysts. My results do not support Hypothesis 4-3a that LUWs are more optimistic than non-LUWs in the leadership position of IPO firms.

Table 4-6 Column 2 shows that generally, the GS had a significantly negative impact on analysts' tone of Type 2 leadership identification, which fails to support Hypotheses 4-4 that the GS does not affect leadership identification. After the GS, financial analysts tend to reduce the probability of Type 2 leadership identification in ICRs. My results go against the conjecture in Stocken and Verrecchia (2004) and Bradley et al. (2008), that regulatory changes do not affect the text content of coverage report as there are no explicit rules on the text content of analyst reports. The GS, although not directly regulating analysts' text outputs, appears to have affected financial analysts, making them tend to be more conservative in their tone of leadership identification.

Table 4-6 Column 1 also shows that the existence of Type 1 leadership identification is not affected by the GS, which supports Hypothesis 4-4a. If investors try to make investment decisions based on the analysts' tone of leadership identification, an industry leader or market leader (Type 1 leader) tends to be less affected by regulatory changes than other types of leader. One possible explanation is that the phrase Type 1 "industry or market leader" is used more rigidly by financial analysts than Type 2 leader identification. Therefore, a stricter regulation environment after the GS does not reduce the existence of Type 1 leadership identification, which supports Hypothesis 4-4a.

The Type 2 leadership identification contains contingent advantages that may or may not hold after IPOs. Analysts reduce the identification of Type 2 leaders after the GS, which fails to support Hypothesis 4-4a. The regulatory changes require analysts to provide more meaningful outputs; therefore, the contingent advantages are less likely to be mentioned in ICRs.

To examine whether my LUW coverage coefficients are driven by my sample, which is dominated by post-GS ICRs, I investigate analysts' leadership identification before and after the GS. Table 4-6 Columns 4-6 reveal no evidence of LUWs suffering from the affiliation optimism bias, either before or after the GS.

Table 4-6 Columns 4-6 suggest that LUWs and non-LUWs tend to have the same existence and intensity of firm leadership before and after the GS, which indicates that even before the GS implementation, LUWs and non-LUWs appear to have the same level of conflicts of interest. These results suggest that, before the GS are implemented effectively to limit the conflicts of interest in financial analysts, both LUWs and non-LUWs may consider the trade-off between providing more optimistic and less accurate coverages to attract future underwriting business and more accurate forecasts to maintain investing business.

Overall, I find that leadership identification tends not to pick out leader firms with superior on-going performance post-listing and that the uninformativeness of leadership identification does not appear to be attributable to LUWs being excessively optimistic compared to non-LUWs. As how analysts identify a firm as an industry or partial leader are black boxes, the leadership identification may capture some firm characteristics other than the potential to generate superior performance. Table 4-6 suggests that large firms are more likely to be identified as Type 1 and 2 leaders than smaller firms, and that large firms are mentioned as a leader more frequently in the report and with greater intensity. These results are consistent with my discussion in Section 4.3.2 that firm size proxies for firm quality, and a large firm is more likely to hold a leadership position (Type 1 and Type 2 leaders) than small firms.

Furthermore, the leadership identification may reflect firm characteristics drawing attention from prestigious sponsorship. My results show that VC sponsorship and the ranking of LUWs, positively affects Type 2 leader identification (Table 4-6 Columns 2, 4 and 6). There are at least two possible explanations for these results. First, financial analysts value the sponsorship and market conditions when analysing non-contingent leadership positions. For Type 1 leaders, the industry or market leading position is more obvious for

Type 2 leaders, and VC or LUW sponsorship does not provide additional competitive advantage information to financial analysts. For Type 2 leaders, sponsorship provides an additional signal, alongside the Type 2 leadership position, of the competitive position of IPO firms to financial analysts. Second, VCs and analysts are likely to make their own analyses of the IPO firms' competitive advantage, and VCs may find firms with Type 2 leadership characteristics attractive investment targets. However, it is not clear whether VCs rely on analysts' classifications or whether they reach their own independent conclusions with regard to the attractiveness of the firms for investments. As the sponsoring, underwriting and analysing decision processes are largely black boxes, my study cannot identify whether the first or second explanation leads to the positive correlations between sponsorship and Type 2 leadership.

## 4.5 Robustness tests

The results in Section 4 are based on the existence of leadership identification, which is a dummy variable. As discussed in Section 4.3.1, investment banks not-found in Investext could bias my classification of IPO firms not covered by LUWs. For example, Goldman Sachs was highly active in the LUW role, and as a LUW arguably would be more likely to identify leadership position among its clients. Therefore, the existence of leadership position in Table 4-2 Panel A are likely to be downward biased.

I also measure the frequency and intensity of Type 1 and Type 2 leaders. The frequency of leadership position refers to the number of leadership sentences per ICR. The intensity of leadership position refers to the number of leadership sentences scaled by the number of pages in an ICR. For these two measurements, however, the impacts, if any, of some investment banks been missing from Investext, on the frequency of leadership sentences and the leadership intensity, are unclear. I examine the impact of LUW affiliation and the GS on analysts' frequency and intensity of leadership identification. This leads to the following four hypotheses:[50]

> ***Hypothesis 4-3b: LUWs mention leadership advantages more frequently than non-LUWs do.***
>
> ***Hypothesis 4-3c: LUWs mention leadership advantages more intensely than non-LUWs do.***
>
> ***Hypothesis 4-4b: The Global Settlement does not affect analysts' frequency of leadership identification.***
>
> ***Hypothesis 4-4c: The Global Settlement does not affect analysts' intensity of leadership identification.***

When the leadership identification is the frequency of leadership position (a count variable) or intensity of leadership position (a continuous and non-negative variable), Model 2 uses Poisson regression and censored Tobit regression, respectively. The regression coefficients of the intensity and frequency of leadership identification are still consistent with those in Tables 4-5 and 4-6.

[50] These hypotheses are extensions to Hypotheses 4-3a and 4-4a presented in Section 4.2.2.

The un-tabulated results show that neither frequency nor intensity of leadership sentences provide consistently significant impact on the post-listing performance. These results fail to support Hypotheses 4-1a and 4-1b that leader firms identified by analysts generate superior performance to non-leaders. Furthermore, the results hold with leadership identification by either LUWs or non-LUWs, which fails to support Hypotheses 4-2a and 4-2b. Analyst affiliation tends not to affect the accuracy of leadership identification, with regard to the two proxies of leadership frequency and intensity.

I also investigate factors affecting analysts' leadership frequency and intensity. The un-tabulated results show that although LUWs tend to mention Type 1 and Type 2 leadership sentences more often than non-LUW analysts, as discussed in Section 4.4.1, these results are driven by the longer reports used by LUWs. After controlling for the impact of report length, LUWs do not mention leadership advantage more intensely than non-LUWs. These results support Hypothesis 4-3b and fail to support Hypothesis 4-3c. Generally, the results of leadership intensity are consistent to the findings with the existence of leadership identification.

The un-tabulated results suggest that generally, the GS had a significantly negative impact on analysts' frequency and intensity of Type 2 leadership identification, which fails to support Hypotheses 4-4b and 4-4c. These results are consistent to the findings in Table 4-6 that the GS does not affect leadership identification. For example, after the GS, financial analysts tend to reduce Type 2 leadership frequency by 0.215 sentences per ICR (significant at the 1% level). Analysts also reduce the intensity of Types 1 and 2 leadership identification in ICRs after the GS.

Furthermore, un-tabulated results suggest that LUW coverage is positively correlated to Type 1 and Type 2 leadership frequencies during both the pre-GS and post-GS periods. For example, before the GS, LUWs' ICRs include significantly more Type 1 sentences than non-LUWs', with the coefficient of 0.4, significant at the 1% level. However, after the GS, LUWs are likely to mention 0.2 more Type 1 sentences per ICR than non-LUWs, which is significant at the 5% level. Thus, both the coefficient and the significance of the LUW coverage are reduced after the GS. After controlling for report length, the un-tabulated results show that LUWs are not more likely to mention leaders more intensely in the pre-GS period compared to in the post-GS period. In both pre- and post-GS period, LUWs tend not to be more optimistic than non-LUWs.

These results suggest that LUWs and non-LUWs tend to have the same existence and intensity of firm leadership before and after the GS, which indicates that even before the GS implementation, LUWs and non-LUWs appear to have the same level of conflicts of interest. These results suggest that, before the GS are implemented effectively to limit the conflicts of interest in financial analysts, both LUWs and non-LUWs may consider the trade-off between providing more optimistic and less accurate coverages to attract future underwriting business and more accurate forecasts to maintain investing business.

In my sample, the frequency and intensity of leadership position are often not observed. To model the non-negative dependent variables with clumping at zero, I also provide models with Zero-inflated Poisson regressions and Cragg's Tobit regressions and these un-tabulated regression results are consistent with the findings which uses Poisson and Tobit regression models.

## 4.6 Conclusions

This paper examines how financial analysts identify IPO firms' competitive position in initial coverage reports, and to what extent leadership identification by financial analysts accurately predicts post-listing performance. My results show that Type 1 (industry or market leader) and Type 2 (firms with partial leadership position) leaders tend not to generate superior performance compared to non-leaders. Furthermore, the inaccurate forecast does not appear to be due to the conflicts of interest in LUWs. I find that LUWs do not tend to provide more optimistic leadership identification than non-LUWs. Both LUWs and non-LUWs appear to not provide a leadership identification which consistently identify firms generating superior on-going performance.

