ERASMUS SCHOOL OF ECONOMICS

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MASTER THESIS

M&A PERFORMANCE THROUGH AN OPERATING MEASURE

A DUPONT LIKE ANALYSIS ON PUBLIC VERSUS PRIVATE TARGET TAKEOVERS

ABSTRACT

This study provides empirical evidence on the impact of the target status on post-merger operating performance for 3,190 US acquisitions between 1993 and 2013. The empirical results show insufficient evidence to fully support the notion of private target acquirers outperforming their public counterpart in terms of the primary measure of operating performance, Return on Assets. Employing a DuPont like analysis, I find evidence to suggest that private target acquirers are better capable of managing their productive asset utilization and are more likely to realize revenue based synergies from the acquisition. Leverage appears to drive the superiority in asset utilization. Further, relative deal size has differential effects on both type of bidders. Public target acquirers experience significant operating performance improvements following relatively small transactions while private target acquirers gain from relatively large acquisitions. Private target acquirers are able to improve their target selection and integration processing capabilities and experience significant operating performance improvements along the deal sequence. Acquisitions of public targets are associated with significant performance deterioration if a blockholder is created in the new formed entity. Lastly, I find that pre-takeover performance serves as very strong predictor of post-merger operating performance for bidders of both organisational forms.

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1. Introduction

Is the M&A performance of the acquirer affected by the organisational form of the target?[1] Corporate transactions are one of the most impactful events in corporate finance and serve a fundamental role in our market economies. It therefore is no surprise that this process of reallocating control over companies has become one of the most widely studied areas in finance. Scholars striving to find an answer to the aforestated question, by means of examining the M&A stock performance of acquirers, have generated a moderate body of literature over time (eg. Easterbrook & Fischel, 1982; Hansen & Lott, 1996; Chang, 1998; Ang & Kohers, 2001; Isa & Lee, 2001; Fuller et al., 2002; Bae et al., 2002; Faccio et al., 2006; Draper & Paudyal, 2006; Capron & Shen, 2007). These scholars have fairly consistently documented that bidders for private targets tend to experience higher abnormal announcement returns than bidders for public targets. Although academics widely agree on the M&A stock performance outcome, the underlying rationale still seems open for debate. Different researchers view this finding as evidence for various hypothesis, none of which have been fully successful. Among others, the managerial motives hypothesis (Draper & Paudyal, 2006), the liquidity hypothesis (Fuller et al., 2002) and the corporate monitoring hypothesis (Chang, 1998) have been proposed.

Despite the extensive research done on the impact of the target's organisational form on stock performance, the literature that investigated the impact of the target's organisational form on post-acquisition operating performance is effectively limited to control-adjusted operating cash flow analyses for Malaysian & Australian firms by Rahman & Limmack (2004) and Shams & Gunasekarage (2016) respectively. The former study shows, for a comparatively small sample (113 acquisitions) of privately owned target companies, that acquistions in Malaysia lead to improvements in the long run operating cash flow performance during the 1988-1992 period. However, this study is unable to conclusively state that the results would also apply to public target acquisitions and to more developed economies. The latter research reveals that the short-term market reaction to private target acquisitions is positive in the sense that they lead to statistically significant positive abnormal returns, but that the market reacts neutral to public target acquisition announcements. For the post-acquisition operating performance measure, they found that public target bidders sustained their pre-acquisition performance whereas private target bidders showed a considerable improvement.

Given the significant number of studies on the relationship between target status and stock performance, scholars should wonder whether it is apprehensive that these documentations are not supported by a similar degree of academic findings on long-term operating performance. Because ultimately, in theory, expectations on future operating performance should be perfectly reflected by stock price movements. Thus, research on share price- and operating performance should theoretically

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[1] Although technically inaccurate, it is considered customary practice among scholars to use the expressions 'takeover', 'acquisition', 'merger' and 'M&A' synonymously.

result in reasonably corresponding outcomes. However, when reviewing the relevant literature we find inconclusive and inconsistent results (eg. Martynova et al., 2006). The review study of Bruner (2002) systematically captures the different approaches and finds that the discrepancies in research findings could be due to differences in the underlying assumptions, or the soundness thereof. Certain academics additionaly contend that operating performance methodologies can (at least partially) resolve the main caveats in stock performance studies (eg., Thanos & Papadakis, 2012). The beforementioned academic findings by no means indicate that the target's organisational form similarly affects both the operating- and stock performance of the acquirer. It is for this reason thought-provoking to assess whether I can document either confirming or opposing results in order to develop a better understanding of the target status' influence on M&A performance.

This research conciously adresses the critical gaps observed in the current literature and seeks to fill these by means of investigating the relationship between the target's organisational form and the long-term operating performance of the acquirer. The objective of this research is therefore to comprehensively answer the following research question:

What is the impact of the organisational form of the target on the post-acquistion operating performance of the acquirer?

A seemingly simple observation emphasizes the magnitude and impact of the private target acquisition phenomenon in relation with the operating performance measure. It is namely readily observable that the volume of acquisitions involving private targets far surpasses that of their publicly quoted counterparts. The Securities Data Company's (SDC) Mergers and Acquisitions database reports 20,290 completed acquisitions by public firms that involved privately held targets against 6,576 public target acquisitions between 1989-2013. Yet, the different private target acquisition characteristics remain a relatively unexplored area of research considering the vast amount of findings on public targets (Seth, 1990; Capron & Shen, 2007). This stresses the practical relevance of gaining deeper understandings of the impact of the target's organisational form on the acquirer's post-acquisition operating performance.

This paper makes several contributions to the existing body of academic literature. First of all, it complements the research on M&A operating performance (e.g., Agrawal, 1992; Healy et al., 1992; Barber & Lyon, 1996; Ghosh, 2001; Martynova et al., 2006) by scrutinizing the impact of the target's organisational form. Second, it adds to the vast amount of literature surrounding the targets' status (eg. Easterbrook & Fischel, 1982; Chang, 1998; Hansen & Lott, 1996; Isa & Lee, 2001; Ang & Kohers, 2001; Bae et al., 2002; Fuller et al., 2002; Faccio et al., 2006; Capron & Shen, 2007; Draper & Paudyal, 2006). In fact, to the best of my knowledge, I am the first to investigate the relation between target's listing status and post-acquisition operating performance covering the US economy.

This study proceeds as follows. Section 2 covers the relevant literature within the context of M&A performance. Section 3 proposes the different hypotheses. The sample selection and data collection procedures are outlined in Section 4. Section 5 lays out the details of the research methodology. A selection of pertinent empirical results will be elaborated on in Section 6. Section 7 combines the main findings of this research and provides the conclusion and remarks. Section 8 and 9 conclude this study with a discussion on the limitations and recommendations of this research respectively.

2. Literature review

The aim of this section is to provide a condense overview of current knowledge in related areas of M&A performance and listing status. Section 2.1 covers the academic studies on acquirer's post-acquisition performance following public- and private takeovers and thereby opens the door to a number of appealing questions to be answered throughout this research. Section 2.2 discusses more universal empirical evidence on takeover performance and explicitly highlights the key differences between stock and operating performance approaches. Section 2.3 provides an outline of the different operating performance measures employed over time.

