

Operating performance of target firm and the change in management team

Abstract:

We analyse the effectiveness of the market for corporate control by analysing the impact of M&A on target and bidding company performance and on whether a change in target company management is required for improvement in company performance. Using separated accounting performance of targets, we find that although acquirers replace a high portion of the contemporary management team in both profitable and unprofitable targets, the post-acquisition performance is not determined by top management turnovers. There is, however, a mean-reversion effect, with post-acquisition performance significantly improving in the unprofitable targets but deteriorating in profitable targets. We also find that the top management team (TMT) turnover rate around acquisition announcements is significantly higher than TMT turnovers of non-acquisition periods, and it is positively related to the pre-acquisition target firm size.

Section 1. Introduction

There are numerous studies (e.g. Jensen & Ruback, 1983) examining the efficiency of the market for corporate control from the perspective of announcement abnormal returns and long-run operational performance in mergers and acquisitions (M&As). However, few studies investigate the impact on target performance from a change of management in M&As. Manne (1965) and Jensen & Ruback (1983) proposed the “market disciplinary 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 owns the majority ownership in the target and obtains the rights to retain or replace top-level managers and the board of directors in the target (Fama and Jensen, 1983a; Fama and Jensen, 1983b). Jensen (1988) conjectured that the replacement of an inefficient and incompetent target management team benefits shareholders, society (e.g., employees, customers and residents of surrounding communities), related business (e.g., suppliers) and the corporate form of organization.

Whether, and to what extent, the disciplinary role of acquisition 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. Our study aims to empirically analysing the relation between the target top management team (TMT) turnover and post-acquisition performance change in target firms. Theoretically, target TMT can be viewed as a valuable source of private information in the targets or as an inefficient control agent which should be removed (Jensen and Ruback, 1983; Jemison & Sitkin, 1986).

While the majority of existing studies on the impact of the target TMT turnover restrict their analyses to bidders' post-acquisition performance (Martin & McConnell, 1991; Fich et al., 2016; Krishnan et al, 1997), or to focus purely on public targets' announcement returns (Martin & McConnell, 1991; Kennedy & Limmack 1996; Walsh & Ellwood, 1991; Walsh & Kosnik, 1993; Franks & Mayer, 1996), our study examine the impact of target TMT turnovers on the long-run operating performance of both public listed and private targets. The post-acquisition consolidated performance of bidders combines the performance of targets and

the performance of the bidders' existing business. As the change of corporate control occurs only in the target firms which become a subsidiary firm after the acquisition, analysing the consolidated performance of bidders is a blunt measure of whether market for corporate control is effective in terms of improving performance of target firms. The announcement returns of target firms show the market expectation of the future performance change of only public targets while private firms constitute a substantial part of M&As. Zollo and Singh (2004) find that two-third of targets are private or subsidiary or divisions of other firms. Lack of information on non-public targets limits the breadth of acquirer's search and increase its risk of not evaluating properly the assets of private targets (Capron & Shen, 2007; Maksimovic et al., 2013).

Some studies provide bidders' views of post-acquisition target TMT Turnovers and target operating performance (Cannella & Hambric, 1993; Zollo & Singh, 2004). Cannella & Hambric (1993) survey the perception (based on 7-point scales) of target performance from the bidder and Zollo & Singh (2004) survey the bidders' perceptions (based on four-point scales) of target TMT Turnovers. These survey studies do not provide a direct measure of the target performance or the TMT turnovers in target firms and managers in different firms may have different views of "good M&A performance" and different classification of the TMT replacement level in target firms. Our study extends the survey studies by investigating the detailed TMT composition data and audited accounting performance of target business.

Much less is known about performance change in the target firms, due to lack of separated accounting performance and stock price information of the target firm post-acquisition (Cannella & Hambrick, 1993; Franks & Mayer, 1996). After acquisitions, target firms become a subsidiary or a division of the bidder business. Unlike in the United States (US) where no

federal statutory requirement for unlisted subsidiaries to make their accounts public (FASB, 2013), in the UK, all registered limited companies, including subsidiary, small and inactive companies, must file company registry information ¹, annual financial statements, appointment and termination of officers, and persons with significant control to the Company House, which are all public records (UK.GOV, 2016). The separated accounting performance of target firms after acquisitions allows me to ascertain whether target TMT turnovers improve the operating efficiency of the target firms or harm the valuable human resource transferred from targets to bidders. We ask two questions in this paper: first, whether the performances of target firms improve after acquisitions; second, does a change of target top management team (TMT) impact the performance of target firms post-acquisition?

There are several important findings of our study. We find that on average, the post-acquisition performance improves significantly in the unprofitable targets but deteriorates in profitable targets. For targets with non-positive return on assets (ROA) ratios, their ROAs increases by 0.28 in second-year post-acquisition and by 0.30 in third-year post-acquisition compared to pre-acquisition ROAs, and the improvements are significant at the 1% level. For targets with positive pre-acquisition ROAs, their ROAs drop by 0.06 in first-year post-acquisition and by 0.08 in third-year post-acquisitions, and the drops are significant at the 1% level.

We also find that acquirers replace a high portion of target TMT in the first-year post acquisitions. On average, acquirers tend to replace 27.7% of the pre-acquisition target TMT in unprofitable targets and 23.4% TMT in profitable targets. The 4.3% difference in TMT turnovers between profitable and unprofitable targets is significant at the 1% level, which

¹ e.g. registered office address, company type and status, incorporation dates, annual return

supports the market disciplinary expectation to replace incompetent TMT in target firms. However, the target TMT turnover does not appear to affect target post-acquisition performance changes after controlling for firm-specific and deal-specific characteristics. We also observe that acquirers tend to replace older directors with longer tenure in the target firms with younger directors who are new to the target board and that target firms with a larger board size pre-deal have a higher TMT turnover than targets with a smaller board size. Empirically, our work mainly extends the literature on acquisitions by examining the impact of target TMT turnover on operating efficiency of post-acquisition target firms. As stated in Maksimovic et al. (2011), separating the post-acquisition performance of newly acquired target's assets from the performance of acquirer's existing assets pins down the extent and direction of post-acquisition restructure. Maksimovic et al. (2011) use the plant-level data of US manufacturing target firms during 1997-2004 and find overall significant improvement in operating margin up to three years post-acquisitions. Jang & Reisel (2015) investigate the separated accounting performance of EU private targets during 2000-2010 and find overall insignificant improvements of peer-adjusted profitability. Maksimovic et al. (2011) and Jang & Reisel (2015) do not explain the source of performance change in the target firms. Our paper complements and extends Maksimovic et al. (2011) and Jang & Reisel (2015) who investigate the operating efficiency of the targets' business by analysing the TMT replacement value-creation source.

Our study is related to previous studies of TMT turnovers in M&As and post-M&A performance of bidders and targets (e.g. Cannella & Hambrick, 1993). Existing empirical studies support the market disciplinary hypothesis with the evidence that poorly performing targets are more likely to experience a high TMT turnover (or the CEO replacement) than well-

performing targets after M&As (e.g. Martin & McConnell, 1991; Jang & Reisel, 2015). However, they fail to sufficiently support the market disciplinary hypothesis with the evidence that removing inefficient TMTs creates value. The ownership of a target firm changes after an acquisition, but the management may stay the same if a bidder views target TMT as a valuable source of private information and decides to retain target's management team. The TMT turnover in the target firm is much more complex than what is explained by the poor pre-acquisition performance (Krug et al., 2015).

Although existing literature mainly focuses on the impact of target TMT turnovers on acquirers as the separated performance of target is limited (Fich et al., 2016; Kennedy & Limmack, 1996; Cannella & Hambrick, 1993; Krishnan et al., 1997; Zollo & Singh, 2004), acquirer's consolidated performance are more likely to be related to acquirer's TMT Turnover instead of target's TMT Turnover. Our regression results support this view and show that a 10% TMT turnover in bidders within one-year post-acquisition reduces the bidder's ROA(-1 year, +1 year) ratio by 1.5%, which is significant at the 1% level; while target TMT Turnover at the same time do not affect bidder's ROA(-1, +1).

Furthermore, our paper joins the emerging literature of mergers and acquisitions on private and subsidiary firms. Existing studies focus primarily on acquisitions with public acquirers and public targets (Krug, Wright, & Kroll, 2015). Our paper, with a few recent studies of non-public target firms (Maksimovic et al., 2001, 2011 and 2013; Erel et al., 2015; Jang & Reisel, 2015), provide investigations of post-acquisition efficiency in target firms.

Section 2. Analytical Framework

2.1 The Efficiency of Acquisition Market

The hypotheses that we examined are motivated by the long-standing question of mergers and acquisitions (M&A) efficiency. Empirical evidence generally suggests that M&As generate positive gains to targets and acquirers do not lose (Bruner, 2002; Jensen & Ruback, 1983; Sudarsanam, 2003). These studies mainly focus on the announcement returns of targets and the short-run and long-run post-acquisition performance of acquirers.

By contrast, we 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 contaminated with the business of the target and acquirer's existing business before the acquisition. Investigating the performance of target helps us to understand how acquisitions affect the business of target firms after the acquisition and how value is created. Second, since targets and acquirers are separate legal entities, an acquirer's performance should be more related to the acquirer's board of directors rather than the target's directors. The TMT turnovers in the target firm should be more responsible for the performance of the target instead of the performance of the whole group.

There are a few studies investigate the post-deal performance of target firms in whole-firm acquisitions and find mixed evidence on performance improvement. Conn (1976) and Jang and Reisel (2015) suggest that acquisitions do not improve target performance, while other studies suggest that acquisitions improve target efficiency and profitability (Cannella and Hambrick, 1993; Very et al.; 1997; Maksimovic et al.,2011).

Cannella and Hambrick (1993) and Very et al. (1997) survey the perception of post-acquisition performance from managers in targets and acquirers. Cannella and Hambrick (1993) examine 96 public-to-public acquisitions made during 1980-1984 in the US and suggest that acquirers view the departure of the targets' executives has a negative impact on target firm. In each acquisition, Cannella and Hambrick (1993) 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 7-point scales, from "very poor" to "very good". The target profitability scale increase by 0.61 points (t-statistic=1.57) after the acquisition (Cannella and Hambrick, 1993).

Very et al. (1997) send surveys to 1004 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 scale of 3.44 (with a standard deviation of 0.67) on the post-acquisition performance. However, these survey evidence do not provide a clear picture of whether the target performance improves significantly after acquisitions. Also, the survey responses could be upward biased as firms with poor performance might not like to disclose their failures.