One possible explanation is that financial analysts, both LUWs and non-LUWs, need to weigh the costs of providing honest leadership identification to maintain long-term relations with their investing clients and the benefits of providing more optimistic leadership identification to attract potential underwriting business. Furthermore, the leadership identification tends to pick out firms with large size or VC and LUW sponsoring.

Analysts' leadership identification, excepting industry or market leader identification, is affected by the regulatory changes such as the GS. My results show that the GS significantly reduced the existence, frequency and intensity of Type 2 leadership identification. These results are consistent with findings in Kadan et al. (2009) that the GS reduced the proportion of positive recommendations. Type 1 leadership identification tends to be less affected by the GS than other types of leaders, as financial analysts appear to use the Type 1 "industry leader" identification more rigidly than the Type 2 "partial leader" identification. The GS affected ICR statements on leadership positions, but did not appear to make statement more informative to identify leaders with superior performance.

**Table 4-1**

**Breakdown of initial coverage reports by year and affiliation of analyst firms**

Type 1 and Type 2 stand for the proportion of initial coverage reports (ICRs) mentioning different types of leadership advantage by analyst firms. Type 1 stands for industry leaders and market leaders; Type 2 stands for a leadership position in specific area, such as technology leaders, cost leaders, and having a market-leading product. I split the ICRs based on the analyst affiliation. Within six-months after IPOs, leading underwriter (LUW) affiliated-analysts issued 1,169 ICRs while non-LUW analysts issued 2,852 ICRs. The ICRs are split into before and after the Global Settlement (GS) based on the ICR release year.

| | All ICR reports | | | Reports written by LUW analysts | | | | Reports written by non-LUW analysts | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | NO of IPOs | NO of ICRs | page | NO of ICRs | Type 1 | Type 2 | page | NO of ICRs | Type 1 | Type 2 | Page |
| 1999 | 319 | 707 | 17 | 154 | 14% | 71% | 18 | 553 | 12% | 69% | 17 |
| 2000 | 298 | 689 | 18 | 154 | 15% | 67% | 21 | 535 | 16% | 61% | 17 |
| 2001 | 54 | 130 | 19 | 26 | 27% | 58% | 23 | 104 | 14% | 66% | 18 |
| 2002 | 48 | 116 | 22 | 24 | 21% | 58% | 25 | 92 | 14% | 63% | 22 |
| 2003 | 41 | 98 | 22 | 32 | 6% | 38% | 22 | 66 | 8% | 58% | 21 |
| 2004 | 113 | 301 | 21 | 86 | 10% | 49% | 25 | 215 | 11% | 49% | 20 |
| 2005 | 111 | 304 | 25 | 107 | 10% | 47% | 29 | 197 | 8% | 46% | 23 |
| 2006 | 122 | 331 | 27 | 106 | 8% | 52% | 32 | 225 | 11% | 48% | 25 |
| 2007 | 118 | 356 | 27 | 107 | 14% | 50% | 31 | 249 | 18% | 62% | 25 |
| 2008 | 11 | 51 | 26 | 10 | 10% | 80% | 29 | 41 | 22% | 63% | 25 |
| 2009 | 37 | 124 | 28 | 44 | 23% | 64% | 31 | 80 | 16% | 60% | 27 |
| 2010 | 74 | 203 | 28 | 94 | 14% | 44% | 32 | 109 | 10% | 59% | 25 |
| 2011 | 72 | 286 | 30 | 95 | 20% | 63% | 35 | 191 | 12% | 63% | 28 |
| 2012 | 83 | 325 | 30 | 130 | 16% | 62% | 35 | 195 | 11% | 59% | 27 |
| Before GS | 719 | 1,639 | 18 | 356 | 16% | 67% | 20 | 1,283 | 14% | 65% | 17 |
| After GS | 2,283 | 2,382 | 27 | 813 | 14% | 53% | 31 | 1,569 | 12% | 56% | 24 |
| All | 1,501 | 4,021 | 23 | 1,169 | 14% | 57% | 28 | 2,852 | 13% | 60% | 21 |

**Table 4-2**

**Panel A. Descriptive Statistics of leadership identification in initial coverage reports**

This panel provides the leadership identification by LUW and non-LUW analysts in initial coverage reports. Existence1 is a dummy variable equals one if the IPO firm is identified as a Type 1 leader at least once in an ICR, and zero otherwise. Daylag is the number of days between the IPO issue date and the ICR release date. Recommendation equals 1 for "buy", 0 for "hold" and -1 for "sell" stock recommendation. Page is the number of pages per ICR. Sents is the number of sentences per ICR. Difference is the mean difference of variables between ICR by LUW analysts and ICR by non-LUW analysts. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Full Sample | | ICR by LUWs | | ICR by non-LUWs | | Difference between LUWs and non-LUWs | Unprofitable IPOs | | Profitable IPOs | | Difference between unprofitable and profitable IPOs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VARIABLES | N | mean | N | mean | N | mean | t-test | N | mean | N | mean | t-test |
| Existence1 | 4021 | 0.134 | 1169 | 0.143 | 2852 | 0.130 | 0.013 | 1698 | 0.131 | 2323 | 0.136 | -0.005 |
| Existence2 | 4021 | 0.591 | 1169 | 0.574 | 2852 | 0.598 | -0.024 | 1698 | 0.601 | 2323 | 0.584 | 0.018 |
| Daylag | 4021 | 56.028 | 1169 | 41.533 | 2852 | 61.970 | -20.437*** | 1698 | 56.651 | 2323 | 55.712 | 0.939 |
| Recommendation | 3988 | 0.799 | 1159 | 0.819 | 2829 | 0.791 | 0.027* | 1698 | 0.837 | 2323 | 0.747 | 0.090*** |
| Page | 4021 | 23.116 | 1169 | 27.666 | 2852 | 21.251 | 6.416*** | 1698 | 21.176 | 2323 | 25.548 | -4.372*** |
| Sents | 4021 | 1729.198 | 1169 | 2122.935 | 2852 | 1567.811 | -555.124*** | 1698 | 1407.137 | 2323 | 2159.154 | -752.017*** |

**Panel B. Descriptive Statistics of leadership identification breakdown by the GS**

| | Full Sample | | | ICR by LUW analysts | | | ICR by non-LUW analysts | | |
|---|---|---|---|---|---|---|---|---|---|
| VARIABLES | before GS | after GS | Difference | before GS | after GS | Difference | before GS | after GS | Difference |
| Existence1 | 0.142 | 0.128 | 0.015 | 0.160 | 0.135 | 0.025 | 0.137 | 0.124 | 0.014 |
| Existence2 | 0.655 | 0.547 | 0.107*** | 0.671 | 0.531 | 0.140*** | 0.650 | 0.556 | 0.094*** |
| Daylag | 55 | 56 | -1 | 36 | 44 | -8*** | 61 | 63 | -2 |
| Recommendation | 0.949 | 0.696 | 0.253*** | 0.986 | 0.745 | 0.241*** | 0.938 | 0.670 | 0.268*** |
| Page | 18 | 27 | -9*** | 20 | 31 | -11*** | 17 | 24 | -7*** |
| Sents | 1318 | 2012 | -694*** | 1465 | 2411 | -946*** | 1277 | 1805 | -528*** |