2.1 Organisational form and M&A performance

Bids for privately held firms account for the single largest component of the global volume of M&A transactions. Recent studies on takeovers document that the target status plays an important role in explaining bidding firm's returns (eg. Draper & Paudyal 2006; Faccio et al. 2006; Capron & Shen 2007). Over time, scholars have reached reasonable consensus that stock markets react favourably to acquisitions of private firms compared to public firms (Wruck 1989, Herztel & Smith, 1993, Hansen & Lott 1996, Chang 1998, Ang & Kohers 2001, Fuller et al. 2002, Moeller et al. 2004, Capron & Shen, 2007). Several hypotheses evolved seeking to explain these abnormal returns related to private target bids. The relevance and predictions of the three most widely-cited hypotheses are discussed below as I trust that these theories could strongly contribute towards explaining the results of this research: (A) managerial motive, (B) liquidity, and (C) corporate monitoring.

(A) Managerial motive
Draper & Paudyal (2006) argue that managers of a bidding firm face a trade-off between maximizing private benefits and enhancing its shareholders' wealth. The managerial motive hypothesis presented in their research is premised on the assumption that acquisitions tend to increase the private benefit of managers. Hence, managers are presumed to demonstrate acquisitive behaviour to serve their own interest, at times to the detriment of the shareholder's interest. The hypothesis shows great resemblance with the renowned agency theory. Academic research documents different motives for managers to pursue actions of self-interest along the lines of the agency problem which may help

explain the existence of the aforementioned concept. The most acknowledged views are briefly discussed in turn.

Amihud and Lev (1981) argue from a portfolio theory perspective that managers are unable to diversify away their 'employment risk' within their personal portfolio as human capital is not readily tradable in competitive markets. Risk avoiding managers are predicted to diversify this employment risk by seeking to decrease earnings volatility through engaging in conglomerate mergers.[2] Although these mergers not necessarily benefit the shareholders, they clearly improve chances of corporate survival.

Jensen's (1986) theory of managerial discretion points out that high levels of free cash flow and underutilized borrowing capacity may trigger a managerial self-interest motive of increasing firm size. According to his reasoning, companies with cash holdings in excess of the projected investments required to engage in positive NPV projects, are more likely to undertake sizeable strategic actions with less analysis which could lead to low-benefit or even value-destroying mergers.

Schleifer and Vishny (1989) in turn claim that managers may acquire certain assets that increase the firm's dependence on management, so that they can safeguard their position within the firm. Their theory of managerial entrenchment predicts that, as a consequence, value will be reduced because available resources are invested in manager-specific assets rather than in shareholder value-maximising alternatives.

Further, various papers acknowledge that managers additionally seek to accumulate wealth, power, reputation and fame (Marris, 1963; Ravencraft & Scherer, 1987; Rhoades, 1983; Black, 1989). The renowned empire building theory postulates that executives are particularly incentivised to grow their firm's sales levels and asset base to achieve these individual grants.[3] The agency costs accompanied with such ethos have a depressing effect on the shareholders' wealth. Additional research shows corresponding evidence indicating that executives in large, diversified firms with complex organizational structures seek to accumulate power and prestige rather than creating value for their shareholders (Mohoney,1979; Agarwal, 1981; Kostiuk, 1990).

The above mentioned managerial motive to a far less extent applies to smaller and less known private companies for a threefold reasons. First, private acquisitions are less likely to be based on self-

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[2] The arguments put forward by Shleifer & Vishny (1991) insinuate that diversification played a key role in corporate M&A strategies during the third merger wave. Martynova & Renneboog (2008) suggest this is partly due to a lack of incentives for managers to prioritise shareholders' interest prior to the 1980s. They conclude with the proposition that the elevation of conglomerate firms may be an extension of this principle- agent problem.

[3] As opposed to profit maximization, Mueller (1969) started to present mergers as a tool for growth maximization. Williamson (1964) provides supporting evidence and introduced the concept of managers' expense preference, shown as a multipart variable containing company cars, prestigious investments and excess staff. Within this uniform stream of research, Rhoades (1983) finds that managerial power offers an explanation for company expansion through M&A during the third merger wave. His paper wraps up by arguing that the profit motive no longer serves as driving force behind large corporates' behavior, but instead seems to be replaced by a 'power motive'.

centric motives, individual objectives and increasingly by the desire to reap benefits of potential synergies to maximize shareholders' wealth because managers simply more often hold a large equity proportion in the company (Demsetz & Lehn, 1985; Weitzel & McCarthy, 2011). The majority of value-destroying conjectures stem from agency problems that arise with the separation of ownership and control. Since these are less prevalent in the case of private firms, theories of empire building and managerial entrenchment are less likely to affect the acquisition bid. Therefore, these bidders will be more reluctant to pay high premiums and consider a more conservative approach in their acquisition strategy (Berkovitch & Narayanan, 1993). Second, as opposed to large listed targets, some academics argue that private target companies are to be integrated more easily into the business following an acquisition (Mendenhall, 2005). Large mergers tend to be more difficult to digest for the acquirer, which may eventually result in the acquisition costs outweighing the potential synergies that initially motivated the transaction (Clark & Ofek, 1994). Third, as Weitzel & McCarthy (2011) rightfully suggest, the hierarchies rooted in larger (public) firms are more profound, resulting in more diffused responsibilities and additional complex structures of accountability. These by-products hamper the information symmetries and transparency, leaving managers more room to act in a self-interested way.

As a result, the market tends to positively perceive a private target acquisition announcement consequently bringing more benefit to the bidder shareholders than if it were a public target bidding announcement. The managerial motive hypothesis formally predicts, (i) that public target bidders have a tendency to overpay when engaging in acquisitions, and (ii) that managers' private benefits are positively associated with both the size and reputation of the firms they manage and the extent of resources they control. Since public firms are generally larger and more reputed in the market than private targets, the theory suggests that managers are prepared to pay relatively larger sums for public targets.

(B) Liquidity

Fuller et al. (2002) study cross-sectional variations in shareholder returns which originate from target characteristics and the acquisition bid. They empirically find negative compound annual returns for large public target acquisitions and argue that the division of gains and/or synergies show fundamental inequalities between private- and public takeovers that can be explained through a liquidity effect. The starting point of their discussion is that private firms and subsidiaries are in a relatively illiquid market and cannot be bought and sold as easily as publicly traded companies. The private firms' illiquid-characteristic make it a less alluring and therefore less valuable investment compared to its listed counterpart. In the process of valuing a private company, illiquidity is a constant theme of discussion between financial analysts. Analysts and practitioners generally stipulate that the degree to which a private firm's value is discounted depends on at least five determinants of illiquidity namely the, (i) liquidity of assets owned by a firm, (ii) financial health and cash flows of

the company, (iii) likelihood of a private firm going public in the future, (iv) size of the firm[4] and (v) a control component (Damodaran, 2005). The acquiring firm is able to capitalize on the illiquidity discount when purchasing the private target or subsidiary. If we agree on the fact that illiquidity affects firm value, and both the theory and empirical evidence indicate that it does, the issue remains on what value to attach to this illiquidity discount.