Conn (1976), Maksimovic et al. (2011), and Jang and Reisel (2015) find mixed evidence of performance improvements in target firms or target assets. Conn (1976) examines 28 European Union (EU) conglomerate mergers during 1964-1968 and states that only 7 targets improve net income/total assets ratio after the transaction. 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 industry-adjusted profit rate change is -1.8%, which cannot be accepted at an uncontroversial level of significance ($t=1.782$). Thus, Conn (1976) do not find industry-adjusted improvements in the targets. 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 EU during 2000-2010, and the peer-adjusted performance shows insignificant improvements ($p\text{-value}=0.43$) after the acquisition.

On the contrary, Maksimovic et al. (2011), as discussed in Section 1, suggest that acquisitions improve the industry-adjusted performance of target plants. Maksimovic et al. (2011) show that 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 the acquisition tends to have flat performance. 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%, and both are significant at the 1% level. Sold plants also have positive performance changes although these changes are less pronounced than changes for kept plants. The average improvement in operating margin is 0.7% for sold plants, while the TFP change is about 2.7%, and both marginally significant at about the 10% level.

The discussion above shows that there is no conclusive evidence of takeover market efficiency. We examine whether UK acquisitions improve target firm performance.

Hypothesis 1: The UK acquisition market is efficient and improves the profitability of target firms.

2.2 Sources of value-creation and TMT turnovers

Economic theory has provided many sources of value creation in an M&A. 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). Erel et al. (2015) show that EU targets hold less cash and save less cash out of incremental cash flows after acquisitions and the post-acquisition target investment tends to be less correlated with cash flows, and they increase the quantity of investments. Potential reductions in production or distribution costs could occur through the realization of economies of scale, adjustment on capital structure, and adoption of more efficient production or organizational technology (Mitchell & Stafford, 2004; Bena & Li, 2014; Campa & Hernando, 2004; Eckbo & Langohr, 1989).

Second, takeovers could increase 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 & Stafford, 2011; Harford, 2005; Mitchell & Mulherin, 1996). 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 the target firms (Cai & Vijn, 2007; Conn & Connell, 1990; Danbolt & Maciver, 2012; Holmen & Knopf, 2004). Finally, the market discipline creates value in M&As by eliminating incompetent target management, which is the main focus of our study.

2.3 TMT turnover Theories

In this paper, we investigate how a change of TMT in target firms affect the post-acquisition performance 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 the target. The acquirer firm has to decide whether to retain or replace the directors in the target and recruit the most suitable officers to manage the resources of the target firm. To motivate our tests, we discuss the testable hypotheses from alternative theories, the market of corporate control theory and resource-based management theory, which could explain the impact of the TMT turnovers on acquisition performance.

2.3.1: 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 & 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 of acquisitions support the disciplinary 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 on public targets during 1958-1984 in the US 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 ($t = - 3.36$).

With a sample of US private targets, Jang and Reisel (2015) observe similar results of pre-acquisition accounting performance and TMT turnovers. For about 48% of private targets, more than half of the top executives are replaced within a three-year window which is from the year before the acquisition to one year after the acquisition (Jang and Reisel, 2015). Jang and Reisel (2015) extend Martin and McConnell (1991) by investigating the negative correlation between the TMT turnover and the pre-acquisition performance. Their regression results show that one percent drops on the EBIT/Total Assets ratio increases the probability of TMT turnovers by 0.14% and the coefficient is significant at the 5% level.

However, showing the negative correlation between the TMT turnover and the pre-acquisition performance may be necessary, but not sufficient to support the market disciplinary hypothesis which removing 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 20 trading days after the tender offer announcement day and find that the targets' and acquirers' CARs are not significant at the 10% level in acquisitions with CEO replacement and retention in the targets. 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.

Furthermore, two studies support the market disciplinary hypothesis with the 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 UK domestic public targets in 1980-1989 and show that targets replacing CEOs² generate 13.07% higher CAR during the period from 3 months before to 4 months after the acquisition announcement than targets retaining CEOs, and the difference is significant at the 10% level.

However, Kennedy and Limmack (1996) acknowledge that cautions are required in drawing inferences. The slightly more gains in CEO replacing targets are driven by the pre-bid announcement stock increases. In another estimation of a month after to 4 months after the acquisition, the difference drops to 3.95% and it is not significant. Kennedy and Limmack (1996) do not discuss why the two types of targets experience no difference in stock performance after the acquisition announcement containing CEO retaining or replacing information. Also, Kennedy and Limmack (1996) find no differences in the annual CAR before the acquisitions for targets replacing or retaining 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".

² If no person was specifically named as CEO, then the position of Managing Director was identified and if no Managing Director was identifiable then the Chairman was used as the next closest substitute.

More recently, Fich et al. (2016) examine 355 completed US domestic M&As during 1999-2008 and find that retaining a CEO in a target underperforming the industry median is associated with about 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 we discussed in Section 1, the acquirer's performance should be more related to acquirer's CEO rather than the target's CEO. Our work extends previous work with evidence of the target TMT turnover and the post-deal target's performance separated from acquirer's performance. Our study extends the studies of the disciplinary role of acquisitions by examining (1) whether there is an expected negative correlation between the TMT turnover and the pre-acquisition performance in the targets, and (2) whether there is a correlation between TMT turnovers and the post-acquisition performance changes in the 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 Mayers, 1996). Walsh and Ellwood (1991) examine 102 US targets in 1979 and find that target firms generally outperform their competitors before the acquisition. The TMT turnovers in the targets are not correlated with targets' pre-acquisition performance and do not trigger higher announcement returns in the 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 announcement-day CAR with 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 the 10% level. A more sophisticated approach should be provided to extend the Person correlation analysis in Walsh and Ellwood (1991).

Two papers investigate hostile takeovers, the type of M&A which are claimed to perform a disciplining function and suggest that the high TMT turnover does not derive from past managerial failure. Walsh and Kosnik (1993) investigate 59 US 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 UK 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 expected premium due to change of the top executive in the targets.

Walsh and his co-authors suggest that TMT may depart voluntarily, instead of involuntarily “discipline” turnovers. Therefore, the TMT turnovers may reflect TMT’s psychological attributes and perceptions of the acquisition other than disciplining function (Krug et al., 2015). Factors such as cultural differences between acquirers and targets, the loss of executive power, alternative career opportunities and financial incentives 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 3 TMT departures are “fired, poor performance cited” among 86 TMT departures. They find that 53% of TMT departures are due to “change in control”, and that “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 of market disciplinary role of takeovers is ambiguous in the correlations between TMT turnovers and pre or post-deal performance. If an acquisition is driven by the market disciplinary reason, targets with poor pre-acquisition performance would experience a high TMT replacement and post-acquisition firm value increases. If TMT turnovers are triggered by reasons other than disciplinary takeovers, the correlations of TMT turnovers and pre or post-acquisition performance may be weak.

Hypothesis 2: replacement of target TMT is negatively related to the pre-acquisition performance in the target.

Hypothesis 3: replacement of target TMT is positively related to the post-acquisition performance improvement in the target.

2.3.2: 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 & Sitkin, 1986; Penrose, 1995). Especially in private targets, the information asymmetry makes it difficult for acquirers to accurately estimate the value of targets (Ragozzino & 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 & Hambrick, 1993; Krishnan et al., 1997; Zollo & Singh, 2004).

Cannella & Hambrick (1993) [cross reference to Section 2A] 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 & Hambrick (1993) find that on average, around 49% of TMT are replaced within 2 years after the acquisition, and that targets' pre-acquisition ROE is significantly positive correlated to TMT departure. The regression results show that a 10% increase of TMT turnover in the targets decreases the target performance scale by 0.14-0.15³. Cannella & Hambrick (1993) show that acquirers view executive departure as a significantly negative impact on post-acquisition performance in the targets. The survey scales of target performance indicate the post-acquisition performance changes, but it is hard to know the extent of performance change.

³ The performance change in the target are rated by acquirers' executives and security analysts based on 7-point scales, from "very poor" to "very good". The regression coefficients are significant at the 5% level.

Krishnan et al. (1997) extend Cannella and Hambrick (1993) by providing the post-acquisition return on assets (ROA) of the consolidated acquiring firms. Krishnan et al. (1997) investigate 147 acquisitions between US public firms during 1986-1988. Krishnan et al. (1997) find that on average 47% of targets' TMT depart within 3 years after the acquisitions and that the Pearson correlation between the TMT turnover and abnormal ROA is -0.22 (significant at the 1% level). The regression coefficient suggests that an acquirer replacing all target TMT within three years of acquisition generate 2.8% lower (significant at the 5% level) ROA than an acquirer retaining all target TMT. Furthermore, Krishnan et al. (1997) show that complementary TMT (defined as differences in functional backgrounds between the acquirers' and targets' top managers) reduce target TMT turnovers and has a positive impact on post-acquisition performance, which supports the RBMV. These evidence indicate 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. Similarly, using a sample of 228 acquisitions in the US 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 the 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 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 contaminated acquirer's performance instead of separated performance of the target. As stated before, we extend previous target TMT turnover research by investigating the proportions of targets' TMT turnovers and the separated accounting performance of the target firms.

The resource-based management view suggests that TMT turnovers harm the profitability of acquisitions and the stability of integration process. Therefore, target firms may suffer the

operation disturbance and the difficulty to realize expected synergy. However, if the TMT turnovers are driven by complex reasons such as culture fitness, the age of retire of directors, TMT departure may have no impact, perhaps even positive impact on post-acquisition performance (Krug et al., 2015).

Hypothesis 4: replacement of target TMT is negatively related to the post-acquisition performance improvement in the target.

2.4 Wealth Transfer versus Resource Reallocation

With the separated financial statements of targets and the consolidated financial statements of acquirers, we investigate whether wealth transfers between targets and acquirers. Previous studies observe that after acquisitions, acquirers transfer funds and reallocate assets across targets and their existing business units (Stein, 1997; Scharfstein and Stein, 2000; Erel et al., 2015).

Theoretically, the fund transfer between targets and acquirers' existing business units could be value-enhancing or value-decreasing. Stein (1997) models the fund transfer in an internal capital market and suggests that fund transfer within combined firms could create value by effectively relax financial constraints in specific units. However, Scharfstein and Stein (2000) also identify that the capital budgeting allocations could be value-decreasing if the rent-seeking behaviour on the part of division managers subvert the working of an internal capital market. There is no strong theoretical prediction about the productivity and profitability of acquirers' existing business units after acquisitions (Maksimovic et al., 2001).