**Table 4-3**
**Descriptive Statistics of leadership identification breakdown by pre-listing profitability**

This panel provides the descriptive statistics of firm characteristics and peer-adjusted performances. Pages (Sents) stands for the average number of pages (sentences) in an initial coverage report (ICR). Coverage is the total number of analysts that issued initial coverage reports within six-months after IPOs. Leverage (debt/TA) stands for the pre-IPO year long-term debt (debt) divided by total assets. Adj_Profit+1 (Adj_Sale+1) is the peer-adjusted EBITDA/TA (net sales) at year +1. Existence1 is a dummy variable equals one if the IPO firm is identified as a Type 1 leader at least once in an ICR, and zero otherwise. Daylag is the number of days between the IPO issue date and the ICR release date. Recommendation equals 1 for "buy", 0 for "hold" and -1 for "sell" stock recommendation. Page is the number of pages per ICR. Sents is the number of sentences per ICR. Difference (mean) is the mean difference of variables between unprofitable and unprofitable IPOs. Difference (median) is the difference of variables' median value between unprofitable and unprofitable IPOs. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Unprofitable IPOs | | | Profitable IPOs | | | Difference | Difference |
|---|---|---|---|---|---|---|---|---|
| VARIABLES | N | mean | median | N | mean | median | mean | median |
| Firm age | 696 | 7.099*** | 5 | 801 | 23.635*** | 13 | -16.536*** | -8*** |
| Total Assets | 696 | 295.219 | 30.692 | 801 | 1158.532*** | 224.330 | -863.313*** | -193.638*** |
| Leverage | 695 | 0.134*** | 0.244 | 796 | 0.274*** | 0.195 | -0.140*** | 0.049*** |
| EBITDA/TA | 696 | -0.544*** | -0.356 | 779 | 0.150*** | 0.115 | -0.693*** | -0.471*** |
| Pages | 696 | 20.547*** | 19 | 805 | 24.227*** | 23 | -3.680 | -4*** |
| Sents | 696 | 1376.520*** | 893.5 | 805 | 1999.545*** | 1517 | -623.025 | -623.5*** |
| Coverage | 696 | 2.504*** | 2 | 805 | 3.071*** | 3 | -0.566*** | -1*** |
| NO. of UWs | 681 | 1.314*** | 1 | 786 | 1.852*** | 2 | -0.538*** | -1*** |
| Adj_Profit-1 | 422 | 0.042*** | 0.040 | 577 | 0.001 | 0.001 | 0.041*** | 0.039*** |
| Adj_Profit+1 | 371 | -0.313 | 0.082 | 530 | 0.211*** | 0.051 | -0.523** | 0.031 |
| Adj_Profit+2 | 315 | 1.144*** | 0.387 | 474 | 0.436*** | 0.086 | 0.707*** | 0.301** |
| Adj_Profit+3 | 259 | 1.349*** | 0.184 | 428 | 0.797*** | 0.122 | 0.552* | 0.062 |
| Adj_Sale-1 | 430 | -6.162*** | -2.151 | 587 | -26.548 | -11.480 | 20.386** | 9.329** |
| Adj_Sale+1 | 374 | 59.378*** | 23.661 | 535 | 91.070*** | 46.548 | -31.693** | -22.887** |
| Adj_Sale+2 | 318 | 58.698*** | 13.506 | 476 | 110.856*** | 49.397 | -52.158 | -35.891*** |
| Adj_Sale+3 | 263 | 73.015*** | 18.8568 | 431 | 155.334*** | 62.507 | -82.320*** | -43.651*** |
| Existence1 | 696 | 0.244*** | 0 | 805 | 0.263*** | 0 | -0.019 | 0 |
| Existence2 | 696 | 0.718*** | 1 | 805 | 0.774*** | 1 | -0.056** | 0 |
| Daylag | 696 | 52.320*** | 41 | 805 | 54.174*** | 41 | -1.854 | 0 |
| Recomm | 696 | 0.862*** | 1 | 805 | 0.786*** | 1 | 0.076*** | 0 |
| Page | 696 | 20.547*** | 19 | 805 | 24.227*** | 23 | -3.680*** | -4*** |
| Sents | 696 | 1376.520*** | 893.510 | 805 | 1999.545*** | 1517.000 | -623.025*** | -623.490 |

**Table 4-4 Correlation Matrix**

This table provides the pairwise correlation coefficients of leadership identifications, IPO firm characteristics, timing characteristics and post-listing firm performance. All variables are the firm-level data. Existence1 (Existence2) is the overall existence of Type 1 (Type 2) leadership positions. GS is the dummy of the Global Settlement. LUW is the dummy which equals one if the ICR was issued by LUW. Inage and lnTA is the natural log of the value of firm age and total assets pre-IPO. Leverage (EBITDA/TA) stands for the pre-IPO year long-term debt (EBITDA) divided by total assets. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise following Banerjee et al. (2016). VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriter(s). Adj_Profit+1 (Adj_Sale+1) is the peer-adjusted EBITDA/TA (net sales) at year+1. Adj_Profit1 (Adj_Sale1) is the peer-adjusted profit (net sales) between year -1, +1. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | Adj_Profit+1 | Adj_Profit+2 | Adj_Profit+3 | Adj_Profit-1 | Adj_Sale+1 | Adj_Sale+2 | Adj_Sale+3 | Adj_Sale-1 | Existence1 | Existence2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Existence1 | 0.04 | -0.01 | 0.01 | 0.03 | 0.09** | 0.08** | 0.06 | 0.01 | 1 | 0.29*** |
| Existence2 | 0.01 | -0.02 | -0.05 | 0.09*** | 0.05 | 0.01 | 0.05 | 0.03 | 0.29*** | 1 |
| GS | 0.02 | -0.12*** | -0.07 | -0.04 | 0.05 | 0.04 | 0.01 | -0.05 | 0.01 | -0.11*** |
| LUW | 0 | -0.04 | 0 | -0.01 | 0.03 | 0.01 | 0 | -0.02 | 0.15*** | 0.04 |
| lnage | 0.04** | -0.07 | -0.06 | -0.03 | 0.1*** | 0.14*** | 0.15*** | -0.02 | 0.09*** | 0.09*** |
| lnTA | -0.01 | -0.11*** | -0.1** | -0.14*** | 0.25*** | 0.29*** | 0.33*** | -0.1*** | 0.12*** | 0.07*** |
| Leverage | 0.03 | -0.14*** | -0.09** | -0.04 | 0.09** | 0.05 | 0.04 | 0.03 | -0.01 | -0.07* |
| VC | -0.05 | 0.07 | 0.03 | 0.01 | -0.14*** | -0.13*** | -0.12*** | 0.02 | -0.02 | 0.02 |
| Hot Market | -0.05 | -0.05 | 0 | 0 | -0.06* | -0.07* | -0.02 | -0.01 | -0.05* | 0.01 |
| LUW rank | -0.04 | -0.07* | -0.07* | 0.04 | 0.14*** | 0.13*** | 0.13*** | -0.02 | 0.13*** | 0.18*** |

**Table 4-5 Panel A Factors affecting peer-adjusted profit margin post-IPO in profitable IPOs, firm-level Type 1 leadership identification**

Output of Model 2 OLS regression is reported for profitable IPOs. Dependent variables are the peer-adjusted profit (profit) at year +1, +2 and +3. Type 1 is the dummy of overall existence of Type 1 leadership. In Columns 1-3, Type 1 leaders are identified by all analysts. In Columns 4-6, Type 1 leaders are identified by LUW analysts. In Columns 7-9, Type 1 leaders are identified by non-LUW analysts. The pre-IPO financial characteristics include firm age, total assets, and leverage. Recommendation is a dummy equal 1 for "buys", 0 for "hold" and -1 for "sell". VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise following Banerjee et al. (2016). Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| | All analysts | All analysts | All analysts | LUWs | LUWs | LUWs | Non-LUWs | Non-LUWs | Non-LUWs |
| VARIABLES | profit1 | profit2 | profit3 | profit1 | profit2 | profit3 | profit1 | profit2 | profit3 |
| Type 1 | 0.057 | 0.022 | 0.048 | 0.028 | 0.093 | 0.134 | 0.049 | -0.004 | 0.097 |
| | (0.049) | (0.092) | (0.116) | (0.079) | (0.140) | (0.197) | (0.053) | (0.102) | (0.129) |
| Recommendation | -0.042 | -0.064 | 0.005 | -0.064 | -0.088 | 0.034 | -0.040 | -0.084 | -0.025 |
| | (0.048) | (0.090) | (0.117) | (0.068) | (0.118) | (0.168) | (0.049) | (0.095) | (0.123) |
| lnAge | -0.011 | -0.029 | -0.034 | -0.019 | 0.022 | 0.020 | -0.012 | -0.019 | -0.019 |
| | (0.027) | (0.053) | (0.066) | (0.038) | (0.068) | (0.095) | (0.028) | (0.056) | (0.070) |
| LnTA | 0.019 | 0.014 | -0.003 | 0.013 | -0.014 | -0.010 | 0.015 | 0.002 | 0.004 |
| | (0.017) | (0.031) | (0.039) | (0.024) | (0.040) | (0.056) | (0.018) | (0.034) | (0.043) |
| Leverage | -0.123 | -0.224 | -0.131 | -0.146 | -0.129 | -0.090 | -0.147* | -0.296* | -0.261 |
| | (0.077) | (0.145) | (0.183) | (0.103) | (0.176) | (0.248) | (0.082) | (0.157) | (0.199) |
| VC | 0.145*** | 0.049 | 0.021 | 0.149** | 0.029 | -0.076 | 0.118** | 0.060 | 0.070 |
| | (0.049) | (0.093) | (0.119) | (0.067) | (0.115) | (0.166) | (0.052) | (0.101) | (0.130) |
| Hot Market | 0.003 | -0.110 | 0.006 | -0.029 | -0.051 | 0.093 | -0.006 | -0.135 | -0.016 |
| | (0.043) | (0.080) | (0.102) | (0.059) | (0.100) | (0.141) | (0.045) | (0.087) | (0.111) |
| LUW rank | -0.021 | -0.061 | -0.013 | -0.028 | -0.036 | -0.022 | -0.028 | -0.065 | -0.018 |
| | (0.022) | (0.042) | (0.054) | (0.029) | (0.051) | (0.072) | (0.027) | (0.051) | (0.067) |
| Profit_pre | 0.776*** | -0.399 | -0.001 | 1.012*** | 0.344 | -0.132 | 0.820*** | -0.535 | -0.357 |
| | (0.209) | (0.387) | (0.503) | (0.317) | (0.532) | (0.741) | (0.222) | (0.422) | (0.553) |
| Constant | 0.091 | 0.757** | 0.338 | 0.267 | 0.446 | 0.180 | 0.209 | 0.897 | 0.362 |
| | (0.190) | (0.366) | (0.476) | (0.260) | (0.454) | (0.641) | (0.226) | (0.439) | (0.582) |
| N | 504 | 448 | 407 | 306 | 272 | 248 | 452 | 400 | 363 |
| r2_a | 0.0326 | 0.00235 | -0.0180 | 0.0295 | -0.0233 | -0.0315 | 0.0315 | 0.0101 | -0.0129 |
| F | 2.885 | 1.117 | 0.205 | 2.031 | 0.315 | 0.163 | 2.630 | 1.454 | 0.489 |
| p | 0.00248 | 0.349 | 0.994 | 0.0358 | 0.970 | 0.997 | 0.00569 | 0.163 | 0.882 |