The empirical evidence suggests that domestic (foreign) private companies are acquired at an average discount of 20–30% (40-50%) relative to similar public companies (Koeplin et al., 2000). On a more general note, Officer (2007) points out that acquirers indeed pay 'substantially less' for illiquid unlisted targets. More recent studies argue that these numbers may be exaggerated and indicate discounts in the range of 5-6% (eg. Comment, 2012). Regardless of the specific adjustment value, the empirical evidence shows that the effect of liquidity is material. Perhaps most interestingly for the purpose of this research, Fuller et al. (2002) indicate that the liquidity effect is consistent with a positive relationship between relative size and returns to bidders of private targets shown throughout prior M&A literature (eg, Asquith et al., 1983).

(C) Corporate monitoring

Chang (1998) proposed the corporate monitoring hypothesis in a successful attempt to explain bidders' positive abnormal returns in stock offers for privately held firms. He examined bidder returns at the announcement of private target takeover bids. His analysis indicates that bidders experience no abnormal returns in cash offers, but receive positive abnormal returns for private takeover proposals financed with stock. His proposition is bolstered by the following logic.

Privately held firms are often characterized by concentrated ownership. Firms bidding for private targets with stock therefore arguably create outside blockholders following the acquisition, which empirically is positively associated with firm value (eg. Claessens et al., 2002; La Porta et al., 2002 ; Anderson & Reeb, 2003; Boone et al., 2011). These blockholders tackle the agency problem in the sense that they have both an incentive of profit maximization, and sufficient control over the assets of the company to have their interests respected. This is the classic argument of 'vertical agency cost', wherein the general prediction is made that as ownership concentration increases, agency costs are anticipated to diminish.

Turning to publicly held firms, it might seem obvious that while all stockholders have the responsibility of monitoring management's actions and behaviour, the benefits of engaging in such monitoring activities are proportional to the fraction of shares owned in the company. Put differently, when ownership is widely dispersed as often is the case with listed companies, it is economically less viable for the separate stockholders to incur the substantial monitoring costs, as they will only see a

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[4] A phenomenon known as the 'size discount' seems closely related to this determinant. This negative relation, measured by Tobin's Q, between a firm's size and its value is likely due to the shareholder's inability to curtail agency costs in larger firms (Offenberg, 2010).

small fraction of the benefits accrue to them. Likewise, when ownership is dispersed, it is increasingly more complex for stockholders to monitor managerial activity.

Thomsen et al. (2006) view the phenomenon from a different angle and study the relationship between blockholder ownership and firm performance for a sample of EU and US firms. Through the 'persistence hypothesis' (Bebchuck & Roe, 1999) they argue that blockholders preserve ownership levels in excess of the quantities that maximize firm value to minority shareholders, because they appreciate the private benefits of control. Thomsen et al. (2006) interpret this finding as evidence of conflicts of interest between minority shareholders and blockholders.

Synthesis. While the discussed hypotheses show (some) evidence in favour of the argument that capital markets perceive the acquisitions of unlisted targets as more value creating decisions than listed target acquisitions, scholars remain silent on the topics of (i) private target bidder's long-term performance and (ii) the long-run performance comparison between public- and private target bidders. By carefully considering whether the ex-post operating performance of US bidders is dependent on the target's listing status, this paper is able to address the unspecified topics above.

2.2 Empirical findings on takeover performance

Over the past five decades, the research topics surrounding M&A performance have been widely discussed and investigated throughout areas of multiple disciplines. Although the different empirical researches do not show unidirectional measures for performance and tend to be discipline specific, there are linkages among many. Ample empirical research attempts to find evidence for explaining and predicting M&A performance (e.g. Shelton, 1988; Seth, 1990; Chatterjee, 1991; Bergh, 1997; Dussage & Mitchell, 1998; Halebian & Finkelstein, 1999; Hayward, 2002; Zollo & Singh, 2004; Kapoor & Lim, 2007; Christmann & King, 2008) but tend to document inconsistent findings. Meglio & Risberg (2010) legitimately point out that academics appear to overlook the fact that opposing results stem from the adoption of different metrics embedded in their research methodologies. It seems apparent to comprehensively consider the various methods used in the existing literature. Authoritative review studies on M&A by Bruner (2002) and Zollo & Meier (2008) exhaustively cover the different methods employed, these are briefly discussed in turn.

Bruner (2002) reviewed 130 studies from 1971 to 2001 and reflects on what it means for M&A to 'pay'. The paper analyses several research approaches, and underlines the results for the broad activity and some noteworthy niches. He segments the M&A profitability measures into four sections: (i) market-based returns to shareholders ("event studies"), (ii) accounting studies, (iii) clinical studies and, (iv) surveys of executives. While his meta-analysis extensively outlines the pros and cons of the various methods, he takes a somewhat biased view by concluding "*I take the economists' perspective that an investment is deemed to "pay" if it earns at least the opportunity cost*

of capital" (Bruner, 2002, p.15). In an analogous review, Zollo & Meier (2008) test different concepts with a survey database. They seek to clarify if the different measures used throughout the literature approximate a single hypothesis, and if not how the different hypotheses relate to one another both empirically and theoretically. Their findings suggest that there is no all-encompassing factor that consistently outperforms the different proxies for M&A performance. They suggest that future research should consider a plurality of measures to capture the full spectrum of M&A performance.

Moving towards the empirical results on M&A, Section 2.2.1 maps out the findings of stock performance event studies. As this research mostly builds on the operating performance construct, section 2.2.2 covers a more detailed discussion on the event studies hereof. Section 2.2.3 provides a synthesis of the literature review by means of comparing both event study results and consequently motivating the methodology used in this paper.

2.2.1 Stock performance event studies based on market reactions

Since the 1970s, studies on abnormal shareholder returns at merger announcement dominated the field in M&A profitability research. Caves (1989) explains that this technique was seen as both a novelty and revolution due to its theoretical soundness, cheap execution and ability to avoid the constant factors troubling studies on post-takeover effects. The abnormal shareholder return is generally computed by subtracting the investor's required return from the raw return and the difference proxies the change in stockholder gains. When considering these market-based returns, Bruner (2002) distinguishes between three main event study insights: (i) target firm shareholder returns, (ii) acquiring firm shareholder returns, (iii) combined entity shareholder returns. The different types are each discussed in turn.

(i) Target firm shareholder returns. The existing literature widely acknowledges the fact that target firm shareholders enjoy significantly- and materially positive returns, at least in the short-term (eg. Malatesta, 1983; Jensen & Ruback, 1983; Datta et al. 1992). Bruner (2002) summarizes the findings of various studies and indeed documents consistent premium returns for target firm shareholders following M&A transactions, regardless of time window variations, deal type and sample period. These abnormal returns range from 20-30% on average, and seem coherent with the control premium paid on the unaffected share price of the target firm.