Empirically, Ozbas and Scharfstein (2010) support Scharfstein and Stein (2000) with the evidence that agency problems at headquarters and divisions in the conglomerates lead to the inefficient allocation of capital. On the contrary, Jang and her co-authors suggest that acquisitions mitigate the financial constraints and decrease the leverage ratios in the targets (Erel et al., 2015; Jang and Reisel, 2015). Erel et al. (2015) investigate 5187 European acquisitions during 2001-2008 and find that acquisitions mitigate the financial constraints in the targets and increase investment in the targets, especially in smaller and independent private targets. After acquisitions, the cash holding to total assets in the targets on average declined by approximately 1.5%, the sensitivity of cash to cash flow declines significantly from

10.4% to close to zero, and the sensitivity of investment to cash flows on average reduce from 6.4% to around 4.5% after the acquisitions (Erel et al., 2015). Erel et al. (2015) suggest that after the 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 tends to not harm the financial capacity of acquirers' existing business. Erel et al. (2015) do not find any evidence of financial constraints before the acquisition, and the inferences about the change of acquirers' financial constraints are difficult to draw. Maksimovic et al. (2001) observe similar pattern of performance change in post-acquisition targets and acquirers' own business: positive increases in productivity and profitability for the kept plants (significant at the 1% level) and no improvements for sold plants. Jang and Reisel (2015) find that on average, the profitability of acquirers does not change after the acquisitions.

Following these study, we investigate the correlation between changes in capital structure change and profitability in targets and acquirers. If no value is created in an acquisition, the improvement of target performance could be a wealth transfer from the acquirer to the target, or the other way around⁴. If synergy values are created in an acquisition, the improvement of target performance would not harm the performance of the acquirers' existing business.

Hypothesis 5: the post-acquisition performance changes in the targets are driven by the wealth transfer between acquirers and targets.

Section 3. Data and Methodology

3.1 Data and Sample

We obtain our sample of UK domestic acquisitions announced and completed between 1 Jan 2006 and 31 December 2014 from the SDC Mergers and Acquisitions database. Unlike the US, there is no federal statutory requirement for unlisted subsidiaries to have their accounts audited or to make their accounts public (FASB, 2013), in the UK, all registered limited

⁴ If target performance deteriorate, the wealth could be transferred from the target to the acquirer.

companies, including subsidiary, small and inactive companies, must file annual financial statements to the Company House, which are all public records (UK.GOV, 2016). We collect UK firms' Company House filings using FAME. Target companies are public, private, or subsidiaries which have separated financial statements. Table 1 provides the sample selection of target companies.

We consider acquisitions in which the acquirer obtains at least 50% of target 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. We exclude reverse takeovers, leveraged buyouts, and management buyouts, where the acquirer is not the controlling entity of the combined business after the deal.

We restrict the sample to acquisition transactions where the deal value to be ~~is~~ greater than or equal to one million pounds to exclude small size acquisitions. If deal values are missing, we restrict the value of targets' total assets to be greater than or equal to one million pounds. We exclude target companies which cannot be found in the FAME database, cannot be identified as a subsidiary of the acquirer after the acquisitions, do not have financial statements for years -1 and +1, where year 0 is the acquisition announcement year, and have a missing value of pre-or-post sales revenues or return on assets (ROA) at the year -1 and +1.

From the FAME database, we collect the information of officers in the target companies, which includes dates of appointment and resign actions, officer position, and date of birth of officers. Following Kaplan (1994), we include all directors, managers and other officers as who are reported to the Companies House. The final sample is 498 target companies with financial variables and information of target officers.

3.2 Models Design and Variable Measurement

To examine the market disciplinary hypothesis, we first examine whether TMT turnovers are driven by the replacement of incompetent managers, and second investigate whether the market disciplinary hypothesis or RBMV explain the impact of TMT turnovers on the performance of post-acquisition targets and acquirers. Following previous literature, we control factors expected to affect the TMT turnover and change of performance in the target

firms. Table 10 describes the measurement of variables and motivates the use of each variable.

Model 1: TMT Turnover

$$\begin{aligned}
 &= \alpha_0 + \alpha_1 * Firm\ Performance_{t-1} + \alpha_2 * \Delta Firm\ Performance_{(t-2,t-1)} \\
 &+ \alpha_3 * TMT\ characteristics_{t-1} + \alpha_4 * Firm\ Financial\ Characteristics_{t-1} \\
 &+ \alpha_5 * Year\ Dummy + \alpha_6 * Peer\ Performance_{t-1}
 \end{aligned}$$

Model 2: $\Delta Firm\ Performance_{(t-1,t+p)}$

$$\begin{aligned}
 &= \beta_0 + \beta_1 * Firm\ Performance_{t-1} + \beta_2 * Deal\ Characteristics_t \\
 &+ \beta_3 * TMT\ characteristics_{t+p} + \beta_4 * Firm\ Financial\ Characteristics_{t-1} \\
 &+ \beta_5 * Deal\ Charactristics + \beta_6 * \Delta Peer\ Performance_{(t-1,t+p)} \\
 &+ \beta_7 * Year\ Dummy + \delta * Turnover
 \end{aligned}$$

Following Hermalin & Weisbach (1988), we measure the TMT turnover as annual percentage of officers replaced on the management board (Benjamin E Hermalin & Weisbach, 1988). We measure the profitability of firms using the return on total assets (ROA) ratio, which is profit and loss before interest divided by total assets (Maksimovic et al., 2011; Hermalin and Weisbach, 1988; Ravenscraft and Scherer, 1988). Following Powell and Stark (2005), we compare the performance of targets with peer firms not involved in M&As, matched on the performance of industry, firm size, pre-acquisition performance and public status at year t-1. Table 10 Peer Firm discusses the procedure of peer firm selection.

3.3 Summary Statistics

Characteristics and performance of targets and peers:

Table 3 Panel A describes the financial characteristics, pre and post-acquisition performance, and TMT characteristics of targets, acquirers and peer firms. 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 (-1, +1) of 24%, which is significantly higher than the 9% in peer firms and 12% in acquirers. We find that that the average board age decreases significantly from 51 to 49 and the average board size stays the same. This evidence suggests that younger directors are brought into the post-acquisition board to replace older directors. Targets and peers have similar ROA from t-1 to t+3. The change of profitability in targets, $\Pi (-i,+j)$, and the differences of performance changes

between targets and peer firms are not different from zero. This results fail to support Hypothesis 1 that UK acquisitions generally improve the profitability of target firms.

However, the no change of average post-acquisition performance disappears when targets are split into profitable and unprofitable groups. Target firms are classified as profitable firms if they generate a positive ROA(-1) and as unprofitable firms if otherwise. Table 3 Panel B shows that unprofitable targets on average improve profitability after acquisitions, while profitable targets show decreasing profits. On average, acquisitions improve the unprofitable targets' ROA by 10% in year +1 (not different from zero), 28% in year +2 (significant at the 1% level), 30% in year +3 (significant at the 1% level). On the contrary, for the profitable target firms, acquisitions on average significantly deteriorate the ROA by 6% in year +1 (significant at the 1% level), 4% in year +2 (not different from zero), and 8% in year +3 (significant at the 1% level). The performance differences between unprofitable and profitable target groups range from 16% to 38%, which are all significant at the 1% level. Targets' peer-adjusted ROAs provide consistent results.

Table 3 Panel B also provides the TMT characteristics in subgroups of profitable and unprofitable targets. As predicted in the market disciplinary hypothesis of acquisitions, unprofitable targets experience significantly higher TMT Turnovers than profitable targets. Around 28% officers are replaced in unprofitable targets while 23% in profitable targets.

The asymmetry of performance changes and TMT turnovers between profitable and unprofitable targets 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. The TMTs in profitable targets may be efficient and acquisitions may not be expected to significantly improve the post-deal performance. However, as stated in the Section2C1, to support the market disciplinary hypothesis, both negative correlation between the TMT turnover and the pre-acquisition performance and removing inefficient TMTs creating value need to be observed.

Characteristics and performance of acquirers:

Table 3 Panel A shows that acquirers are on average less leveraged than targets. The average Leverage₁ is 60% in acquirers, which is 10% lower than that of targets. In our sample, acquirers tend to use cash payment to around 90% of both profitable and unprofitable targets,

which support the view that acquirers are more likely to have a strong financing capacity than targets.

To compare our study with prior literature which links target TMT turnover and acquirer performance, we examine the change of performance in acquirers. Table 3 Panel A shows that acquirers' performance experience a slight drop between 1% and 1.6% (significant at the 5% level). The RBMV literature views target board members as valuable human resources to the acquirer and expects acquisitions impact acquirer performance. We further investigate whether target TMT turnovers affect acquirer performance after control firm and deal specific factors in Section 5.

Section 4 Regression Analysis

4.1 Market Disciplinary Turnovers

Table 5 provides evidence to partially support the market disciplinary hypothesis. Table 5B Columns 1 to 4 show that profitable targets on average experience 4% less TMT turnover than unprofitable targets and that the difference is significantly at the 1% level. Table 5B Columns 5 to 8 show that profitable targets reduce the likelihood of complete turnovers by 43% to 47%. Although the category of pre-acquisition performance matters to TMT Turnovers, the level of performance does not affect TMT turnovers. In Table 5 Panel A, the negative but non-significant coefficients of ROA(-1) indicate that a lower pre-acquisition performance increases the proportion and probability of TMT Turnovers in targets. These results provide some support to Hypothesis 2 that pre-acquisition performance negatively affect the TMT turnovers in targets. Table 7 Panels A and B provide consistent results that ROA(-1) do not impact TMT Turnovers.

Table 5 Panels A and B Columns 1 to 4 show that targets with large TMT size experience significant higher TMT Turnovers around acquisitions. However, the probability of Complete TMT turnovers is reduced in targets with large TMT sizes (Table 5A&B Columns 5 to 8), which consists to the RBMV expectation. As TMT size indicates the complexity of business, acquirers are less likely to fully replace targets' TMTs when targets business are complex. Table 7 Panels A&B provide consistent results.

The RBMV hypothesis is further supported by the positive coefficient of Relative Industry. Table 5 Panels A&B Columns 5 to 8 show that acquirers are more likely to completely replace

target TMT when acquirers are in the same industry as targets' and are more likely to have the knowledge of target business. Furthermore, Table 7 Panel B shows that Relative Industry affects the Complete TMT Turnovers only in profitable targets. For unprofitable targets, acquirers replace target TMTs regardless targets' TMT knowledge.