**Table 4-5 Panel B Factors affecting peer-adjusted profit margin post-IPO in profitable IPOs, firm-level Type 2 leadership identification**

Output of Model 2 OLS regression is reported for profitable or unprofitable IPOs. Dependent variables are the peer-adjusted profit (profit) or peer-adjusted net sales (sale) at year +1, +2 and +3. Type 1 is the dummy of overall existence of Type 1 leadership. In Columns 1-3, Type 1 leaders are identified by all analysts. In Columns 4-6, Type 1 leaders are identified by LUW analysts. In Columns 7-9, Type 1 leaders are identified by non-LUW analysts. The pre-IPO financial characteristics include firm age, total assets, and leverage. Recommendation is a dummy equal 1 for "buys", 0 for "hold" and -1 for "sell". VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriters. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise following Banerjee et al. (2016). Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| All analysts | All analysts | All analysts | All analysts | LUWs | LUWs | LUWs | Non-LUWs | Non-LUWs | Non-LUWs |
| VARIABLES | profit1 | profit2 | profit3 | profit1 | profit2 | profit3 | profit1 | profit2 | profit3 |
| Type 2 | 0.054 | 0.206** | 0.083 | -0.021 | 0.187* | -0.015 | 0.045 | 0.129 | 0.057 |
| | (0.052) | (0.097) | (0.122) | (0.061) | (0.108) | (0.147) | (0.051) | (0.098) | (0.122) |
| Control variables | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| N | 504 | 448 | 407 | 306 | 272 | 248 | 452 | 400 | 363 |
| r2_a | 0.0311 | 0.0137 | -0.0173 | 0.0318 | -0.0113 | -0.0333 | 0.0309 | 0.0147 | -0.0139 |
| F | 2.797 | 1.692 | 0.234 | 2.113 | 0.664 | 0.115 | 2.596 | 1.663 | 0.448 |
| p | 0.00329 | 0.0885 | 0.989 | 0.0284 | 0.741 | 0.999 | 0.00632 | 0.0961 | 0.908 |
| **Panel C Factors affecting peer-adjusted net sales post-IPO in unprofitable firms, firm-level Type 1 leadership identification** | | | | | | | | | |
| Output of Model 2 OLS regression is reported for unprofitable IPOs. Dependent variables are the peer-adjusted net sales (sale) at year +1, +2 and +3. | | | | | | | | | |
| VARIABLES | sale1 | sale2 | sale3 | sale1 | sale2 | sale3 | sale1 | sale2 | sale3 |
| Type 1 | 13.056*** | 7.158 | 24.894*** | 17.422*** | 13.612 | 17.446 | 10.278** | 6.925 | 26.163*** |
| | (4.197) | (5.926) | (8.232) | (6.316) | (10.496) | (16.345) | (4.937) | (6.938) | (9.704) |
| Control variables | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| N | 357 | 303 | 250 | 206 | 170 | 133 | 312 | 268 | 219 |
| r2_a | 0.113 | 0.0721 | 0.145 | 0.283 | 0.132 | 0.453 | 0.101 | 0.0643 | 0.148 |
| F | 6.045 | 3.608 | 5.685 | 9.987 | 3.865 | 13.13 | 4.884 | 3.040 | 5.217 |
| p | 6.85e-08 | 0.000278 | 3.86e-07 | 0 | 0.000187 | 0 | 4.05e-06 | 0.00179 | 2.11e-06 |
| **Panel D Factors affecting peer-adjusted net sales post-IPO in unprofitable firms, firm-level Type 2 leadership identification** | | | | | | | | | |
| Type 2 | 15.152*** | 8.116 | 17.139* | 7.532 | 8.187 | 29.027** | 11.552** | -2.864 | 4.157 |
| | (4.576) | (6.558) | (8.891) | (5.391) | (8.503) | (12.002) | (5.039) | (7.213) | (9.663) |
| Control variables | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| N | 357 | 303 | 250 | 206 | 170 | 133 | 312 | 268 | 219 |
| r2_a | 0.110 | 0.0706 | 0.105 | 0.258 | 0.122 | 0.530 | 0.0989 | 0.0537 | 0.0768 |
| F | 5.873 | 3.551 | 4.231 | 8.900 | 3.619 | 17.52 | 4.793 | 2.683 | 3.015 |
| p | 1.23e-07 | 0.000335 | 4.22e-05 | 0 | 0.000393 | 0 | 5.47e-06 | 0.00537 | 0.00210 |

**Table 4-6 Determinants of IPO leadership identification by financial analysts**

Output of Model 1 logit regression is reported and the dependent variable is the dummy of leadership existence. I control for industry effects with the 2-digit SIC. The pre-IPO financial characteristics include firm age, total assets, and leverage. GS, LUW and GS*LUW stand for the dummy of Global Settlement effect, dummy of lead-underwriter as the report issuer, and the interaction term, respectively. Hot Market dummy equals 1 for IPO issued in the hot markets and zero otherwise. VC dummy stands for the existence of venture capital holding at the time of IPO. LUW rank is the highest rank of lead underwriter(s). Standard errors are presented in parenthesis. ***, **, * stand for the significance at the 1%, 5% and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | All ICRs | All ICRs | ICRs issued before the GS | | ICRs issued after the GS | |
| VARIABLES | Type 1 | Type 2 | Type 1 | Type 2 | Type 1 | Type 2 |
| LUW | 0.216 | 0.121 | 0.202 | 0.105 | 0.203 | 0.061 |
| | (0.172) | (0.138) | (0.175) | (0.140) | (0.142) | (0.102) |
| GS | -0.105 | -0.404*** | — | — | — | — |
| | (0.128) | (0.096) | — | — | — | — |
| GS*LUW | -0.028 | -0.063 | — | — | — | — |
| | (0.222) | (0.171) | — | — | — | — |
| lnAge | 0.118 | 0.269*** | 0.174 | 0.292*** | 0.035 | 0.231*** |
| | (0.073) | (0.053) | (0.111) | (0.089) | (0.104) | (0.071) |
| LnTA | 0.129*** | 0.103*** | 0.149*** | 0.074* | 0.072 | 0.135*** |
| | (0.038) | (0.028) | (0.058) | (0.043) | (0.053) | (0.041) |
| Leverage | -0.096 | 0.013 | -1.391*** | -0.565** | 0.448** | 0.197 |
| | (0.209) | (0.139) | (0.463) | (0.268) | (0.227) | (0.162) |
| VC | 0.031 | 0.389*** | 0.135 | 0.486*** | -0.057 | 0.284** |
| | (0.128) | (0.094) | (0.184) | (0.137) | (0.183) | (0.137) |
| Hot Market | -0.006 | 0.215*** | -0.184 | 0.216* | 0.187 | 0.178* |
| | (0.105) | (0.078) | (0.163) | (0.130) | (0.149) | (0.105) |
| LUW rank | 0.048 | 0.131*** | -0.119 | 0.067 | 0.264** | 0.178*** |
| | (0.071) | (0.047) | (0.096) | (0.074) | (0.117) | (0.066) |
| Constant | -2.208** | -1.293 | -2.161** | -1.248* | -3.511*** | -2.420** |
| | (0.885) | (0.896) | (0.978) | (0.721) | (1.233) | (0.998) |
| Industry | Y | Y | Y | Y | Y | Y |
| N | 3570 | 3792 | 1512 | 1554 | 1916 | 2214 |
| r2_p | 0.0697 | 0.129 | 0.0537 | 0.0967 | 0.0946 | 0.153 |
| chi2 | 203.2 | 660.4 | 68.55 | 193.4 | 150.8 | 467.3 |
| p | 0 | 0 | 7.58e-05 | 0 | 0 | 0 |

## Appendix 4-1. Content around “leadership identification”

Generally, the evidence referred to by financial analysts to support statements referring to a firm’s leadership position shows the competitive advantages in some aspects (e.g., cost efficiency, technology pioneer). Some analysts tend to analyse the competitive advantages in detail, and some do it briefly. For example, the content in initial coverage reports of RealD Inc. (the IPO firm) shows that the two analysts (investment banks), William Blair and JP Morgan, have different styles of discussing RealD’s competitive advantage. When stating the market leader position of RealD Inc., in several sections William Blair discusses the industry potential and market share of RealD Inc., technology advantages, EPS power, products and licensing, valuation and risk factors. On the other hand, JP Morgan uses a three-sentence paragraph to summarise and interpret the sustainable competitive advantage in RealD Inc., including market share, brand awareness, and patent-protected technologies. As discussed in Section 4.2.1, the text content of a firm’s competitive advantages is unstructured data, which varies from report to report. To examine the unstructured data, I use a content analysis approach in an attempt to convert analysts’ understanding of a firm’s competitive position into a numerical category for the leadership identification.