(ii) Acquiring firm shareholder returns. The pattern of findings on bidder shareholder returns is less straightforward and consistent than the evidence for its target shareholder counterpart. Scholars have employed a wide mixture of samples and constructs for investigating bidder shareholder returns but find mixed evidence. Bruner (2002) reviews 41 studies on this topic that show a rather evenly distribution over value- destruction, creation and conservation findings. It may be concluded that, collectively, acquisitions offer bidding firm shareholders insignificant abnormal returns and therefore

provide no added value. Although this holds for the aggregate, certain academics do document significant abnormal returns for particular sets of acquisitions. For instance, Andrade et al. (2001) find an average abnormal return in the days surrounding the announcement of -0.7% for mergers in the 1973-1998 period. In fact, this study was one of the first in a whole string of findings to support perhaps the most stylized fact on this matter, namely that public US bidders tend to earn negative abnormal announcement returns of around -1.0% following a bid for public US targets (eg. Chatterjee, 1992; Andrade et al., 2001; King et al., 2004; Betton et al., 2008; Finkelstein & Kim, 2009; Harford et al., 2011). Any interpretation of the acquirer's return must cope with the problematic dispute on size differences between target and acquirer, as buyers generally are much larger. Asquith et al. (1983) address this 'size effect' and find a positive relation between the bidder's abnormal returns and the relative size of the target. Moeller et al. (2004) generate complementary evidence on this phenomenon by showing that abnormal announcement returns for small acquirers are superior to those of relatively large bidders. More specifically, their findings suggest that large firms offer higher acquisition premiums, therefore entering acquisitions with negative synergy gains and consequently experience significant shareholder wealth losses at announcement. Small firms in contrast show significant positive returns when announcing an acquisition, refining the firm size effect as it was.

(iii) Shareholder returns of combined entity. While much of the empirical attention initially centred on bidder returns, scholars likewise scrutinized the effects of acquisitions on the combined bidder and target returns (eg. Healy et al., 1992; Houston et al., 2001). Langtieg (1978) was at the academic forefront in measuring stockholder gains from the perspective of a three-factor performance index. He augmented the traditional 'one-factor' performance index of Jensen (1969) by adding an industry factor and a matched non-merging control group. Langtieg (1978) thereby essentially constructed a three-factor performance index that produced greater explanatory power. Bradley et al. (1988) approximate the level of the synergistic gains, using the revaluation of the combined firm shareholder wealth as a basis. Healy et al. (1992) use yet another way of measuring the economic gains of the combined entity namely through examining the post-merger cash flow performance. Without stepping into the methodological implications of this research, as these are further discussed in Section 5, the above clearly highlights the variety of methods and developments of measuring combined-firm's post-acquisition performance. As mentioned, the review study by Bruner (2002) captures the most effectual methods and concludes that most findings point in the direction of increased combined entity shareholder wealth. Empirical evidence thus indicates that M&A transactions seem to create some joint value for the acquirer and target combined.

2.2.2 Operating performance event studies based on accounting data

The previous sub-section illustrates that stock performance event studies generally provide evidence that points in the same direction. Operating performance event studies on the contrary document erratic results with respect to takeover performance and therefore yet again stress the relevance of a structured comparative analysis. The inconsistent nature of this accounting data evidence appears to be due to the large assortment of performance measures applied throughout the academic literature. The literary evolution of the operating performance methodology can be explained by segmenting different 'movements' in the operating performance literature. By acknowledging certain movements in the M&A literature over time, we can clearly distinguish between the assorted methods and build on a systematized review in the remaining of this paper[5].

First movement. The very first researches conducted on operating performance on one hand document insignificant changes in post-takeover M&A performance (eg. Mueller, 1980; Herman & Lowenstein, 1988) while on the other hand an academic stream of research finds evidence of declining profitability following takeovers (eg. Meeks, 1977; Ravenscraft & Scherer, 1989). Meeks (1977) leads the way in the evolvement of literature on operating performance and studied the difference between pre- and post-merger profitability levels of UK-based companies. He documents a year-by-year average underperformance of profitability for the post-takeover period compared to ex-ante ratios. His research concludes that, based on these findings, takeovers should not be motivated by a pursuit for efficiency gains. Instead, he argues that corporate acquisitions are undertaken to exploit the benefits of internal capital markets. A few years later, Mueller (1980) employed an operating performance measure to study the effects of cross-border acquisitions. His results show insignificant evidence of declining ex-post M&A operating performance, concluding that expected synergy realizations are minor. For an industry specific US dataset, Ravenscraft & Scherer (1989) find deteriorating post-merger profitability which is likely to stem from 'control loss', owing to more complex organizational structures and lessened managerial competence and/or motivation. Along the same lines of interpretation, Herman & Lowenstein (1988) indicate that corporations engaging in hostile takeovers are, on average, unable to exploit any synergistic gains.

Second movement. Moving forward, Healy et al. (1992) place some critical notes against the methodologies employed in previous research (i.e. first movement) and develop their own methodology paired with a set of recommendations. Their argumentation suggests that prior research was predominantly dependent on accrual accounting data, which is prone to managers' reporting discretion and therefore also to manipulation. They recommend scholars and practitioners to apply a measure of operating cash flows deflated by assets when assessing takeover performance. Additionally, they argue that benchmarking the firm- against industry performance eradicates any

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[1] For a graphical overview of the different streams on operating performance literature as in Naar (2014) refer to Table 2.1.

distortionary industry effects. Although their 'industry-adjusted cash flow return' enhances the explanatory power of the performance measure, their research only considers the top 50 largest acquisition targets. As a result, their conclusions cannot be directly generalized over the whole spectrum of corporate transactions.

Third movement. The literature around operating performance enters a new phase when academics start to recognize inconsistencies in the different performance metrics and identify disparities when diving into previous applied statistical methods. Barber & Lyon (1996) were among those academics and examined the impact of different methodological choices on the test statistics of abnormal operating performance. Their results indicate that commonly used research methods yield test statistics that are often incorrectly specified. Specifically, the paper finds that the parametric t-statistic for studies on accounting data is consistently outperformed by the nonparametric Wilcoxon test. In addition to their contributions with regard to the statistical methods, Barber & Lyon (1996) complement the work of Healy et al. (1992) by not only matching a sample firms' industry to the control group, but also by controlling for size and past performance. The illustrative study on operating performance conducted by Ghosh (2001) essentially implements the proposed methodological modifications of Barber & Lyon (1996) and subsequently re-evaluates the outcome of the study in the 'second movement' by examining the 100 largest US acquisitions over an updated 15-year horizon. He argues that previous research on operating performance is likely to be biased because acquirers (i) engage in M&A activity following a period of notable corporate performance, and (ii) are mostly larger than industry-median entities. Having matched firms on historical performance and company size, his research shows no evidence for abnormal post-takeover operating performance.

Fourth movement. Andrade et al. (2001) highlight the fact that the preceding literature on operating performance seems to have neglected two of the most consistent empirical features of M&A activity, namely that (i) mergers occur in waves, (ii) mergers have a strong tendency to cluster within a wave. These features indicate that mergers possibly arise as a reaction to unexpected shocks to industry structure, especially deregulation. To surmount the distorting effects of industry clustering, they combine a time series of annual cross-sectional regressions and conclude by showing a statistically significant increase in post-takeover operating performance, albeit small.