4.2 Target Performance Improvements and Mean-reversion Effect:

Table 6 Panels A and B show that Target TMT Turnovers do not affect the performance change in targets within two years after acquisitions but significantly increase target ROA improvement in the third year. The sub-group tests in Table 8 Panel A suggests that TMT Turnovers in profitable targets improve target performance, which is against the RBMV expectation. It might be possible that the positive effect of TMT replacement would be observed in long-run instead of short-run. As our study covers only three-year post-acquisition performance, the long-run effect of TMT Turnovers are left to future research. These results fail to support Hypotheses 3 and 4, which means results do not support the disciplinary officer turnover hypothesis or resource-based management view of TMT turnovers' impact on post-acquisition performance change.

Table 6 shows that targets experience strong mean-reversion and Table 8 provides consistent results in sub-groups of profitable and unprofitable targets. ROA(-1) significantly decrease the performance improvement in profitable targets and improve performance in unprofitable targets. The correlations between ROA(-1) and target ROA changes range from -1.1 to -0.8, which are all significant at the 1% level (Table 6 Panels A and B). After adjusting for peer performance, the coefficients drop to the range from 0.6 to 0.9, which are still significant at the 1% level (Table 6 Panel C). These results suggest that the post-acquisition performance changes experience significant mean-reversion effects. The regression results consist to the descriptive statistics that profitable targets experience fewer performance improvements than unprofitable targets. Table 6 also show that Cash Payment positively affect the first-year post-acquisition performance improvement in targets, which is consistent to the expectation that cash deals generate higher returns than stock deals.

4.3 Target TMT Turnover versus Acquirer Performance Changes:

To compare our study with previous literature which links the Target TMT Turnovers to acquirers' performance improvement, we investigate whether Target TMT Turnover or Acquirer TMT Turnover drives the post-acquisition performance changes of acquirers. As we

stated before, targets are subsidiaries of acquirers and the TMT Turnovers in acquirers should be more important to acquirers than the subsidiaries' TMT Turnovers. In our sample, targets are relatively small to acquirers. The median of target's total assets divided by acquirer's total assets is 0.06. Table 9 Panel A shows that the proportion of Target TMT Turnover do not affect post-deal performance change in acquirers within two years after acquisition and positively affect performance in year 3. On the contrary, a Complete Turnover in the target on average significantly reduce acquirers' change of ROAs by 2% to 4% (significant at the 5% level). These results show that partial target TMT turnover improves acquirer's performance but a complete TMT turnover is harmful to acquirers significantly.

Furthermore, Table 9 Panel B shows that after controlling for targets' TMT Turnovers, acquirers' TMT Turnovers at (0, +1) significantly reduce acquirers' ROA improvement within the first two years post-acquisition while targets' TMT Turnovers do not impact performance changes in acquirers. A 10% increase in acquirers' TMT Turnovers reduce the ROA(-1, +1) by more than 2.4% (significant at the 1% level) and further reduce the ROA(-1, +2) by more than 1.6% (significant at the 1% level).

Section 5 Conclusion

Our results suggest that on average acquisitions significantly improve the performance of unprofitable targets and significantly deteriorate the performance of profitable targets. Unprofitable targets are more likely to experience "disciplinary TMT turnovers," but the TMT Turnovers do not improve the post-acquisition target performance. Our results do not provide evidence to support the market hypothesis expectation that disciplinary TMT turnovers improve the operation and performance of target firms. The reasons of TMT Turnovers around acquisitions could be complex and disciplinary TMT turnover is not the main reason of officer turnovers in our UK sample. Other sources of value-creation, such as the increasing financing capacity provided by acquirers to targets, may explain the value creation in unprofitable targets.

On average, acquirers experience negative changes of post-acquisition performance, but the decreasing ROA are not driven by TMT Turnovers in targets. Although TMTs in profitable targets are valuable resources of inside knowledge, the post-acquisition performance in acquirers are more affected by acquirers' TMT turnovers than target TMT turnovers.

Table 1. Sample Selection of target companies

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

		NO.
Complete UK domestic M&As during 2006-2014		15,332
Less: deals with missing values of transaction size	9,396	5,936
Plus: deals with missing value of 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), 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 of target percentage shares acquired in the deal	633	6,775
Less: deals with missing values of 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 of 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 cannot identify the parent-subsidiary relation at from year +1 onwards	1,078	2209
Less: deals with no balance sheets or profits & loss statements information in FAME at year -1 and +1	326	1883
Less: targets which have missing values of acquisition sales revenue	1,228	655
Less: targets which have missing values of ROA at the year -1 and +1,	157	498
Less: targets which have missing data of officer information	0	498
Final Sample Size		498

Table 2 Frequency Distribution

Panel A. Number of Deals 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 the acquisition, and targets and acquirers are domestic U.K. firm which has at least one financial report before and after the acquisition.

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

Panel A. Number of Deals		Panel B. Industry Frequency			
M&A announcement year	Frequency	Industry	2-Digit SIC	Frequency of Target	Frequency of Acquirer
2006	65	Agriculture, Forestry and Fishing	01-09	0	0
2007	68	Mining	10-14	3	1
2008	49	Construction	15-17	6	7
2009	43	Printing	18-19	15	16
2010	57	Manufacturing	20-39	0	0
2011	59	Transportation, Communications, Electric, Gas and Sanitary service	40-49	92	92
2012	82	Wholesale Trade	50-51	35	43
2013	62	Retail Trade	52-59	30	19
2014	13	Finance, Insurance and Real Estate	60-67	116	168
Total	498	Services	70-89	198	151
		Public Administration	91-97	3	1
		Total		498	498

Table 3. Target characteristics and acquisition deal-specific characteristics:

Panel A reports the average of selected financial for targets, peer firms and acquirers: firm size, leverage and firm performance before and after the acquisition and the changes of performance. Panel A also reports the TMT turnovers around acquisitions. All financial variables are winsorized at the 1% level. The unit of Total Assets is thousand GBP. $\pi(-i,+j)$ stands for the ROA(+j) subtracting ROA(-i). The t-statistics are from tests of significance of the average from zero in parentheses. c=significant at 10%, b=significant at 5%, a=significant at 1%.

VARIABLES	Target		Peer		Diff.	Acquirer		Diff.
	Mean	N	Mean	N		Mean	N	
Total Assets	57,418	498	63,825	498	-6,407	1,550,183	410	-1,502,424a
Leverage1	0.682	498	0.700	498	-0.018	0.595	410	0.099a
Leverage2	0.134	498	0.174	498	-0.040	0.194	410	-0.060a
Pre_deal TMT Age	51.000	498	51.240	489	-0.172	52.100	472	-1.130a
Post_deal TMT Age	49.110	497	50.620	490	-1.486a	51.550	483	-2.436a
Pre_deal proportion of over 65 TMT	0.484	498	0.341	498	0.143a	0.567	476	-0.088a
Post_deal proportion of over 65 TMT	0.390	498	0.437	497	-0.046	0.777	485	-0.388a
Pre-deal Board Size	7.480	498	4.958	498	2.556a	7.105	486	0.381c
Post-deal Board Size	7.460	498	4.904	498	2.556a	7.449	486	0.051
Post-deal New TMT No.	2.129	498	0.526	498	1.602a	1.255	486	0.885a
ROAt-1	0.089	498	0.095	496	-0.006	0.077	396	0.023c
ROAt+1	0.057	498	0.085	496	-0.026	0.056	472	-0.001
ROAt+2	0.100	414	0.091	407	0.012	0.043	395	0.055a
ROAt+3	0.073	333	0.082	327	-0.004	0.048	317	0.029
$\pi(-1,+1)$	-0.033c	498	-0.010	494	-0.020	-0.011	393	-0.031
$\pi(-1,+2)$	0.018	414	-0.003	405	0.022	-0.016b	316	0.022b
$\pi(-1,+3)$	-0.006	333	-0.007	325	0.011	-0.013b	249	-0.002b
$\pi(-2,-1)$	0.011	469	0.013	433	-0.002	0.005	362	0.010
TMT Turnover	0.244	498	0.092	497	0.152a	0.120	485	0.123a
Complete_TMT_Turnover	0.430	498	0.554	202	-0.079	0.376	101	0.376
TMT Turnover_pre	0.239	498	0.092	498	0.147a	0.115	476	0.125a
TMT Turnover_new	0.232	498	0.086	497	0.147a	0.163	485	0.069a

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 UK or Irish firms in the FAME database. All variables, if not specified, measure the target firms.

VARIABLES	Unprofitable Target		Profitable Target		Difference	VARIABLES	Unprofitable Target		Profitable Target		Difference
	N	Mean	N	Mean	Mean		N	Mean	N	Mean	Mean
Total Assets	92	37,339	406	61,968	-24,628	TMT Turnover	92	0.277	406	0.234	0.043a
Leverage1	92	0.927	406	0.626	0.300a	Pre-deal Board Age	91	51.133	406	50.974	0.158
Leverage2	92	0.240	406	0.110	0.130a	Post-deal Board Age	92	49.827	406	48.949	0.878c
Relative Industry	92	0.511	406	0.480	0.031	Pre_deal Tenure	92	5.247	406	6.255	-1.001a
Relative Size	71	1.207	339	1.291	-0.084c	Post_deal Tenure	92	3.261	406	3.477	-0.216
Firm Age	92	18.731	406	22.424	-3.693	TMT Turnover	92	0.296	406	0.232	0.064
Cash Payment	92	0.891	406	0.968	-0.077	Complete_Turnover	92	0.500	406	0.414	0.086
$\Pi(-1,+1)$	92	0.100	406	-0.063a	0.163a	TMT Turnover_pre	92	0.257	406	0.235	0.022
$\Pi(-1,+2)$	77	0.284a	337	-0.042	0.327a	TMT Turnover_new	92	0.244	406	0.230	0.015
$\Pi(-1,+3)$	62	0.304a	271	-0.077a	0.381a	Pre-deal Board Size	92	7.870	406	7.392	0.478
$\Pi(-2,-1)$	89	-0.118	380	0.041	-0.159a	Post-deal Board Size	92	7.576	406	7.433	0.143
Adj_ $\Pi(-1,+1)$	91	0.032	403	-0.032c	0.063	Post-deal New TMT No.	92	2.239	406	2.103	0.136
Adj_ $\Pi(-1,+2)$	75	0.163c	330	-0.010	0.173a	Pre-deal proportion of over 65 TMT	92	0.489	406	0.483	0.006
Adj_ $\Pi(-1,+3)$	58	0.255a	267	-0.042c	0.298a	Post-deal proportion of over 65 TMT	92	0.467	406	0.372	0.095
Acq_ $\Pi(-1,+1)$	68	-0.012	325	-0.011	-0.002						
Acq_ $\Pi(-1,+2)$	62	-0.031	296	-0.015	-0.015						
Acq_ $\Pi(-1,+3)$	53	-0.032	241	-0.023	-0.009						

t-statistics from test of significance of the average from zero in parentheses.

c=significant at 10%, b=significant at 5%, a=significant at 1%.