## Appendix 4-2. Type 3 and Type 4 leadership identification

In addition to the *industrial or market leaders* (Type 1 leader), and *firms with partial leadership position* (Type 2 leader), I identify two other types of leadership positions in ICRs. In ICRs, financial analysts could state that *firms* *may be a leader in the future* (Type 3 leader) or that the *firms are aiming to be a leader in the future* (Type 4 leader).

> *Type 3 leader describes IPO firms that financial analysts view as having the potential to become leaders in the future (leader-to-be); and*
>
> *Type 4 leader identifies IPO firms that state the aim to become a leader (leader-aim-to-be).*

There are 638 “leader to be” sentences and 628 “leader aim to be” sentences in my final sample. Type 3 and Type 4 leaders are firms that do not hold a competitive advantage at the time of IPOs but which analysts suggest may be expected to become leaders in the future. Financial analysts expect Type 3 leaders to become a Type 1 or Type 2 leader in the future. Thus, a Type 3 leader is more likely to hold resources and capabilities to build up its competitive position than a Type 4 leader. Any firm can express the hope to become a leader. Type 4 leader firms, if they lack other types of leadership identification, do not necessarily hold competitive advantages.

For Type 3 and Type 4 leaders, as the firm does not hold the competitive advantages at the time of IPO, their potential leadership position is not strong enough to be expected to generate superior operating performance, at least in the short-run. These Type 3 or 4 leaders have the potential to become Type 1 or 2 leaders in the future and presumably to generate superior performance in the long-run. However, facing competition from existing leaders and new entrants, these potential leaders also bear the risks of losing their potential advantages. Therefore, Type 3 and 4 leaders may or may not generate superior performance during my event window of three years post-listing. This leads to the following two hypotheses:

> ***Hypothesis 4-1c: IPO firms identified as Type 3 leaders do not generate better operating performance post-listing than non-leader firms.***

> ***Hypothesis 4-1d: IPO firms identified as Type 4 leaders do not generate better operating performance post-listing than non-leader firms.***

Un-tabulated results show that financial analysts identify Type 3 leaders in 11.9% of ICRs and Type 4 leaders in 10.8% of ICRs. The descriptive statistics shows that financial analysts are less likely to mention contingent leaders (Type 3 and Type 4 leaders) than unconditional leaders (Type 1 and Type 2 leaders). Consistent with the findings on Type 1 and 2 leadership identifications, I find that LUWs and non-LUWs have a similar level of existence and intensity of Type 3 and 4 leadership identifications and that LUWs have a higher level of Type 3 and 4 leadership frequency due to longer reports used in LUWs. The GS significantly reduced Type 3 and 4 leadership identification in both LUWs and non-LUWs.

The regression results of Type 3 and Type 4 leadership positions show that generally, Type 3 and Type 4 leadership identifications do not consistently have a positive impact on the post-listing operating performance, which support hypothesis 4-1c and 4-1d. The sub-group regression results suggest that neither LUWs nor non-LUWs' leadership identification appear to consistently affect the post-listing performance, which is consistent with the results on Hypotheses 4-2a and 4-2b.

I find that LUW analysts do not tend to be more likely to identify an IPO firm as a Type 3 or 4 leader than non-LUW analysts but have a higher frequency of Type 3 and 4 leaders than non-LUWs. This evidence is consistent with the findings on Type 1 and 2 leadership identification that after controlling for the longer report by LUWs, LUWs and non-LUWs tend to state Type 3 and 4 leaders with the same intensity. I also find that the GS significantly reduced the firm-level existence, frequency and intensity of Type 3 and 4 leadership positions, which fails to support Hypothesis 4-4a, b and c that the GS does not affect the existence, frequency and intensity of leadership identification.

## Appendix 4-3. Contradictory opinions between LUWs and non-LUWs

I use a two-by-two matrix to identify the perception difference between LUW and non-LUW analysts (Table Appendix 4-1). Quadrant 1 stands for a situation where both LUW and non-LUW analysts perceive the IPO firm as a leader. Quadrant 2 stands for a situation where non-LUWs perceive the IPO firm as a leader while LUWs fail to state that the firm has a competitive advantage in the ICRs. Quadrant 3 stands for a situation where LUWs perceive the firm as a leader while non-LUWs analysts do not view the IPO firm as having a competitive advantage. Quadrant 4 stands for a situation where neither LUWs nor non-LUWs perceive the IPO firm as a leader. Quadrants 2 and 3 indicate that there is a difference of opinion regarding the IPO firms' leadership position between LUW and non-LUW analysts, while Quadrants 1 and 4 show a shared opinion of IPO firms' leadership position between LUWs and non-LUWs.

**Table Appendix 4-1**
**Perception bias of leadership identification between LUW and non-LUW**

| Consistency of opinions | LUW Leaders | LUW non-leader |
|---|---|---|
| Non-LUW leader | Quadrant 1<br>shared opinion | Quadrant 2<br>different opinion |
| Non-LUW non-leader | Quadrant 3<br>different opinion | Quadrant 4<br>shared opinion |

I investigate whether LUWs or non-LUWs provide more accurate leadership identification which picks out firms with superior future operating performance, when they have contradictory opinions of a firm's leadership position:

> ***Hypothesis 4-2c: When LUWs and non-LUWs have different opinions of an IPO firm's leadership position, Q3 leaders (IPO firms identified as leaders by LUWs but not by non-LUWs) are likely to perform worse than Q2 leaders (IPO firms identified as leaders by non-LUWs but not by LUWs analysts).***

I also investigate the accuracy of LUWs versus non-LUWs when they have contradictory opinions of leadership positions of an IPO firm. I use the report-level leadership identification to test whether IPO firms identified as leaders by LUWs but not by non-LUWs are likely to perform worse than IPO firms identified as leaders by non-LUWs but not by LUWs analysts. As discussed in Section 4.2.2, if LUWs are more likely to suffer conflicts of interest between their fiduciary responsibility to investing clients and their sales incentive to underwriting clients, LUWs may provide less accurate leadership identification than non-LUWs. Un-tabulated regression results suggest that either LUWs or non-LUWs sometimes tend to provide a leadership identification which positively correlated the post-listing performance. Therefore, it is not clear whether LUWs or non-LUWs are more accurate in identifying firms which go on to deliver superior performance post-listing when they have contradictory opinions.

These results suggest that the affiliation position of financial analysts is not likely to affect the accuracy of their leadership identification.

## Appendix 4-4. Alternative variable measurements and alternative models

I apply alternative variable measurements in Models 1 and 2, and results hold consistently. The alternative variables are described as follows.

***Alternative performance measurements:*** In addition to profit and sales growth used in the main analysis, analysis has also been undertaken using the peer-adjusted growth of profit margin and net sales as alternative performance measures. Prior literature on leader firm performance generally focuses on profits as a leader firm should take advantage of its leadership position to earn positive profits (e.g., Lieberman et al., 1988; Barber et al., 2001). My study not only explores the profitability, but also investigates the growth of sales of IPO firms. As my study investigates operating performance within three years of IPOs, the growth of sales could capture "leadership" advantages in growth IPO firms without positive earnings (Eisenmann, 2006; Mitchell, 1991; Colak and Gunary, 2011; Banerjee et al., 2016). Regression results with the alternative peer-adjusted operating performance are consistent with the findings using peer-adjusted profit margin and net sales.

***Alternative leadership sentence intensity measurement:*** An alternative measure for the intensity of leadership identification is measured as the number of leadership sentences per thousand of sentences in an ICR.

***Firm-level leadership identification:*** Table 4-6 investigates the analysts' tone of leadership identification at the initial coverage report level. Thus, one IPO firm may have multiple observations of leadership identification by several financial analysts. To control the multiple observations effect, I examine Hypotheses 4-3 and 4-4 with the firm level data of leadership identification. In the firm level data, each IPO firm is observed once. The LUW dummy equals one if the IPO firm got initial coverage reports from at least one LUW. These results, with firm-level leadership identification, are consistent with those in Table 4-6 with report-level leadership identification.

When aggregating analysts' leadership identification in an IPO firm, I measure the existence, likelihood, frequency and intensity of leadership sentences. The firm-level existence of leadership position sentences is a dummy variable that equals one if the IPO firm is identified as a leader by at least one analyst. The likelihood of leadership position sentences is the proportion of ICRs (or analysts) mentioning the leadership position of an IPO firm. The firm-level frequency of leadership position sentences is the average number of leadership sentences per ICR. The firm-level intensity of leadership position sentences is the mean value of leadership intensity in all ICRs for an IPO firm.

***Alternative general economic measurements:*** As an alternative to the dummy of hot market in an IPO wave, I control for the impact of market timing on post-IPO performance with a dummy for the bubble period and a dummy of early mover, and results are consistent with Tables 4-5 and 4-6.

Coakley et al. (2007) investigate post-IPO operating performance of 590 U.K. IPOs in 1985-2003 and find that operating performance declined in IPOs issued during the 1998-2000 stock-market bubble period, but performed normally when issued in the remaining years. In contrast, Helwege and Liang (2004) observe that IPOs issued in hot and cold markets have similar post-IPO operating performance. Bubble period is a dummy which equals 1 if an IPO was issued between October 1999 and March 2000 (Banerjee et al., 2016).