Other. While the development of research constructs on operating performance may seem straightforward based on the presented literature movements, a vast amount of research on this topic still shows opposing results. For the sake of exhaustiveness and in order to establish a complete perspective on the full range of event study outcomes, the different articles may be categorised into the following. The first category consists of scholars documenting statistically significant positive changes in post-merger operating performance. A second category includes papers which show a declining post-merger operating performance trend and lastly, the third group of academics find no

considerable change in post-takeover operating cash flows. Table 2.2 provides further details on the different outcome buckets.

Conclusion. While the above presented literature on operating performance may leave some room for different interpretations, it is fast becoming apparent that the empirical results are strongly reliant on the applied performance measure. This seems particularly noteworthy when we assemble the methodology in Section 5.

Table 2.1: Overview of the evolvement on operating performance research

Author(s)	Movement	Contribution	Sample period	*N*
Meeks (1977)	**I**	- Post-merger profitability for UK acquiring firms consistently declined - Related mergers increase market power, except for conglomerates	1964 - 1971	233
Mueller (1980)	**I**	- M&A operating performance insignificantly declines post-merger - Cross-border synergy realisations are minor	1962 - 1972	287
Herman & Lowenstein (1988)	**I**	- Positive ROCs for acquirers using tender offers (1975-1978) - Deteriorating post-merger profitability resulting from 'control loss' in the 1981 – 1983 period	1975- 1983	56
Ravencraft & Scherer (1989)	**I**	- Hostile acquisitions hold negative relation with operating ROA - Ceteris paribus, firms engaged in tender offers significantly more profitable than firms with no activity	1950 - 1976	471
Healy et al. (1992)	**II**	- Significant improvement in Asset Turnover, no increase in CFM - Methodological recommendation of using OCF / TA	1979 - 1984	50
Barber & Lyon (1996)	**III**	- Non-parametric Wilcoxon test outperforms parametric t-statistic - Methodological modification of controlling for size and performance	1977 - 1992	na
Ghosh (2001)	**III**	- CFM increases significantly following transactions made with cash - Previous research on operating performance is biased by relative size and historical performance effects	1981 - 1995	315
Andrade et al. (2001)	**IV**	- Statistical significant increase in post-merger operating performance when controlling for merger waves and clustering within the waves	1973 - 1998	4,300

Table 2.2: Overview of other findings on M&A operating performance

Δ Post-Acquisition Operating Performance								
Positive and significant	Sample period	Area	*Declining*	Sample period	Area	*No change*	Sample period	Area
Ikeda (1983)	1964 - 1975	Manufact., Japan	Dickerson et al. (1997)	1949 - 1977	UK	Chatterjee (2000)	1977 - 2000	UK
Herman & Lowenstein (1988)	1975 - 1983	US	Kruse et al. (2002)	1969 - 1992	Japan	Sharma & Ho (2002)	1986 - 1991	Manufact., Australia
Fowler & Schmidt (1989)	1975 - 1979	Industrial Manufact.	Yeh & Hoshino (2002)	1987 - 1992	Taiwan	Gugler et al. (2003)	1981 - 1998	Global
Manson et al. (1995)	1985 - 1987	UK	André et al. (2004)	1980 - 2000	Canada	Moeller & Schlingemann (2004)	1980 - 2001	US
Switzer (1996)	1967 - 1987	US	Clark & Ofek (2004)	1981 - 1988	Distressed takeovers, US	Martynova et al. (2006)	1997 - 2001	Europe
Parrino & Harris (1999)	1982 - 1987	US				Dutta & Jog (2009)	1993 - 2002	Canada
Linn & Switzer (2001)	1967 - 1987	US						
Heron & Lie (2002	1985 - 1997	US						
Ramaswamy & Waegelein (2003)	1975 - 1990	US						
Rahman & Limmack (2004)	1988 - 1992	Malaysia						
Powell & Stark (2005)	1985 - 1993	UK						

2.2.3 Stock performance studies versus operating performance research

Given the significant number of studies on the relationship between target status and stock performance, scholars should wonder whether it is apprehensive that these documentations are not supported by a similar degree of academic findings on long-term operating performance. Because ultimately, in theory, expectations on future operating performance should be perfectly reflected by stock price movements. Thus, research on share price- and operating performance should theoretically result in reasonably corresponding outcomes. However, comparative studies more often than not show contradictory findings (eg. Ghosh, 2001; Papdakis & Thanos, 2010). Ghosh (2001) clearly accentuates the fact that evidence on stock performance research is often followed by opposing findings on operating performance studies, but does not provide a theoretical analysis on the origin of

these incongruities. A study by Papadakis & Thanos (2010) further highlights these discrepancies by documenting an insignificant correlation between stock-based abnormal returns and accounting based metrics. They claim that the lack of statistical significance in the correlation between the two performance measures is likely to be the root cause of the conflicting results found in the literature. Similar to Ghosh (2001), these scholars regrettably do not provide a discussion on the underlying rationale behind the dissimilarities. The remainder of this section endeavors to provide additional context by digging deeper into the fundamental assumptions made in both the accounting- and market based event studies.

Ad hoc, it appears seemingly obvious that the majority of academic research on takeover performance employs a performance measure based on stock returns. Naturally, market based studies are characterised by more convenient levels of data availability than accounting based performance research and are less prone to differences in reporting standards. Nevertheless, a deeper and more comprehensive investigation on the assumptions underpinning market based research do uncover some significant limitations which review studies by Bruner (2002) and Zollo & Meier (2008) clearly address. First of all, market based research is premised on one of the most vital paradigms of traditional finance theory namely the efficient market hypothesis. This implies that (i) collectively, market participants are capable of correctly forecasting future cash flows and (ii) these forecasts are immediately priced into the stockprice the moment they arise. Yet, certain academics placed some question marks behind the investor rationality assumption by showing discrepancies in future earnings forecasts and stock market implied valuations (eg. Summers, 1986; Campbell et al., 1997; Elton et al., 2004). In fact, research conducted by Rau & Vermaelen (1998) indicates that market participants consistently overextrapolate a company's financial prospects when evaluating the attractiveness of an acquisition. As a result, projected synergy value and the lengthiness of its realisation trajectory may be determined erroneous throughout market based event studies which arguably lowers the outcome quality. Likewise, academics reason that the efficient market hypothesis holds in its semi strong form at best due to the existence of arbitrage opportunities and market anomalies (eg. Jensen, 1978; Daniel & Titman, 2000). But even if we accept that those vital assumptions are to be true, market based event studies are expected to be prejudiced by two more refined conventions. Stock market studies implicitly imply (i) the influence of unforeseen events to be insignificant and (ii) the probability of an unsuccesful deal to be nonexistent. Academics nonetheless reason that because acquisition announcements regularly disclose information that alter the investors' future cash flow estimates of the acquired firm, market based event studies indeed show inconsistencies (eg. Brous, 1992). However, typical market based methodologies do not permit for seperating the market reaction in a stand-alone and combined-entity component (eg. Massa & Zhang, 2009). Besides, building on the assumption that market participants are rational, one may critic the postulation that stock performance event studies accurately capture the market's foresight value of the merged firm because the

probability of deal failure should be incorporated in the price that investors are willing to pay at announcement. The value of the actual projections might only be disclosed when the transaction is completed. Since long-term event studies are particularly susceptible to unforeseen / one-off events, this problem cannot simply be sorted out by strechting the employed time window (Mitchel & Stafford, 2000).