Table 4. Correlations

Table 4 describes the pairwise correlations between target board characteristics, target financial characteristics, and deal-specific characteristics. The t-statistics are from tests of significance of the average from zero in parentheses. c=significant at 10%, b=significant at 5%, a=significant at 1%.

	Complete Turnover	TMT Turnover	ROA(-1)	$\Pi(-2, -1)$	Pre-deal TMT Age	Post-deal TMT Age	Pre-deal Tenure	Post-deal Tenure	Post-deal TMT Size	Pre-deal TMT Size	Ln(Total Assets)
TMT Turnover	0.37a	1									
ROA(-1)	-0.06	-0.04	1								
$\Pi(-2, -1)$	0.02	-0.02	0.54a	1							
Pre-deal TMT Age	0.03	0.06	-0.1b	-0.11b	1						
Post-deal TMT Age	-0.09b	0.05	-0.11a	-0.1b	0.69a	1					
Pre-deal Tenure	0.12b	0.06	0.01	-0.14a	0.42a	0.25a	1				
Post-deal Tenure	-0.07	0.2a	-0.02	-0.13b	0.23a	0.27a	0.64a	1			
Post-deal Board Size	0.2a	0.63a	0	0.01	0.06	0.06	0	0.19a	1		
Pre-deal Board Size	-0.23a	0.04	-0.03	-0.02	-0.01	0	-0.24a	-0.09c	0.34a	1	
Ln(Total Assets)	0.04	0.31a	-0.11b	-0.1b	0.21a	0.19a	0.04	0.14a	0.38a	0.18a	1
Leverage1	0.03	-0.07	-0.33a	0.06	-0.07	-0.08c	-0.16a	-0.14a	-0.02	-0.01	-0.06
Leverage2	0.03	0.08	-0.17a	-0.05	0	0	-0.09c	-0.05	0.1b	0.03	0.22a
$\Pi(-1, +1)$	-0.01	-0.04	-0.49a	-0.43a	0.02	-0.01	0.1b	0.05	-0.07	-0.02	0.02
$\Pi(-1, +2)$	-0.08	0.04	-0.6a	-0.48	-0.09c	-0.02	-0.06	-0.01	0.01	0.08	0
$\Pi(-1, +3)$	-0.02	0.07	-0.63a	-0.47a	-0.02	0	-0.06	-0.02	0	0.13b	0.14b
Adj_ $\Pi(-1, +1)$	0	-0.06	-0.3a	-0.21a	0.03	0	0.08	0.05	-0.06	-0.03	0.02
Adj_ $\Pi(-1, +2)$	-0.04	0.03	-0.4a	-0.34a	-0.08	-0.02	-0.06	-0.02	0.03	0.05	-0.05
Adj_ $\Pi(-1, +3)$	-0.01	0.01	-0.4a	-0.37a	-0.04	-0.04	-0.08	-0.06	-0.06	0.13b	0.12b
Cash Payment	-0.1b	-0.12b	-0.02	-0.09c	0.1b	0.09c	0.16a	0.07	-0.15a	-0.03	-0.01
Relative Size	0.03	-0.1b	0.08	0.08	-0.1c	-0.11cc	-0.03	-0.1	-0.03	0.01	-0.34a
Relative Industry	0.08b	-0.04	0	0.02	-0.03	-0.02	0	-0.06	-0.03	0.01	-0.09b

	Leverage1	Leverage2	$\Pi(-1, +1)$	$\Pi(-1, +2)$	$\Pi(-1, +3)$	Adj_ $\Pi(-1, +1)$	Adj_ $\Pi(-1, +2)$	Adj_ $\Pi(-1, +3)$	Cash Payment	Relative Size
Leverage2	0.36a	1								
$\Pi(-1, +1)$	0.15a	0.13a	1							
$\Pi(-1, +2)$	0.26a	0.1c	0.57a	1						
$\Pi(-1, +3)$	0.19a	0.1c	0.51a	0.56a	1					
Adj_ $\Pi(-1, +1)$	0.16a	0.09c	0.81a	0.4a	0.35a	1				
Adj_ $\Pi(-1, +2)$	0.18a	0.03	0.41a	0.79a	0.39a	0.49a	1			
Adj_ $\Pi(-1, +3)$	0.1c	0.01	0.34a	0.37a	0.82a	0.42a	0.45a	1		
Cash Payment	-0.07	-0.04	0.14a	0	0.13b	0.12b	-0.06	-0.01	1	
Relative Size	0.08	-0.03	-0.01	0.08	-0.02	0.04	0.13b	0.02	-0.17a	1
Relative Industry	0	0.06	0.02	-0.07	-0.03	0.03	-0.01	-0.05	0.14a	-0.05

Table 5 Factors affect board turnover

Table 5 presents factors affect TMT turnovers. The dependent variable for models in Columns 1 to 4 is TMT Turnover and OLS estimations are applied. The dependent variable for models in Columns 5 to 8 is Complete Turnover and logit regressions are applied as Complete Turnover is a dummy variable. All financial variables are winsorized at 1%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	TMT	TMT	TMT	TMT	Complete	Complete	Complete	Complete
	Turnover	Turnover	Turnover	Turnover	Turnover	Turnover	Turnover	Turnover
<i>ROA</i> ₋₁	-0.023 (0.043)	-0.020 (0.043)			-0.436 (0.413)	-0.409 (0.410)		
Pre-deal TMT Age	-0.001 (0.002)		-0.002 (0.002)		-0.011 (0.020)		-0.012 (0.020)	
Pre-deal Tenure	0.004 (0.004)	0.003 (0.004)	0.005 (0.004)	0.004 (0.003)	0.049 (0.034)	0.037 (0.034)	0.055 (0.035)	0.042 (0.034)
Pre-deal Board Size	-0.001 (0.004)	-0.001 (0.004)	-0.001 (0.004)	-0.001 (0.004)	-0.183a (0.038)	-0.188a (0.040)	-0.186a (0.038)	-0.191a (0.040)
Ln(Total Asset)	0.045a (0.007)	0.044a (0.006)	0.045a (0.006)	0.044a (0.006)	0.131b (0.063)	0.123b (0.062)	0.136b (0.063)	0.128b (0.062)
Leverage1	-0.032 (0.028)	-0.032 (0.029)	-0.053c (0.028)	-0.053c (0.028)	0.186 (0.273)	0.193 (0.272)	0.140 (0.269)	0.145 (0.269)
Relative Industry	-0.006 (0.020)	-0.006 (0.020)	-0.007 (0.020)	-0.007 (0.020)	0.402b (0.190)	0.403b (0.190)	0.395b (0.191)	0.396b (0.191)
Pre-deal over 65 TMT %		-0.002 (0.013)		-0.003 (0.013)		0.050 (0.126)		0.043 (0.127)
Profitable Target Dummy			-0.082a (0.027)	-0.081a (0.027)			-0.464c (0.257)	-0.448c (0.256)
Constant	-0.090 (0.114)	-0.151b (0.075)	0.003 (0.115)	-0.071 (0.077)	-0.181 (1.080)	-0.591 (0.717)	0.170 (1.107)	-0.278 (0.750)
Observations	498	498	498	498	498	498	498	498
r2_a or r2_p (Pseudo R2)	0.0878	0.0870	0.105	0.103	0.0584	0.0582	0.0616	0.0612
F or chi2	7.838	7.765	9.289	9.184	39.77	39.62	41.90	41.67
p	5.17e-09	6.37e-09	8.07e-11	1.09e-10	1.39e-06	1.49e-06	5.43e-07	6.02e-07

Standard errors in parentheses. c=significant at 10%, b=significant at 5%, a=significant at 1%.

Table 6 Factors affect target performance changes

Table 6 presents factors affect target performance changes post-acquisitions. In Columns 1 to 6, the dependent variable $\Pi(-i,+j)$ stands for the target ROA performance change between year +j and -i. In Columns 7 to 9, the dependent variable $Adj_ \Pi(-i,+j)$ stands for the peer-adjusted performance change of target firms between year +j and -i, which is the ROA change in the target subtracting the ROA change in the peer firms.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	$\Pi(-1,+1)$	$\Pi(-1,+2)$	$\Pi(-1,+3)$	$\Pi(-1,+1)$	$\Pi(-1,+2)$	$\Pi(-1,+3)$	Adj $\Pi(-1,+1)$	Adj $\Pi(-1,+2)$	Adj $\Pi(-1,+3)$
TMT Turnover	-0.043 (0.086)	0.035 (0.080)	0.063 (0.093)	-0.023 (0.098)	-0.023 (0.098)	0.025 (0.094)	-0.070 (0.097)	-0.070 (0.097)	0.053 (0.096)
ROA_{-1}	-0.815a (0.067)	-0.893a (0.066)	-1.062a (0.079)						
Profitable Target Dummy				-0.138a (0.048)	-0.138a (0.048)	-0.279a (0.046)			
Post-deal Board Size	-0.006 (0.006)	0.001 (0.005)	-0.005 (0.006)	-0.009 (0.007)	-0.009 (0.007)	-0.000 (0.006)	-0.007 (0.007)	-0.007 (0.007)	0.003 (0.006)
Post-deal TMT Age	-0.008b (0.004)	-0.005 (0.003)	-0.007c (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.003 (0.004)	-0.007c (0.004)	-0.007c (0.004)	-0.002 (0.004)
Post-deal Tenure	0.012c (0.007)	0.005 (0.007)	-0.005 (0.008)	0.015c (0.008)	0.015c (0.008)	0.008 (0.008)	0.009 (0.008)	0.009 (0.008)	-0.001 (0.008)
Ln(Total Asset)	-0.001 (0.011)	-0.013 (0.010)	0.032a (0.012)	0.014 (0.012)	0.014 (0.012)	-0.000 (0.011)	0.020c (0.012)	0.020c (0.012)	-0.009 (0.012)
Leverage1	-0.003 (0.044)	0.061 (0.042)	-0.080c (0.048)	0.135a (0.049)	0.135a (0.049)	0.168a (0.048)	0.114b (0.047)	0.114b (0.047)	0.106b (0.048)
Relative Industry	-0.001 (0.031)	-0.044 (0.029)	-0.026 (0.034)	-0.001 (0.035)	-0.001 (0.035)	-0.049 (0.034)	0.012 (0.035)	0.012 (0.035)	-0.014 (0.035)
Cash Payment	0.071a (0.023)	0.004 (0.021)	0.036 (0.026)	0.082a (0.026)	0.082a (0.026)	0.021 (0.024)	0.075a (0.025)	0.075a (0.025)	0.002 (0.025)
Adj_ROA_{-1}							-1.220a (0.099)	-1.220a (0.099)	-1.079a (0.108)
Constant	0.379b (0.190)	0.392b (0.175)	0.198 (0.209)	0.014 (0.220)	0.014 (0.220)	0.259 (0.209)	-0.070 (0.097)	-0.070 (0.097)	0.053 (0.096)
Observations	497	413	332	497	497	413	493	493	404
r ² _a	0.265	0.353	0.402	0.0569	0.0569	0.136	0.269	0.269	0.214
F	20.83	25.99	25.69	4.326	4.326	8.209	21.07	21.07	13.22
p	0	0	0	1.96e-05	1.96e-05	0	0	0	0