Another market timing feature is whether the IPO firm is an early mover. Prior studies on early-mover advantages suggest that early movers in a market have significantly superior skill and resource profiles to later movers (Lieberman and Montgomery, 1988; Robinson et al., 1992; VanderWerf and Mahon, 1997). Firms going public earlier in an IPO wave could generate higher profitability (Chemmanur and He, 2011; Banerjee et al., 2016) or lower profitability compared to firms going public later (Christoffersen et al., 2010). Following Banerjee et al. (2016), early mover is a dummy which equals 1 if an IPO went public within the first two quarters of a rising IPO cycle, and taking the value 0 if otherwise.

The general changes in the industry could also affect operating performance in firms. Therefore, I control for the impact of general changes in the industry on operating performance by industry classifications (Barber and Lyon, 1996).

Firms in an industry enjoys positive shock are likely to outperform firms in other industries. The industry is classified based on 2-digit SIC codes. Results with the industry fixed effect are consistent with those in Tables 4-5 and 4-6.

## Appendix 4-5. Investment bank fixed effects

As discussed in Appendix 4-1, ICRs from investment banks may identify leaders using different tones. Bradley et al. (2008) investigate the behaviour of analysts from four top underwriters (Credit Suisse First Boston, Goldman Sachs, Merrill Lynch and Morgan Stanley) and indicate that these four high prestige investment banks are more likely to be optimistic as a non-LUW than as a LUW. Therefore, to distinguish high- or low-prestige investment banks, I control for the investment bank fixed effect on analysts' leadership identification. Results in Table 4-6 do not control the fixed effect of financial analysts. However, the un-tabulated regression results with investment bank fixed effects included provide results consistent with those reported in Table 4-6.

The leadership identification may vary across investment banks, regarding the LUW affiliation and types of leadership position. Table Appendix 4-2 lists the participation and the tone of leadership identification in top 20 LUW and top 20 non-LUW analyst firms. Table Appendix 4-2 shows that investment banks, such as Morgan Stanley and JP Morgan, tend to be more active as underwriters than non-LUW analyst in the issuance of ICRs. During the sample period of 1999-2012, Morgan Stanley acted as a leading underwriter for 199 IPO firms but issued non-LUW ICRs for only 34 IPOs. Furthermore, some investment banks (e.g., Morgan Stanley and JP Morgan) are more likely to identify Type 1 leaders if they hold a lead-underwriting relation with the IPO firm. Table Appendix 4-2 indicates that different investment banks may have their own tone in the leadership identification with regard to the affiliation. I control investment bank fixed effects in the regression Model 1 and results hold.

**Table Appendix 4-2 Investment Banks' tone of leadership identification**

This table provides the top 20 leading underwriter (LUW) affiliated analysts and top 20 non-LUW analyst firms ranked by the number of initial coverage reports issued during 1999-2012. N stands for the number of observations of initial coverage reports. Pages stands for the number of pages in an ICR.

| | Reports written by LUWs | | | Reports written by non-LUWs | | |
|---|---|---|---|---|---|---|
| Underwriter | N | Type 1 | Type 2 | N | pages | Type 1 |
| Morgan Stanley | 199 | 19% | 66% | 34 | 29.50 | 3% |
| Credit Suisse | 157 | 17% | 63% | 104 | 27.44 | 13% |
| JP Morgan | 144 | 13% | 56% | 63 | 27.67 | 21% |
| Deutsche Bank | 107 | 21% | 74% | 109 | 27.11 | 14% |
| UBS | 62 | 10% | 48% | 77 | 23.95 | 18% |
| Piper Jaffray | 46 | 9% | 22% | 182 | 18.80 | 10% |
| Jefferies | 44 | 11% | 48% | 116 | 23.44 | 17% |
| Lehman Brothers | 35 | 11% | 54% | 39 | 20.05 | 15% |
| Donaldson,Lufki | 32 | 0% | 34% | 38 | 13.79 | 8% |
| Barclays | 30 | 7% | 67% | 15 | 29.87 | 20% |
| Bear Stearns | 28 | 11% | 43% | 71 | 29.72 | 10% |
| Citigroup | 26 | 35% | 69% | 8 | 34.00 | 0% |
| Salomon,Smith, | 24 | 13% | 50% | 84 | 19.44 | 18% |
| SG Cowen | 22 | 9% | 45% | 90 | 17.13 | 9% |
| CIBC | 20 | 15% | 50% | 115 | 27.95 | 12% |
| Chase,Hambrech | 19 | 21% | 84% | 45 | 16.07 | 31% |
| William Blair | 14 | 21% | 79% | 135 | 25.78 | 16% |
| Roberston | 19 | 16% | 68% | 93 | 12.88 | 12% |
| Dain Rauscher | 6 | 17% | 100% | 97 | 10.38 | 14% |
| RBC Capital | 7 | 14% | 29% | 77 | 21.62 | 12% |
| Wachovia | 12 | 8% | 25% | 58 | 23.47 | 21% |
| Hambrecht & | 16 | 6% | 81% | 48 | 13.54 | 25% |
| BancBoston | 11 | 0% | 100% | 29 | 10.00 | 17% |
| ThinkEquity | 1 | 0% | 0% | 53 | 20.51 | 15% |
| Cowen Co. | 8 | 0% | 38% | 52 | 25.25 | 10% |
| Wells Fargo | 10 | 10% | 40% | 44 | 26.93 | 11% |
| All | 1,169 | 14% | 57% | 2,852 | 21.25 | 13% |

# Chapter 5. Summary and Contributions

This chapter provides a summary of the main findings in the three empirical papers, discusses how these results relate to the hypotheses tested, explains the main contributions and implications for this thesis, discusses limitations of the current study and outlines potential extensions for further research.

## 5.1 Summary

This thesis examines four main research questions. Chapter 2 examines whether an IPO helps private acquirers to conduct acquisitions with superior returns in the U.K. acquisition market compared to reverse takeovers (RTs). Chapter 3 examines whether U.K. domestic acquisitions improve the long-run operating performance of target firms. Chapter 3 also examines how targets' top management turnover, if applicable, affects the post-acquisition operating performance of target and acquirer firms in the U.K. Chapter 4 examines whether U.S. IPO firms with leadership positions identified by analysts generate superior operating performance post-listing.

In addition, to further investigate factors affecting post-acquisition top management team (TMT) turnover and factors affecting analysts' tone and accuracy of leadership identification, I raise additional questions as to whether pre-acquisition target performance affects TMT turnover in target firms (see Chapter 3), whether regulation reforms affect analysts' tone of leadership identification (see Chapter 4), and whether analyst affiliation affects the tone and accuracy of leadership identification (see Chapter 4).

This section presents the main results of Chapters 2, 3 and 4, and discusses how these results relate to the nine hypotheses in this thesis. The first hypothesis, addressed in Chapter 2, relates to Hsieh et al.'s (2011) conjecture that an IPO leads to a more efficient acquisition strategy that enhances firm value compared to RTs conducted by private acquirers.

> ***Hypothesis 2-1: Acquisitions conducted by recently listed IPO firms outperform acquisitions conducted by private firms in a RT.***

To address the first question, I investigate 179 public acquirers in IPO-M&As and 66 private acquirers in RTs on the London Stock Exchange between 1 January 1995 and 31 December 2012. The empirical evidence in Section 2.6 fails to support Hypothesis 2-1. Acquirers earn significant negative post-acquisition stock returns. The average of acquirers' two-year CARs post-acquisition is -35% in IPO-M&As and -45% in RTs, although the difference is not statistically significant. Controlling for the self-selection of acquisition-driven IPO or RT listing-and-acquisition route and firm- and deal-specific characteristics, I find that undertaking an IPO prior to acquiring another firm has no positive impact on post-acquisition stock returns. Public acquirers appear to bear a higher agency cost due to less concentrated insider ownership. As presented in Section 2.6.4, public acquirers have lower executive ownership (or CEO/MD ownership) than private acquirers in RTs, and acquirers' executive ownership (or CEO/MD ownership) has a significant positive impact on acquirers' post-acquisition abnormal returns. Alternatively, an IPO may have a negative impact on post-acquisition stock returns, as the benefits of valuation surprise or overvaluation in public acquirers' capital do not outweigh the costs of overvalued synergy (Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004).

Chapter 3 examines four hypotheses. Hypothesis 3-1 tests the overall efficiency of the U.K. takeover market, which is the second research question. I investigate the post-acquisition operating performance of 498 targets in domestic acquisition announced and completed between 1 January 2006 and 31 December 2014.

***Hypothesis 3-1: Target firms improve performance post-acquisition in comparison to peer firms.***

Results in Section 3.5.1 support Hypothesis 3-1 with the evidence that peer-adjusted operating performance improves significantly in unprofitable targets. On average, unprofitable targets' peer-adjusted ROA increases significantly, by 16.3% and 25.2% over the period from year -1 to year +2 and +3, respectively. However, for profitable targets, peer-adjusted ROA does not change significantly. These results are consistent with most of the literature, which states that target firms on average gain from acquisitions (Bruner, 2002).