Event studies on operating performance are not affected by most of the aforementioned restrictions (Zollo & Meier, 2008). The assumptions underlying the efficient market hypothesis for instance, do not need to hold for research propositions based on operating performance measures. Also, any noise created by the possibility of deal failure will not affect accounting based methodologies. Still, accounting based research is more vulnerable to certain transitory occurrences. For example, if a combined firm subsequently pursues another corporate transaction, this may complicate the operating performance measurement of the previous acquisition. In market based event studies, these kind of complications seem irrelevant as they are concerned with a 'fundamental valuation' of the company based on its expected future performance.

By studying the impact of a company's listing status on the post-takeover operating performance of the acquirer, I am able to circumvent a number of limitations surrounding market based research. The academic findings by Ghosh (2001) and Papdakis & Thanos (2012) by no means indicate that the target's organisational form similarly affects both the acquirer's operating- and stock performance. Hence, they implicitly invite future researchers to explore the accounting based M&A performance to provide a comparative counterpart for stock performance studies. It is for this reason thought-provoking to assess whether I can document either confirming or opposing results in order to develop a better understanding of the target status' influence in an operating performance context.

2.3 Determinants of post-merger performance

In the search for measuring M&A operating performance, academics have documented numerous determinants that may help identify the key drivers behind any changes in operating returns. In line with the theoretical framework put forward by Haleblian et al. (2009), this section subdivides the performance moderators into two buckets: (i) deal characteristics; (ii) firm characteristics.

(A) Deal characteristics

Deal Structure. The pecking order theory of financing postulates that acquirers will only consider paying for an acquisition with stock if they deem their own shares overvalued, hence the market will negatively perceive such an acquisition deal structure (Myers & Majluf, 1984; Loughran & Vijgh, 1997). In contrast, and as already touched upon in Section 2.1, empirical evidence on private target takeovers suggests that bidders experience positive returns following stock offers. Fuller et al.

(2002) point towards blockholdership creation and favourable tax implications as justification for these findings. Their analysis suggests that stock offers defer some of the current tax implications faced by the acquiring firm's owners and that they are therefore prepared to accept a discounted price (with a maximum of the tax deferral option value). Supported by some academics, they even insinuate that the listing effect might essentially be a payment method effect (Travlos, 1987; Chang, 1998; Fuller et al., 2002). Later studies add some nuance and verify that the payment method effect indeed exists, but that it is unattached and distinct from the listing effect (Ang & Kohers, 2001; Draper & Paudyal, 2006; Petmezas, 2009). While most studies on operating performance find no material impact from the deal structure (eg. Healy et al., 1992; Heron & Lie, 2002; Powell & Stark, 2005), some scholars argue that cash offers are associated with an increased likelihood of entrenched management being replaced which may improve operating performance (Denis & Denis, 1995; Ghosh & Ruland, 1998).

Relative size of the acquisition. Starting to address studies on abnormal returns, Acquith et al. (1983) report a positive relationship between the acquisition size and abnormal stock performance. They reason that even the most favourable mergers can have a negligible impact on the acquirer's stock performance if targets remain relatively small compared to the acquirer. Large targets on the other hand tend to exhibit large potential for synergy realisation. Still, large targets may be more difficult to integrate into the business following the acquisition which could in turn lead to diminishing returns. Both these suppositions receive supporting empirical evidence. Fuller et al. (2002) find a positive relationship between private target's size and abnormal performance and a negative relative size association with public targets. More specifically, they show that for private acquisitions financed with stock, the relative acquisition size coefficient becomes increasingly more positive. Returns from listed targets are found to be positive for cash offers and negative for stock offers when the relative size of the acquisition increases. Moving towards studies on synergy realisation, Clark & Ofek (1994) show that the complications in managing bulky post-merger firms overshadow the operating and financial synergies from the transaction, leading to a decline in operating performance. Although these findings might portray the relative size as substantial performance moderator, the majority of empirical findings still find no statistical significant relation between operating performance and the acquisition's relative size (Healy et al., 1992; Heron & Lie, 2002; Sharma & Ho, 2002; Kruse et al., 2002; Powell & Stark, 2005; Moeller & Schlingemann, 2003).

Hostility: hostile versus friendly. Whether the acquirer approaches the target with a hostile versus friendly bid can explain part of the variance observed in post- M&A performance. Hostile takeovers might diminish any gains the bidding firm seeks to caputure as both the premium and potential takeover defenses have a dampening effect on post-acquistion returns. Herman &

Lowenstein (1998) indeed report a decline in both ROE and ROCE following hostile takeovers.[6] Servaes (1991) also finds evidence supporting this reasoning and documents an average 4% lower return for hostile versus friendly takeovers. However, empirical studies testing deal attitude in an operating performance context do not report any statistical significant changes (eg., Healy, 1992; Schwert, 2000; Ghosh, 2001; Powell & Stark, 2005; Martynova et al., 2006).

(B) Firm characteristics

Market-to-book ratio. The market to book ratio (MTB), sometimes referred to as the Tobin's Q, is the ratio between a company's market- and book value of assets. Acquirers tend to experience a decrease in announcement period returns for higher MTB targets, as this theoretically signals an overvluation of the target which investors interpret as overpayment. Also, if one believes the MTB serves as a proxy for information asymmetry, then high MTB firms should report inferior performance on average. On the other hand, high MTBs may indicate hefty growth potential for the company. Especially for acquisitive firms lacking internal growth prospects but still seeking to expand their business by means of enagaging in M&A activity, acquiring high MTB targets may provide a solution (McCardle & Vishwanathan, 1994). Evidence on operating performance and MTB is mixed, while McLaughlin et al. (1988) report a negative association between MTB and operating performance, Heron & Lie (2002) find that low MTB firms acquiring high MTB targets experience operating performance improvements.

Acquisition experience. Studies on serial acquisitions consistently find that the acquirer's cumulative abnormal returns decline with the number of preceding acqustions made by the acquirer, which may be explained through a hubris hypothesis and agency theory perspective (eg., Roll, 1986; Fuller et al., 2002; Conn et al., 2004; Sudarsanam & Huang, 2007). Though from an operating performance perspective, scholars argue that acquirers gain specific abilities and know-how with their M&A experience necessary to realize critical post-acquisition structural changes. For instance, the study by Haleblian & Finkelstein (1999) indicates that experienced acquirers are indeed able to enhance their target selection and integration abilities compared to acquirers with less M&A experience.

Acquirer's leverage and cash reserves. One may claim that in the long run, acquirers with high leverage ratios ought to outperform low levered bidders as they are more closely srutinized and monitored by their debtholders. Of course, these debt levels are critically dependent on company specific debt capacities and potential costs of financial distress. Nevertheless, traditional finance theory from behavioral economics stipulate that these monitoring functions make it increasingly less likely that firms undertake unprofitable and value destroying acquisitions (Grier & Zychowicz, 1994).