Table 7. Factors affect board turnover in subgroups

Table 7 describes factors affect TMT turnovers in subgroups of profitable and unprofitable targets. The dependent variable is TMT Turnover for OLS models in Column 1 to 4 and Complete Turnover for Logit models in Column 5 to 8. The adjusted R square (r2_a) and Pseudo R square are for OLS and Logit regressions respectively. The F statistics and Chi square are for OLS and Logit regressions respectively. All financial variables are winsorized at 1%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	OLS	OLS	OLS	Logit	Logit	Logit	Logit
	Profitable	Profitable	Unprofitable	Unprofitable	Profitable	Profitable	Unprofitable	Unprofitable
<i>ROA₋₁</i>	0.083 (0.074)	0.084 (0.073)	-0.017 (0.087)	-0.012 (0.087)	-0.651 (0.742)	-0.624 (0.739)	0.215 (0.751)	0.271 (0.743)
Pre-deal TMT Age	-0.001 (0.002)		-0.004 (0.006)		-0.010 (0.022)		-0.044 (0.052)	
Pre-deal Tenure	0.006 (0.004)	0.006c (0.004)	0.004 (0.010)	-0.001 (0.010)	0.064c (0.038)	0.057 (0.037)	0.028 (0.089)	-0.007 (0.084)
Pre-deal Board Size	-0.001 (0.004)	-0.000 (0.004)	-0.001 (0.010)	-0.001 (0.010)	-0.166a (0.042)	-0.168a (0.044)	-0.285a (0.095)	-0.283a (0.096)
Ln(Total Asset)	0.042a (0.007)	0.041a (0.007)	0.073a (0.018)	0.066a (0.017)	0.086 (0.073)	0.082 (0.072)	0.288c (0.173)	0.225 (0.161)
Leverage1	-0.017 (0.038)	-0.016 (0.037)	-0.088c (0.049)	-0.086c (0.049)	0.200 (0.368)	0.208 (0.367)	0.115 (0.441)	0.119 (0.438)
Relative Industry	0.001 (0.021)	0.002 (0.021)	-0.040 (0.052)	-0.033 (0.053)	0.384c (0.212)	0.385c (0.212)	0.271 (0.467)	0.285 (0.469)
Pre-deal over 65 TMT %		-0.012 (0.014)		0.022 (0.033)		0.004 (0.144)		0.067 (0.291)
Constant	-0.124 (0.129)	-0.189b (0.086)	-0.081 (0.280)	-0.223 (0.195)	-0.073 (1.268)	-0.476 (0.853)	1.469 (2.632)	-0.089 (1.798)
Observations	406	406	92	92	406	406	92	92
r2_a (Pseudo R2)	0.0727	0.0723	0.157	0.126	0.0529	0.0525	0.111	0.105
F (Chi2)	5.534	5.507	3.423	2.882	29.11	28.92	14.11	13.42
p	4.31e-06	4.64e-06	0.00288	0.00952	0.000138	0.000150	0.0492	0.0625

Standard errors in parentheses. c=significant at 10%, b=significant at 5%, a=significant at 1%.

Table 8. Factors affect target performance changes in subgroups

Table 8 describes factors affect target performance changes post-acquisitions in profitable and unprofitable targets. The dependent variable $\Pi(-i,+j)$ stands for the target ROA performance change between year +j and -i. Columns 1 to 3 are for profitable targets, and columns 4 to 6 are for unprofitable targets.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	$\Pi(-1,+1)$	$\Pi(-1,+2)$	$\Pi(-1,+3)$	$\Pi(-1,+1)$	$\Pi(-1,+2)$	$\Pi(-1,+3)$
	Profitable	Profitable	Profitable	Unprofitable	Unprofitable	Unprofitable
TMT Turnover	0.052 (0.085)	0.007 (0.091)	0.076 (0.107)	0.064 (0.291)	0.169 (0.199)	0.004 (0.222)
ROA_{-1}	-0.771a (0.103)	-0.718a (0.129)	-0.973a (0.152)	-1.035a (0.169)	-1.076a (0.105)	-1.041a (0.125)
Post-deal TMT Size	-0.008 (0.006)	0.000 (0.006)	-0.007 (0.007)	-0.025 (0.023)	-0.002 (0.015)	0.009 (0.016)
Post-deal TMT Age	-0.004 (0.003)	-0.003 (0.004)	-0.008b (0.004)	-0.021c (0.012)	-0.012 (0.008)	0.004 (0.009)
Post-deal Tenure	0.009 (0.007)	0.011 (0.007)	-0.001 (0.009)	0.011 (0.025)	-0.037b (0.018)	-0.037c (0.020)
Ln(Total Asset)	0.007 (0.011)	-0.008 (0.011)	0.043a (0.014)	-0.000 (0.038)	-0.006 (0.024)	-0.031 (0.030)
Leverage1	-0.041 (0.052)	0.105c (0.059)	-0.054 (0.070)	0.091 (0.100)	-0.024 (0.065)	-0.122c (0.072)
Relative Industry	0.030 (0.030)	-0.039 (0.033)	-0.033 (0.039)	-0.109 (0.104)	-0.022 (0.069)	0.078 (0.076)
Cash Payment	0.052b (0.022)	0.004 (0.023)	0.049c (0.029)	0.125c (0.072)	0.005 (0.049)	-0.045 (0.057)
Constant	0.180 (0.191)	0.191 (0.205)	0.120 (0.249)	0.926 (0.626)	0.841b (0.407)	0.310 (0.443)
Observations	406	337	271	91	76	61
r2_a	0.155	0.0865	0.218	0.404	0.625	0.594
F	9.241	4.536	9.360	7.789	14.87	10.77
p	0	1.21e-05	0	3.56e-08	0	3.82e-09

Standard errors in parentheses, c=significant at 10%, b=significant at 5%, a=significant at 1%.

Table 9. Target TMT Turnover and Acquirer's performance changes

Table 9 describes factors affect acquirer's performance changes. The dependent variable $Acq_ \Pi(-i,+j)$ stands for the acquirer performance change between year +j and -i.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	Acq_ $\Pi(-1,+1)$	Acq_ $\Pi(-1,+2)$	Acq_ $\Pi(-1,+3)$	Acq_ $\Pi(-1,+1)$	Acq_ $\Pi(-1,+2)$	Acq_ $\Pi(-1,+3)$	Acq_ $\Pi(-1,+1)$	Acq_ $\Pi(-1,+2)$	Acq_ $\Pi(-1,+3)$	Acq_ $\Pi(-1,+1)$	Acq_ $\Pi(-1,+2)$	Acq_ $\Pi(-1,+3)$
Acquirer TMT Turnover							-0.156a (0.049)	-0.071 (0.050)	-0.010 (0.072)	-0.163a (0.048)	-0.094c (0.049)	-0.030 (0.070)
Target TMT Turnover	-0.027 (0.028)	-0.064b (0.028)	-0.012 (0.039)				-0.010 (0.028)	-0.057b (0.029)	-0.011 (0.039)			
Acq_ROA ₋₁	-0.578a (0.055)	-0.666a (0.056)	-0.692a (0.075)	-0.590a (0.055)	-0.677a (0.056)	-0.713a (0.075)	-0.587a (0.054)	-0.672a (0.056)	-0.693a (0.076)	-0.603a (0.054)	-0.687a (0.056)	-0.715a (0.075)
Acq ROA(-2,-1)	-0.243a (0.049)	-0.143a (0.052)	-0.321a (0.070)	-0.239a (0.049)	-0.142a (0.053)	-0.313a (0.069)	-0.216a (0.049)	-0.130b (0.053)	-0.319a (0.071)	-0.209a (0.049)	-0.124b (0.053)	-0.313a (0.070)
Acq Post-deal Board Size	-0.002 (0.002)	-0.002 (0.002)	-0.000 (0.003)	-0.003 (0.002)	-0.003 (0.002)	-0.000 (0.003)	-0.001 (0.002)	-0.002 (0.002)	-0.000 (0.003)	-0.001 (0.002)	-0.002 (0.002)	-0.000 (0.003)
Acq Post-deal TMT Age	-0.001 (0.002)	0.001 (0.002)	-0.002 (0.002)	-0.001 (0.002)	0.001 (0.002)	-0.002 (0.002)	-0.001 (0.002)	0.000 (0.002)	-0.002 (0.002)	-0.002 (0.002)	0.000 (0.002)	-0.002 (0.002)
Acq Post-deal Tenures	0.004 (0.003)	0.003 (0.003)	0.005 (0.004)	0.004 (0.003)	0.003 (0.003)	0.005 (0.004)	0.003 (0.003)	0.002 (0.003)	0.005 (0.004)	0.004 (0.002)	0.002 (0.002)	0.004 (0.003)
Acq Ln(Total Asset)	0.002 (0.004)	0.002 (0.004)	0.002 (0.005)	0.003 (0.004)	0.002 (0.004)	0.004 (0.005)	0.002 (0.004)	0.002 (0.004)	0.002 (0.005)	0.003 (0.004)	0.002 (0.004)	0.004 (0.005)
Acq Leverage1	0.014 (0.026)	0.019 (0.028)	0.016 (0.038)	0.012 (0.026)	0.019 (0.028)	0.010 (0.038)	0.011 (0.026)	0.018 (0.028)	0.017 (0.039)	0.009 (0.026)	0.018 (0.027)	0.010 (0.038)
Relative Industry	-0.019 (0.013)	-0.028b (0.013)	-0.010 (0.018)	-0.018 (0.013)	-0.027b (0.013)	-0.006 (0.018)	-0.014 (0.013)	-0.026c (0.013)	-0.010 (0.018)	-0.013 (0.013)	-0.025c (0.013)	-0.006 (0.018)
Cash Payment	0.008 (0.009)	0.000 (0.009)	0.024c (0.013)	0.007 (0.009)	0.001 (0.009)	0.023c (0.013)	0.007 (0.009)	0.000 (0.009)	0.024c (0.013)	0.005 (0.009)	-0.000 (0.009)	0.022 (0.013)
Target Complete TMT Turnover				-0.023c (0.013)	-0.029b (0.013)	-0.038b (0.018)				-0.023c (0.013)	-0.030b (0.013)	-0.038b (0.018)
Constant	0.046 (0.078)	-0.001 (0.078)	0.056 (0.110)	0.056 (0.078)	-0.003 (0.078)	0.070 (0.109)	0.087 (0.078)	0.017 (0.079)	0.058 (0.112)	0.110 (0.077)	0.025 (0.078)	0.073 (0.110)
Observations	375	342	280	375	342	280	375	342	280	375	342	280
r2_a	0.410	0.435	0.419	0.414	0.434	0.428	0.425	0.436	0.417	0.433	0.439	0.426
F	27.02	27.21	21.11	27.38	27.17	21.88	26.08	25.00	19.12	26.93	25.27	19.85
p	0	0	0	0	0	0	0	0	0	0	0	0