Hypotheses 3-2 and 3-3 investigate the market discipline theory of acquisition, which addresses the relation between post-acquisition TMT turnover and pre- and post-acquisition performance of target firms.

***Hypothesis 3-2: Replacement of target TMT is negatively related to pre-acquisition performance in targets.***

Prior studies on the market discipline theory of acquisition show that a target firm with poor pre-acquisition performance is more likely to experience high TMT turnover to remove inefficient TMTs (Martin and McConnell, 1991; Walsh and Ellwood, 1991; Walsh and Kosnik, 1993; Franks and Mayers, 1996; Kennedy and Limmack, 1996; Jang and Reisel, 2015). Consistent with prior studies, regression results in Section 3.5.2 tend to support Hypothesis 3-2, with the evidence that while TMT turnover is generally high in both profitable and unprofitable targets, profitable targets experience significantly lower TMT turnover, by 10%, than unprofitable targets. However, showing the negative correlation between TMT turnover and pre-acquisition performance may be necessary, but is not sufficient to support the market discipline hypothesis that removing inefficient TMTs creates value. Therefore, I extend prior literature on the market discipline theory of acquisition by investigating the impact of target TMT turnover on the long-run operating performance of both public listed and private targets in Hypothesis 3-3.

Hypotheses 3-3 and 3-4 examine the third research question, which is the relation between TMT turnover and post-acquisition performance. More specifically, Hypothesis 3-3 examines the impact of post-acquisition TMT turnover in target firms on targets' post-acquisition performance, and Hypothesis 3-4 examines the impact of post-acquisition TMT turnover in target firms on acquirers' post-acquisition performance. The market discipline theory of acquisition suggests that replacement of inefficient TMTs enhances the post-acquisition performance of target firms. Alternatively, the resource-based management view of TMT turnover suggests that target TMTs hold valuable insider information on target firms. Therefore, target TMT turnovers would harm the profitability of acquisitions and the stability of the integration process.

> ***Hypothesis 3-3: Replacement of target TMT is positively related to post-acquisition performance improvement in targets.***

Results in Section 3.5.3 show that target TMT turnover does not affect the post-acquisition peer-adjusted performance of target firms, regardless of how target TMT turnover is measured. These results fail to support Hypothesis 3-3. Although pre-acquisition performance affects target TMT turnover, the replacement of TMTs does not appear to improve the peer-adjusted post-acquisition performance of target firms.

To compare my study with prior studies focusing on the impact of target TMT turnover on acquirers' post-acquisition performance, I examine Hypothesis 3-4.

> ***Hypothesis 3-4: Replacement of target TMT is negatively related to post-acquisition performance improvement in acquirers.***

Results in Section 3.5.4 show that a complete TMT turnover in targets on average significantly reduces acquirers' peer-adjusted ROA by 3% to 4%, and the impacts are significant at the 5% level. This result is driven by the sub-sample of acquisitions with profitable targets. Table 3-10 shows that a complete TMT turnover in profitable targets harms the post-acquisition ROAs of acquirers, but a complete TMT turnover in unprofitable targets does not appear to affect acquirers' post-acquisition ROAs. These results support the resource-based management view in Hypothesis 3-4, with the evidence that a complete TMT replacement in profitable targets is harmful to the consolidated profits in acquirers, regardless of the small relative size of targets to acquirers.

Overall, results in Sections 3.5.3 and 3.5.4 suggest that TMT turnover in target firms is much more complex than what is explained by the poor pre-acquisition performance. The TMT turnover may reflect TMTs' psychological attributes and their perception of acquisition (e.g., culture fit) rather than the disciplining function of acquisitions (Krug et al., 2015).

Chapter 4 investigates four hypotheses that relate to the tone and accuracy of analysts' leadership identification. To address the fourth research question of whether U.S. IPO firms with leadership positions identified by analysts generate superior operating performance post-listing, I investigate 4,021 initial coverage reports of 1,501 U.S. IPOs issued between 1 January 1999 and 31 December 2012. I classify analysts' leadership identification into two types.

> *Type 1 leader describes IPO firms that are explicitly identified as "a market leader" or "an industry leader"; and*
>
> *Type 2 leader describes IPO firms that hold a "partial leading position" in a particular product or asset.*

Hypothesis 4-1 examines the accuracy of analysts' leadership identification. I split Hypothesis 4-1 into two sub-sample tests, each focusing on a type of leader. Type 1 and 2 leaders are expected to hold competitive advantages over other firms in the same industry or market.

***Hypothesis 4-1a: IPO firms identified as Type 1 leaders generate better operating performance post-listing than non-leader firms.***

***Hypothesis 4-1b: IPO firms identified as Type 2 leaders generate better operating performance post-listing than non-leader firms.***

Results in Section 4.5.3 suggest that leaders identified by analysts tend not to generate superior performance to that of non-leaders. These results fail to support Hypotheses 4-1a and 4-1b that analysts provide informative leadership identification to help investors select firms with superior future performance.

To investigate whether the uninformative leadership identification is driven by analyst affiliation, I examine whether lead-underwriters (LUWs) or non-LUWs provide more accurate leadership identification in Hypothesis 4-2 and whether analyst affiliation affect the leadership identification in Hypothesis 4-3. Some studies suggest that lead-underwriters (LUWs) are more likely to suffer from conflicts of interest due to their affiliation and provide more optimistic but less accurate forecasts (Michaely and Womack, 1999; Dechow et al., 2000; Lin et al., 2005; Barber et al., 2007).

I examine the impact of analyst affiliation on the accuracy of leadership identification. I split Hypothesis 4-2 into two sub-sample tests, to investigate the accuracy of LUWs' leadership identification and non-LUWs' leadership identification.

***Hypothesis 4-2a: Firms identified as leaders are less likely to outperform if the leadership advantage is identified by LUWs.***

***Hypothesis 4-2b: Firms identified as leaders are more likely to outperform if the leadership advantage is identified by non-LUWs.***

The overall results in Section 4.5.2 reveal that it is not clear whether LUWs or non-LUWs provide more accurate leadership prediction. Both LUWs and non-LUWs appear to not provide a leadership identification which consistently identify firms generating superior on-going performance. Therefore, these results suggest that analysts' affiliation tends not to affect the accuracy of leadership identification, which fails to support Hypothesis 4-2s.

Furthermore, I split Hypothesis 4-3 into three sub-sample tests, to investigate whether analyst affiliation affect the leadership identification by analysts.

***Hypothesis 4-3a: LUWs are more likely to identify an IPO firm as a leader than non-LUWs are.***

***Hypothesis 4-3b: LUWs mention leadership advantages more frequently than non-LUWs do.***

***Hypothesis 4-3c: LUWs mention leadership advantages more intensely than non-LUWs do.***

Results in Section 4.5.3 fail to support Hypotheses 4-3a and 4-3c. LUWs tend not to be more likely to identify their IPO clients as leaders than non-LUWs. While LUWs more frequently use leadership-related words compared to non-

LUWs, LUWs also tend to issue longer initial coverage reports than non-LUWs do. Controlling for report length, LUWs do not use leadership-related words more intensely than non-LUWs.

The last hypothesis in this thesis explores the impact of the Global Settlement (GS) on the text content of analysts' research outputs. The 2003 GS requires financial analysts (especially affiliated analysts) to disclose conflicts of interest and limit relations between research and investment banking departments (Kadan et al., 2009; Corwin et al., 2017). Although existing studies of regulation changes generally suggest that the GS reduced the optimistic recommendations and forecasts in analyst reports, whether it affected the qualitative text content has not, to the best of my awareness, been investigated in prior studies. As the GS does not restrict the text content in analyst reports, I expect that it does not affect analysts' tone of leadership identification. I split Hypothesis 4-4 into three sub-sample tests, each focusing on a leadership identification measurement.

> ***Hypothesis 4-4a: The Global Settlement does not affect analysts' likelihood of identifying a firm as a leader.***
>
> ***Hypothesis 4-4b: The Global Settlement does not affect analysts' frequency of leadership identification.***
>
> ***Hypothesis 4-4c: The Global Settlement does not affect analysts' intensity of leadership identification.***

Evidence in Sections 4.5.1 and 4.5.3 shows that although the text content in analyst reports, as opposed to their recommendations, is not subject to regulation requirements, analysts tend to be more conservative in the leadership identification of IPO firms after the GS. For example, analysts reduce their Type 2 leadership identification by 0.215 sentences per ICR and the change is significant at the 1% level. My results fail to support Hypothesis 4-4 and go against the conjecture in Stocken and Verrecchia (2004) and Bradley et al. (2008) that regulation changes do not affect the text content of coverage reports, as there are no explicit rules relate to the text content of analyst reports.

## 5.2 Contribution to knowledge

This thesis contributes to the literature in several ways. First, this thesis provides empirical evidence on Hsieh et al.'s (2011) conjecture that an IPO helps acquirers to conduct optimal acquisitions. To assess this conjecture, I compare the stock returns of public acquirers in IPO-M&As and private acquirers in RTs. Previous studies argue that an IPO helps to facilitate subsequent acquisitions, with an infusion of cash and publicly traded stocks as acquisition currencies (Celikyurt et al., 2010; Hovakimian and Hutton, 2010). Hsieh et al. (2011) suggest that an IPO helps acquirers to conduct subsequent acquisitions at the optimal time and therefore public acquirers are more likely to conduct value-enhancing acquisitions than private acquirers are. However, these studies do not provide empirical evidence that acquisitions conducted by IPO firms outperform acquisitions conducted by private acquirers.