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[6] ROE and ROCE refer to return on common equity and return on capital employed respectively.

From the empirical evidence on leverage ratios one may however not draw any unilateral conclusions as most of the results indicate that post-acquisition performance is unaffected by pre-acquisition debt ratios (eg., Clark & Ofek, Linn & Switzer, 2001; Martynova et al., 2006). A company's cash reserves may also affect the post-acquistion operating peformance through various channels. Firms with high cash levels may benefit from acquiring 'cash-poor' targets by increasing its cash utilization and unleashing the target's growth potential with increased financial firepower. On the other hand, as discussed in Section 2.1, the free cash flow theory predicts that firms with high cash levels are more likely to engage in unprofitable investments that put pressure on its operating performance (Jensen, 1986; Moeller & Schlingemann, 2004; Martynova et al., 2006).

Industry commonality. Throughout the academic literature, industry commonality is considered a notable determinant when examining post-acquistion performance. Reasoning along the lines of the 'focus theory' suggests that operational synergy realisation deteriorates following unrelated acquisitions (Conner, 1991). Familiarity with the target's industry may reduce the time needed for adaption which can smoothen the post-acquisition integration process (Harrison et al., 2001). Similarly, positive spillovers from management's experience and tacit knowledge are likely to be more pronounced in the event of industry related transactions. The empirical evidence on industry commonality yet again shows inconsistencies. A wide stream of research suggests that there is no significant relationship between operating performance and industry focus (Fowler & Schmidt, 1989; Parrino & Harris, 1999; Martynova et al., 2006), while others report performance increases (Healy et al., 1992; Heron & Lie, 2002) and decreases (Ghosh, 2001) respectively.

To conclude, this section started with a comparative analysis of the target's organisational form from a pure theoretical point of view, elaborating on different hypotheses predicting private target outperformance over public target takeovers. Next, the discussion moved towards the empirical results on stock performance studies, indicating that M&A does seem to 'pay' for the combined shareholder base. Further, the comprehensive review on operating performance studies indicates that the empirical results are strongly reliant on the applied performance measure, emphasising the need for a detailed methodology construction in Section 5. The comparison between stock- and operating performance research in Section 2.2.2 clearly shows the advantages of studying M&A performance through operating measures, primarily by being able to circumvent some major limitations of stock performance studies. Lastly, a critical examination of the key performance determinants addresses the factors that may help explain any differences in public- versus private target takeover performance and sets the tone for their predictive signs in the following section. It seems particularly interesting to see whether I can document either confirming or opposing results in order to develop a better understanding of the target status' influence on M&A performance.

3. Hypotheses development

As indicated by the discussion in the literature review, plentiful empirical research is conducted on the relation between target's listing status and M&A stock performance. In contrast, the review clearly highlights that academics widely underexplored the effects of target's listing status on accounting-based operating performance measures. Nonetheless, for the arguments put forward in Section 2.2.3, suchlike findings are regarded critical to benchmark and conceivably examine the evidence of studies on stock performance. Accordingly, this research is initially motivated to verify: '*Do private target takeovers perform better than public target takeovers in terms of long-term operating performance?*'. Following the theorectical predictions made by Chang (1998), Fuller et al. (2002) and Draper & Paudyal (2006), I first formulate a rather generic prediction which serves as the starting point for a deeper, more comprehensive hypothesis development:

H1: On the aggregate level, private target acquisitions show unequal gains in long-term operating performance compared to public target acquisitions when controlling for qualitative elements.

As mentioned, listing status is associated to M&A performance through multiple factors. The specific accent of this paper therefore lies on exploring and describing the variables driving these differences. By primarily focusing on explaining the predicitive sign of each variable, I am able to address both discrepancies in performance measurement studies and contribute to the discussion on behavioral takeover hypotheses. The impact of target choice (i.e. acquiring a private verus public target) can be broken down into a firm characteristic component (A) and a component controlling for bid characteristics (B). Figure 1 provides a graphical representation of the research components.[7]

Figure 3.1: Breakdown of acquirer's performance from target choice
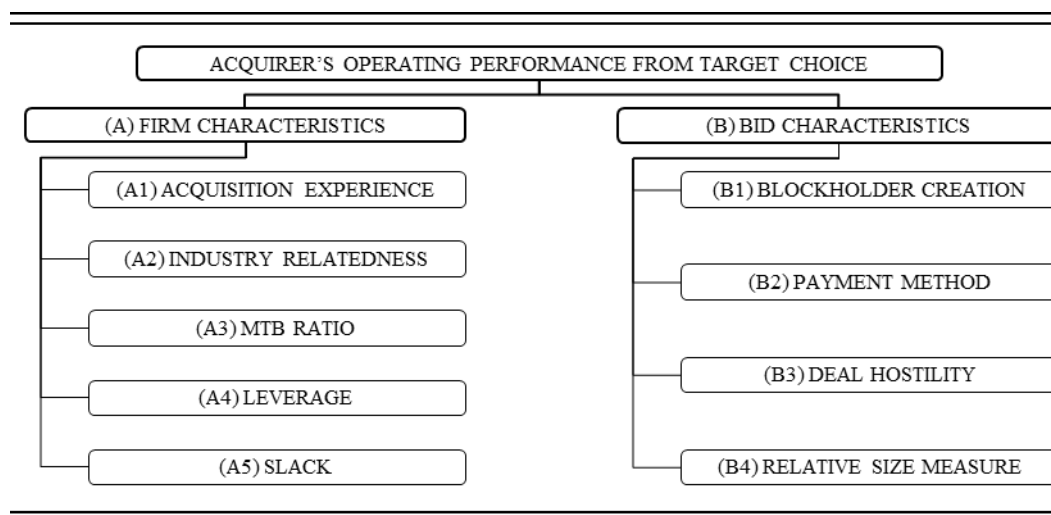
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Firm characteristics (A)

(A01). The listing effect may first be explained by means of examining the acquisition learning curve of the acquirer. Earlier research postulates that acquirers grow certain skills through prior acquisition experiences that improve their post-acquisition perfromance (eg. Fowler & Schmidt, 1986). More specifically, the organizational learning theory suggests that acquirers are to considerably increase their ability to select appropriate acquisition targets and to improve their integration processing capabilities with the number of prior acquisitions (Aktas, 2009). Based on the difference in transaction volume between public and private target acquisitions, one may argue that private target acquirers are more likely to gain this kind of experience.[8] Therefore, I empirically examine if acquisition experience might drive any of the differences in operating performance by postulating:

H(A01): Post-merger operating performance increases for both public- and private target acquirers in the quantity of their prior acquisition experience, this effect is more pronounced for private target acquirers.