Table 10. Definition of Variables

TMT Turnover

Following Maury (2006), we measure the TMT Turnover_{post} as the number of officers that leave the board between acquisition announcement date (t) and one year after the 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)].

The pre-acquisition turnover is measured as the number of target officers departed one year before the acquisition announcement (Franks & Mayer, 1996; Hermalin & Weisbach, 1988; Kaplan, 1994). TMT Turnover_{pre} is the number of directors resigned between t-1 and t divided the number of directors on the board at t-1 year.

To investigate the TMT appointment in the post-acquisition targets, we define TMT Turnover_{new} as the number of new directors appointed between t and t+1 divided by the number of directors at t+1 year.

Following Morck et al. (1988) and Mikkelson & Partch (1997), we measure the complete change of target officers between acquisition announcement date and fifth-year 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.

Firm Performance

We apply three alternative profitability measures, which are NI/TA (profit and loss 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), we measure changes in target operating performance using three windows, (-1, +1), (-1, +2), and (-1, +3), with year 0 being the acquisition announcement year. We use Profit Target Dummy as an alternative measure of firm performance. The Profit Target Dummy equals 1 if the target generates positive profits at year t-1, and 0 otherwise.

Our 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), we apply the EBITDA/TA as an operating cash flow measure. Appendix 2 the performance measurements provide more discussion about the choice of operating cash flow measures.

$\Pi(-i,+j)$ stands for the target performance change between year +j and -i. Adj_ $\Pi(-i,+j)$ stands for the peer-adjusted performance change of target firms between year +j and -i. Acq_ $\Pi(-i,+j)$ stands for the acquirer performance change between year +j and -i.

TMT characteristic—Board Size, Age of TMT, and Tenure of TMT

We measure the pre-acquisition and post-acquisition board size as the number of officers registered in the Company House at year t-1 and t+1 respectively. Following Yermack (1996),

We control the impact of board size on the relationship between TMT Turnover and pre-acquisition target performance as firms with smaller boards have a stronger relationship between firm performance and CEO turnover than firms with larger boards.

We 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. We measure the number of officers who are over 65 at t-1 and t+1 as an alternative measurement of the Age of TMT. Although default retirement age (formerly 65) has been phased out (GOV.UK, 2016), empirical studies adopt the 65 age threshold (Hermalin & Weisbach, 1988; Hermalin & Weisbach, 2003; Maury, 2006; Mikkelsen & Partch, 1997; Morck et al., 1988; Peters & Wagner, 2014; Warner et al., 1988). 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 & Wagner, 2014). When officers with less monitoring attention are replaced, target firms are more likely to experience performance improvements.

We measure the pre-and-post average tenures of officers at year -1 and +1. We also use three alternative measurements of tenure which are the average tenure of replaced officer's tenure, newly appointed officer's tenure and retained officer's tenure. We define the Replaced Tenure as the average tenure of officers replaced at (t-1, t), the Appoint Tenure as the average tenure of officers newly appointed at (t, t+1), and the Retained Tenure as the average tenure of officers retained at (t, t+1). 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 elder 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 Financial Characteristics—Firm Size and Leverage

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

Following Aivazian et al. (2005), we use two alternative measures of leverage. One is book value of current debts and long-term debts divided by book value of total assets, while the other is long-term debt divided by total assets. Leverage_pre measures the pre-acquisition leverage ratios in the most recent financial reports before the acquisition announcement. Leverage_post measures the post-acquisition leverage ratios in year t+1. Renneboog (2000) suggests that high leverages are more likely to be related to creditors intervene and monitoring as the risk of financial distress increases.

Deal Characteristics—Cash payment and relative size of the deal

The dummy of cash payment equals one if more than 50% of the deal is paid in cash. The payment dummy indicates a role for debt and financial constraints provided by the acquirer to the target and it is more likely to positively affect the post-acquisition performance (Maksimovic et al., 2011).

The relative size ratio is the ln value of acquirer's total assets divided by the ln value of target's total assets in their most recent annual reports before the acquisition announcement (at year t-1). Maksimovic et al. (2011) find that the relative size is negatively related to improvement in target operating efficiency. On the contrary, Beitel et al. (2004) find that deals with larger relative size provide significant higher announcement returns to the target.

Peer Firm

Following Powell and Stark (2005), we compare the performance of targets with non-M&A involved peer firms matched on the performance of industry, firm size, pre-acquisition performance and public status at year t-1. First, in the FAME database, we select peer firms from target industries with the same 2-digit US SIC code⁵. Second, the firm size filter is between 70% and 130% of target size, measured as target total assets at t-1. Third, the performance filter is between 90% and 110% of target ROA at year t-1. Fourth, we select peer firms with the same public status as target firms. There is three classifications of public status of targets, which are public, private and subsidiary.

If no matched peer firms satisfy these requirements, the size restriction is extended by using a filter of between 50% and 150%. If no peer firms exist with the (50%, 150%) size filter, we select peer firms from target industries with the same 1-digit SIC code or remove the industry filter. From this list of potential matched firms, firms with the closest operating performance (ROA) of the target at t-1 and the same public status are selected as peers⁶. If no matched firms satisfy a ROA filter between (90%, 110%) and the same public status, we extend the ROA filter to (70%, 130%) and (50%, 150%). If still no matched firms, we remove the public status filter and matched firm with the closest ROA of the target at t-1.

Year Dummy and industry classifications

We control the general changes in the economy and industry by year dummies and industry classifications (Hermalin & Weisbach, 2003; Krug et al., 2015; Warner et al., 1988). Firms in an industry which enjoy 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 & Minton, 2006). Maksimovic et al. (2013) suggest that one-the-wave public targets realize higher productivity gains than off-the-wave targets since investment opportunities and changes in liquidity allow certain types of firms to obtain capital more easily or cheaper than other firms. The performance variables, therefore, should be interpreted as performance relative to the market in a particular year.

⁵ The 2-digit US SIC codes are provided by SDC database. Although all firms in our sample are UK firms, the SDC database does not provide the UK SIC codes. FAME includes both US SIC and UK SIC codes. We use the 2-digit US SIC codes to construct peer firms.

⁶ We apply three ROA filters, which are between (90%, 110%), (70%, 130%) and (50%, 150%).

Reference List

- Andrade, G., Mitchell, M. L., & Stafford, E. (2001). New evidence and perspectives on mergers.
- Andrade, G., & Stafford, E. (2004). Investigating the economic role of mergers. *Journal of Corporate Finance*, 10(1), 1-36.
- Aivazian, V.A., Ge, Y. and Qiu, J., (2005). The impact of leverage on firm investment: Canadian evidence. *Journal of corporate finance*, 11(1), pp.277-291.
- Banerjee, S., Güçbilmez, U. & Pawlina, G. (2016). Leaders and followers in Hot IPO markets. *Journal of Corporate Finance*, 37, 309-334.
- Barber, B., Lyon, J., 1996. Detecting abnormal operating performance: the empirical power and specification of test statistics. *Journal of Financial Economics*, 41, 359– 399.
- Beitel, P., Schiereck, D., & Wahrenburg, M. (2004). Explaining M&A success in European banks. *European Financial Management*, 10(1), 109-139.
- Bena, J. A. N., & Li, K. A. I. (2014). Corporate Innovations and Mergers and Acquisitions. *The Journal of Finance*, 69(5), 1923-1960. doi: 10.1111/jofi.12059
- Bhagat, S., & Bolton, B. (2008). Corporate governance and firm performance. *Journal of Corporate Finance*, 14(3), 257-273.
- Boone, A.L., Field, L.C., Karpoff, J.M. and Raheja, C.G. (2007). The determinants of corporate board size and composition: An empirical analysis. *Journal of Financial Economics*, 85(1), s66-101.
- Bradley, M., Desai, A., & Kim, E. H. (1988). Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. *Journal of Financial Economics*, 21(1), 3-40.
- Bruner, R. F. (2002). Does M&A Pay? A Survey of Evidence for the Decision-Maker. *Journal of Applied Finance*, 12(1), 48-68.
- Cai, J., & Vijh, A. M. (2007). Incentive effects of stock and option holdings of target and acquirer CEOs. *The Journal of Finance*, 62(4), 1891-1933.
- Campa, J. M., & Hernando, I. (2004). Shareholder Value Creation in European M&As. *European Financial Management*, 10(1), 47-81.
- Campa, J. M., & Hernando, I. (2006). M&As performance in the European financial industry. *Journal of Banking & Finance*, 30(12), 3367-3392.
- Cannella, A. A., & Hambrick, D. C. (1993). Effects of executive departures on the performance of acquired firms. *Strategic Management Journal*, 14(S1), 137-152.
- Capron, L., & Shen, J. C. (2007). Acquisitions of private vs. public firms: Private information, target selection, and acquirer returns. *Strategic Management Journal*, 28(9), 891-911.
- Conn, R. L. (1976). Acquired firm performance after conglomerate merger. *Southern Economic Journal*, 1170-1173.
- Conn, R. L., & Connell, F. (1990). International mergers: Returns to US and British firms. *Journal of Business Finance & Accounting*, 17(5), 689-711.
- Conyon, M. J. (1998). Directors' Pay and Turnover: An Application to a Sample of Large UK Firms. *Oxford Bulletin of Economics and Statistics*, 60(4), 485-507.
- Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, 51(3), 371-406.