Contrary to expectations and the conjecture in prior literature, Chapter 2 finds that acquisitions conducted by recently listed IPO firms do not tend to generate higher stock returns within two years post-acquisition than firms conducting

RTs. Public acquirers may bear a more severe problem of agency costs or overvalued synergy than private acquirers. This thesis extends existing research on acquisition-driven IPOs. Investors and shareholders of firms involved in acquisitions need to understand the potential costs and benefits brought by an IPO to subsequent acquisitions.

Second, Chapter 2 extends existing RT literature. Prior RT studies focus predominantly on the public listing role of RT and overlook the acquisition feature in RTs (Gleason et al., 2005; Makamson, 2010). My study fills the gap by investigating the acquisition feature in RTs and exploring factors that influence the listing-and-acquisition choice between IPO-M&As and RTs. I explore the stock returns of 66 RTs that involve operational public targets, and find that RTs tend to have similar stock returns to acquisitions conducted by recently listed IPOs.

Third, I investigate the post-listing ownership of RTs and IPOs. It is argued that private firms opting for a RT listing may have a preference for more concentrated ownership than firms opting for an IPO, as RTs are not required to issue capital to the public. However, results in Chapter 2 show that insiders in RT firms do not tend to hold a statistically higher proportion of ownership than those in IPOs. Therefore, in the U.K., firms opting for either listing-and-acquisition route can have a similar level of control preference in terms of the proportion of common shares held by insiders post-listing. The inclusion of board characteristics also extends existing RT research by investigating the impact of corporate governance factors (such as executive ownership) on post-acquisition performance.

Fourth, most previous research on target firms focuses on public targets' stock returns due to a lack of post-acquisition accounting data (Cannella and Hambric, 1993; Very et al., 1997; Zollo and Singh, 2004). In the U.S., there is no federal statutory requirement for unlisted firms to report financial statements to the public (FASB, 2013). However, in the U.K., all registered limited companies, including subsidiaries, must report their annual financial statements to the Companies House, who makes the information available to the public (GOV.UK, 2016). Chapter 3 extends existing literature by investigating the post-acquisition operating performance of public and private targets. I empirically test the overall efficiency of the takeover market in the U.K., and whether acquisitions improve the profitability of target firms. Chapter 3 also includes an analysis of post-acquisition operating performance of public and private acquirers. Adding to the existing literature on post-acquisition performance, I show that unprofitable targets improve their peer-adjusted profit margins significantly.

Fifth, I extend and strengthen the literature on TMT turnover. Prior studies on TMT turnover present two alternative theoretical arguments: the market discipline theory of acquisition suggests that acquisitions can be used as a mechanism to replace inefficient TMTs; the resource-based management view suggests that TMTs hold valuable inside information on the firm, and that replacing TMTs would harm firms performance. With the post-acquisition operating performance of targets and acquirers, I test both the market discipline role of acquisitions and resource-based management view of TMT. Previous studies on market discipline theory tend to investigate the relation between pre-acquisition performance and TMT turnover (Martin and McConnell, 1991; Jang and Reisel, 2015). However, these studies fail to analyse whether replacing inefficient TMTs helps to improve the post-acquisition performance. Chapter 3 fills the gap by showing that TMT turnover tends not to affect peer-adjusted post-acquisition performance. Thus, the reasons for TMT turnover appear to be much more complex than what the disciplinary theory of acquisitions explains.

Sixth, this thesis provides the first study assessing leadership identification in analyst reports. Chapter 4 explores IPO firms' leadership positions identified by analysts and investigates the accuracy of leadership identification in initial coverage reports. More specifically, I test whether these leadership positions benefit firms' future operating performance.

Seventh, previous studies examine the accuracy of stock recommendations and earnings forecasts in analyst reports and the sentiment of text content (e.g., Irvine 2003; Twedt and Rees, 2012). Chapter 4 differs from the existing literature as it focuses on the competitive advantages captured by a leadership position. Results in Chapter 4 suggest that leadership position text provides investors with additional information beyond stock recommendations. Eighth, existing literature on leadership advantages investigates the first mover or pioneer advantages. These studies generally identify leaders as the "first or early mover in the market" based on the order of market entry or the proportion of market shares (Tufano, 1989; Kalyanaram and Wittink, 1994; Szymanski et al., 1995; Murthi et al., 1996). First movers are distinct from industry leaders. For example, if an early follower learns from the mistakes of the first mover and dominates the market, it would be inappropriate to classify the first mover as “an industry leader” (Golder and Tellis, 1993). Different from these studies, Chapter 4 focuses on the leadership position identified by analysts. The leadership identification reflects analysts’ superior industry and firm knowledge, and therefore, more likely to capture the competitive advantages of firms in a leadership position than what is captured by a first-mover position.

## 5.3 Implications for practice

The results presented in Chapter 2 have important implications for private firms that want to go public and take over another business. In the U.K., regardless of whether firms opt for an IPO or a RT, they face the same regulatory scrutiny and generate similar long-run stock returns. Insiders in firms opting for either route tend to have similar post-listing ownership. These results indicate that the route of listing-and-acquisition does not appear to significantly affect post-acquisition performance. A private firm can select a suitable listing-and-acquisition route based on its financial characteristics, transaction costs and the market timing.

Chapter 3 shows that the operating performance of unprofitable targets improves significantly after acquisitions, but these improvements are not attributed to the replacement of TMT. These results indicate that other sources of value creation, such as increasing financing capacity provided by acquirers to targets, may explain the improved profit margin in target firms. Erel et al. (2015) show that acquisitions relieve target firms’ financial constraints. Thus, acquirers may need to pay more attention to other value-creation sources in M&As to improve targets’ performance.

Furthermore, Chapter 3 shows that high TMT turnover or a complete TMT turnover in targets tends not to improve post-acquisition performance. On the other hand, a complete TMT turnover harms the performance of acquirers. Acquirers may need to assess the value of insider information and knowledge held by target TMTs to make appointment or replacement decisions in target firms.

Chapter 4 shows that although there are no explicit regulation requirements on the text content in analyst reports, analysts have become more conservative identifying a firm as a leader. Therefore, the GS tends to affect the text content in analyst reports. These results have important implications for both the regulatory authorities and investors. As I show, regulation requirements may indirectly regulate the text content in analyst reports and lead analysts to provide meaningful research outputs. Furthermore, investors could assess the text content as well as stock recommendations and earnings forecasts to make more profitable investment decisions.

Chapter 4 also shows that LUWs appear not to be more optimistic than non-LUWs in their leadership identification of IPO firms, however, nor are they more accurate than non-LUWs. These results may help investors and regulatory parties to understand the impact of analyst affiliation on the quality of analysts' research output. Investors may use information from both LUWs' and non-LUWs' reports to make their own investment decisions. The existing regulation requirements appear to limit the problem of conflicts of interest in LUWs, which could lead LUWs to issue more optimistic and less accurate research outputs than non-LUWs.

## 5.4 Limitations and opportunities for future research

This thesis cannot cover research topics from all possible perspectives. Some research questions have been left outside the scope of this thesis. This section intends to address some of the main limitations of this thesis and discuss future research projects which may help to overcome these limitations.

Chapter 2 suggests that public acquirers are more likely to bear higher agency costs or overvalued synergy, and provides empirical evidence to support the identification of agency costs. However, Chapter 2 does not examine whether there is a trade-off between overvalued acquirers' stocks and overvalued synergy, nor does it distinguish whether agency costs or overvalued synergy has more impact on public acquirers' performance. New measures of stock valuation and synergy valuation need to be developed to assess these questions.

The analysis in Chapter 3 suggests that the market discipline role of acquisitions does not tend to explain the high TMT turnover in both profitable and unprofitable target firms. The reasons for TMT turnover around acquisitions could be complex and require further exploration. Krug et al. (2015) suggest that the TMT turnover may reflect TMTs' psychological attributes, such as culture fit and the age of retirement of directors. A study of the purpose of TMT turnover would help to understand the high TMT turnover around acquisitions.

Martin and McConnell (1991) investigate reasons for departures of 111 top managers in 104 public target firms as indicated in the *Wall Street Journal*.

Martin and McConnell (1991) find that 53% of TMT departures are due to "change in control". "Normal retirement", "accepted high-level position in acquirer", "policy differences", "early retirement", "took similar position with another firm", and "other personal or business interests" are also cited as TMT departure reasons. As firms may not publicly disclose the reason for TMT turnover in targets, especially private targets, a survey of TMTs involved in acquisitions may indicate reasons for TMT replacement and retainment decisions.

The analysis in Chapter 4 suggests that analysts' leadership identification provides valuable information to investors. But how do analysts identify a firm as an industry leader? This process remains a black box, and data on it may be very difficult to obtain. A survey or interview study which gathers proprietary data from financial institutions may help investors and regulatory authorities understand the research process of analysts. Such a study is, however, beyond the scope of this thesis and remains a possible area for future research.

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