- Danbolt, J., & Maciver, G. (2012). Cross-Border versus Domestic Acquisitions and the Impact on Shareholder Wealth. *Journal of Business Finance & Accounting*, 39(7/8), 1028-1067.
- Davidson, W. N., Worrell, D. L., & Cheng, L. (1990). Key Executive Succession and Stockholder Wealth: The Influence of Successors Origin, Position, and Age. *Journal of Management*, 16(3), 647-664.
- Dickerson, A. P., Gibson, H. D., & Tsakalotos, E. (1997). The impact of acquisitions on company performance: Evidence from a large panel of UK firms. *Oxford Economic Papers*, 49(3), 344-361.
- Eckbo, B. E., & Langohr, H. (1989). Information disclosure, method of payment, and takeover premiums. *Journal of Financial Economics*, 24(2), 363-403.
- Erel, I., Jang, Y. and Weisbach, M.S., 2015. Do acquisitions relieve target firms' financial constraints? *The Journal of Finance*, 70(1), 289-328.
- Fama, E. F. (1980). Agency Problems and the Theory of the Firm. *The Journal of Political Economy*, 288-307.
- Fama, E. F., & Jensen, M. C. (1983a). Agency problems and residual claims. *The Journal of Law & Economics*, 26(2), 327-349.
- Fama, E. F., & Jensen, M. C. (1983b). Separation of ownership and control. *The Journal of Law & Economics*, 26(2), 301-325.
- Financial Accounting Standards Board (FASB), Private Company Council, "Private Company Decision-Making Framework, A Guide for Evaluating Financial Accounting and Reporting for Private Companies", December 23, 2013. Available at: http://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1176163703583&acceptedDisclaimer=true
- Fich, E. M., Officer, M., & Tran, A. L. (2016). Do acquirers benefit from retaining target CEOs? *Unpublished working paper, Drexel University*.
- Franks, J., & Mayer, C. (1996). Hostile takeovers and the correction of managerial failure. *Journal of Financial Economics*, 40(1), 163-181.
- Ghosh, A., 2001. Does operating performance really improve following corporate acquisitions? *Journal of Corporate Finance*, 7, 151-178.
- GOV. UK, 2016, Working after State Pension age, access on 8 October 2016, <https://www.gov.uk/working-retirement-pension-age>
- Gugler, K., Mueller, D. C., Yurtoglu, B. B., & Zulehner, C. (2003). The effects of mergers: an international comparison. *International Journal of Industrial Organization*, 21(5), 625-653.
- Hambrick, D. C., & Cannella, A. A. (1993). Relative standing: A framework for understanding departures of acquired executives. *Academy of Management Journal*, 36(4), 733-762.
- Harford, J. (2005). What drives merger waves? *Journal of Financial Economics*, 77(3), 529-560.
- Hermalin, B. E., & Weisbach, M. S. (1988). The determinants of board composition. *The RAND Journal of Economics*, 589-606.
- Hermalin, B. E., & Weisbach, M. S. (2003). Boards of directors as an endogenously determined institution: a survey of the economic literature. *Economic Policy Review*, 9(1), 7-26.

- Holmen, M., & Knopf, J. D. (2004). Minority shareholder protections and the private benefits of control for Swedish mergers. *Journal of Financial and Quantitative Analysis*, 39(01), 167-191.
- Hsieh, J., Lyandres, E., & Zhdanov, A. (2011). A Theory of Merger-Driven IPOs. *Journal of Financial & Quantitative Analysis*, 46(5), 1367-1405.
- Jang, Y. and Reisel, N., 2015. Why Are Firms Sold? Evidence from Acquisitions of European Private Firms. Evidence from Acquisitions of European Private Firms (September 30, 2015). EFMA conference paper
- Jemison, D. B., & Sitkin, S. B. (1986). Corporate acquisitions: A process perspective. *Academy Of Management Review*, 11(1), 145-163.
- Jensen, M. C., & Ruback, R. S. (1983). The market for corporate control: The scientific evidence. *Journal of Financial Economics*, 11(1), 5-50.
- Jenter, D., & Kanaan, F. (2015). CEO Turnover and Relative Performance Evaluation. *The Journal of Finance*, 70(5), 2155-2184.
- Kaplan, S. N. (1994). Top executives, turnover and firm performance in Germany. *Journal of Law, Economics & Organization*, 10 (1), 142-159.
- Kaplan, S. N., & Minton, B. (2006). How has CEO turnover changed? Increasingly performance sensitive boards and increasingly uneasy CEOs: National Bureau of Economic Research.
- Kennedy, V. A., & Limmack, R. J. (1996). TAKEOVER ACTIVITY, CEO TURNOVER, AND THE MARKET FOR CORPORATE CONTROL. *Journal of Business Finance & Accounting*, 23(2), 267-285.
- Krishnan, H. A., Miller, A., & Judge, W. Q. (1997). Diversification and top management team complementarity: Is performance improved by merging similar or dissimilar teams? *Strategic Management Journal*, 18(5), 361-374.
- Krug, J. A., Wright, P., & Kroll, M. J. (2015). Top management turnover following mergers and acquisitions: solid research to date but still much to be learned. *The Academy of Management Perspectives*, 28(2), 147-163.
- Loughran, T., Ritter, R., 1997. The operating performance of firms conducting seasoned equity offerings. *Journal of Finance*, 52, 1823– 1850.
- Martin, K.J. and McConnell, J.J., 1991. Corporate performance, corporate takeovers, and management turnover. *The Journal of Finance*, 46(2), 671-687.
- Maksimovic, V. and Phillips, G., 2001. The market for corporate assets: Who engages in mergers and asset sales and are there efficiency gains?. *The Journal of Finance*, 56(6), 2019-2065.
- Maksimovic, V., Phillips, G., & Prabhala, N. R. (2011). Post-merger restructuring and the boundaries of the firm. *Journal of Financial Economics*, 102(2), 317-343.
- Maksimovic, V., Phillips, G., & Yang, L. (2013). Private and public merger waves. *The Journal of Finance*, 68(5), 2177-2217.
- Maury, B. (2006). Corporate Performance, Corporate Governance and Top Executive Turnover in Finland. *European Financial Management*, 12(2), 221-248.
- Mikkelsen, W. H., & Partch, M. M. (1997). The decline of takeovers and disciplinary managerial turnover. *Journal of Financial Economics*, 44(2), 205-228.
- Mitchell, M. L., & Mulherin, J. H. (1996). The impact of industry shocks on takeover and restructuring activity. *Journal of Financial Economics*, 41(2), 193-229.
- Morck, R., Shleifer, A., & Vishny, R. W. (1988). Alternative mechanisms for corporate control: National Bureau of Economic Research Cambridge, Mass., USA.

- Ozbas, O. and Scharfstein, D.S. (2009). Evidence on the dark side of internal capital markets. *Review of Financial Studies*, 23(2), 581-599.
- Parrino, R. (1997). CEO turnover and outside succession a cross-sectional analysis. *Journal of Financial Economics*, 46(2), 165-197.
- Penrose, E. T. (1995). *The Theory of the Growth of the Firm*: Oxford University Press, USA.
- Peters, F. S., & Wagner, A. F. (2014). The Executive Turnover Risk Premium. *The Journal of Finance*, 69(4), 1529-1563.
- Phillips, G. M., & Zhdanov, A. (2013). R&D and the Incentives from Merger and Acquisition Activity. *Review of Financial Studies*, 26(1), 34-78.
- Powell, R.G. and Stark, A.W., 2005. Does operating performance increase post-takeover for UK takeovers? A comparison of performance measures and benchmarks. *Journal of Corporate Finance*, 11(1), pp.293-317.
- Ragozzino, R. and Reuer, J.J. (2009). Contingent earnouts in acquisitions of privately held targets. *Journal of Management*, 35(4), pp.857-879.
- Ravenscraft, D. J., & Scherer, F. (1988). Mergers and managerial performance. *Knights, raiders, and targets: The impact of the hostile takeover*, 194-210.
- Renneboog, L. (2000). Ownership, managerial control and the governance of companies listed on the Brussels stock exchange. *Journal of Banking & Finance*, 24(12), 1959-1995.
- Scharfstein, D. S., and Stein, J. C. (2000), The dark side of internal capital markets: Segmental rent seeking and inefficient investments, *Journal of Finance*, 55, 2537–2564.
- Scherer, F. M. (1988). Corporate takeovers: The efficiency arguments. *The Journal of Economic Perspectives*, 2(1), 69-82.
- Stein, J. C. (1997), Internal capital markets and the competition for corporate resources, *The Journal of Finance*, 52, 111–133.
- Sudarsanam, S. (2003). *Creating value from mergers and acquisitions: The challenges: An integrated and international perspective*: Pearson Education.
- Vafeas, N. (2003). Further evidence on compensation committee composition as a determinant of CEO compensation. *Financial Management*, 32(2), 53-70.
- Very, P., Lubatkin, M., Calori, R., & Veiga, J. (1997). Relative standing and the performance of recently acquired European firms. *Strategic Management Journal*, 18(8), 593-614.
- Walsh, J. P. (1988). Top management turnover following mergers and acquisitions. *Strategic Management Journal*, 9(2), 173-183.
- Walsh, J.P. and Ellwood, J.W., 1991. Mergers, acquisitions, and the pruning of managerial deadwood. *Strategic Management Journal*, 12(3), 201-217
- Walsh, J.P. and Kosnik, R.D., 1993. Corporate raiders and their disciplinary role in the market for corporate control. *Academy of Management Journal*, 36(4), 671-700.
- Warner, J. B., Watts, R. L., & Wruck, K. H. (1988). Stock prices and top management changes. *Journal of Financial Economics*, 20, 461-492.
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2), 185-211.
- Zollo, M., & Singh, H. (2004). Deliberate learning in corporate acquisitions: post-acquisition strategies and integration capability in U.S. bank mergers. *Strategic Management Journal*, 25(13), 1233-1256.