(A02). An important element in the puzzle of corporate acquisition strategies is the choice for acquisitive diversification. The argument put forward by academics that corporate diversification destroys value is fairly compelling because of the large body of supporting empirical evidence. These findings mainly consider public target acquisitions and stretch from consolidated business segment discounts (eg. Lang & Stulz, 1994; Berger & Ofek, 1995), to acquirers earning negative stock returns following acquisitions in different industries (eg. Morck et al., 1990; Maquieira et al., 1998; Servaes & Lin, 1999). Another stream of research addresses private target acquisitions and argue that, in contrast to outsiders, industry insiders are more capable of assessing both the value and growth prospects of potential private targets. Because private acquisitions involve larger information asymmetries, insiders likely benefit from a higher business proximity, larger knowledge base and greater industry familiarity (Chatterjee, 1986; Singh & Montgomery, 1987; Capron & Shen, 2007). As operating performance studies scrutinizing diversification effects from acquisitions seem to be limited, I provide additional evidence for the M&A literature on operating performance by framing the hypothesis:

H(A02): Inter-industry acquisitions show unequal gains for public target takeovers compared to private target takeovers in terms of post-merger operating performance.

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[8] As portrayed in the introduction section, private target acquisitions accounted for 75.5% of total US M&A transactions between 1989-2013

(A03). The theory of self-attribution bias put forward by Conn et al. (2005) and Billet & Qian (2008) suggests that managerial overconfidence is likely to result in managerial hubris. The hubris hypothesis in turn postulates that acquiring firms overpay for their targets resulting in shareholder value deterioration. Based on the findings of Hietala et al. (2003), this paper empirically tests the following hypothesis:

H(A03): An acquirer's MTB value is negatively associated with its post-takeover operating performance, this effect is more pronounced for public target acquisitions.

(A04). Prior literature has shown that the pre-takeover capital structure of the acquirer is likely to have a material impact on the post-takeover M&A performance. As Lang et al. (1996) show, private firms with substantial future growth prospects benefit from financial flexibility as it facilitates potential future investments and remedies on the high costs of financial distress. Larger firms, on average, are better served with lowering their cost of capital through increased debt ratios as these firms generally hold a larger debt capacity. The results by Yang (2011) indicate that overleveraged (listed) acquirers experience superior performance over underleveraged firms. Regardless of these incongruities, scholars widely acknowlegde that acquirers move towards an optimal range of capital structure. As this range lies higher for larger firms, and public target acquirers are generally larger than private acquirers, I test the hypothesis:

H(A04): The pre-merger leverage ratio of public target acquirers is positively associated with post-merger operating performance, and for private target acquirers is negatively associated with post-merger operating performance.

A(05). Cash holdings based on market imperfections as described by Myers & Maljuf (1984) and Jensen's (1986) free cash flow theory are not mutually exclusive. The paper by Myers & Maljuf (1984) does not dicredit the likelihood that market participants attach value to the monitoring role of debt. Both theories place different emphasis on under- or overinvestment problems associated with cash holdings. While Jensen's theory postulates that the market generally expects managers to engage in negative NPV projects when having more discretion over investment decisions, the market imperfection argument by Myers & Majluf (1984) suggests that managers may perhaps be unable to engage in investment projects in the first place. Nevertheless, traditional finance theory anticipates financial synergies when cash rich firms with limited project opportunities is combined with a cash strapped-firm exhibiting potential high-return projects (Bruner, 1988). This synergy is likely to subsist when large firms acquire smaller firms, or when public entities acquire private firms. Following the

literature review and the above, I empirically examine the following hypothesis for public and private target acquisitions:

H(A05): Pre-merger cash reserves are negatively (positively) associated with post-merger operating performance of public (private) target acquirers.

Deal characteristics (B)

Simply examining the firms' characteristics may not do justice to the complicated nature of corporate takeovers. A second feature that seperates public- from private target takeover performance involves the different deal characteristics.

(B01). Chang (1998) suggests that private target bidders create 'blockholders' in the post-merger firm following stock-financed acquisitions. As discussed in the literature review, academics empirically show that the creation of blockholders in the company potentially reduce agency costs. Shleifer & Vishny (1997) argue that blockholders form a vital part of an effective corporate governance system. Research by Boone et al. (2011) also indicates that concentrated ownership creates incentives to monitor and influence managers so that post-merger activities are aligned with the stockholders interests. Likewise, managers are increasingly incentivised to employ due diligence prior to the acquisition (eg. Clasessens et al., 2002). With respect to public target acquisitions, stock-financed deals do not tend to create blockholders persé, as listed firms are mostly characterised by dispersed equity ownership. In fact, scholars document negative announcement period returns following stock-financed acquisitions usually explained through the theories of adverse selection and the pecking order of financing (Myers & Majluf, 1984; Shyam-Sunder & Myers, 1999). Similarly, accounting based studies by Switzer (2001) and Ghosh (2001) indicate that cash financed acquisitions perform better than stock-financed acquisitions. I construct different proxies to identify if blockholders are created in the merged entity and empirically examine part of the monitoring proposition from an operating point of view by testing:

H(B01): Post-merger operating performance of public (private) target acquirers decreases (increases) with the target's equity ownership in the acquiring firm subsequent to stock financed acquisitions.

(B02). Ample empirical research suggests that the outcome of M&A performance, at least in terms of stock performance, is contigent on the deal structure of the acquisition (Healy, 1992; Draper & Paudyal, 2006; Martynova, 2006; Faccio, 2006). From a corporate monitoring perspective, stock financed private acquisitions are likely to result in increased monitoring by shareholders as private firms are characterised by concentrated ownership, public firms on the other hand show a dispersed ownership structure. Further, following the predictions put forward by the asymmetric information hypothesis, private target merger announcements should convey positive information and are associated with increased abnormal returns when the transaction payment is with stock. The dilutive effect of stock payments in public target takeovers tend to increase information assymetry and leave shareholders less incentivised to examine the potential acquirer. Following the thoughts of Draper & Paudyal (2006), this research examines the following testable propositions to provide a benchmark for studies on market based performance:

H(B02a): When the acquisition involves a stock-only dealstructure, private target acquirers gain (relatively) more than public target acquirers.

H(B02b): Stock financed private target acquisitions experience superior post-takeover operating performance over cash financed private target acquisitions.

(B03)

The managerial motives bias predicts that the executives' private benefits are positively associated to the size and reputation of the firm they manage, thereby increasing the likelihood of overpaying in the event of public target acquisitions. The overpayment puts pressure on the prospected synergy realisation as a source of value creation and may therefore result in negative post-merger operating performance. An abundance of market based studies have indeed found suchlike evidence and report negative announcement period returns for these acquisitions (eg. Travlos, 1987; Asquith, 1990; Draper and Paudyal, 2006). Scholars argue that private target takeovers face different post-acquisition performance prospects. Moeller et al. (2004) suggest that, conditional on private target acquirers being relatively small companies, the economic impact for these firms is much greater and therefore they approach the acquisition process with extra caution. Further, should the acquisition of a private target be motivated along the lines of the managerial motives hypothesis, agency problems are likely to be less prevalent and a positive association between target size and post-merger bidder returns should be expected (Kohers, 2004). I test if these predictions hold in an operating performance context:

H(B03): The relative size of the acquisition is negatively (positively) associated with public (private) target post-merger operating performance.

4. Sample

4.1 Sample criteria

The starting point of the sample selection procedure is rested on the classification of acquisitions that took place in the US (North-America). Further, this research considers public- and private target takeovers by US listed bidders over a sample period that spans from 1993-2013. The logic behind the selected sample criteria is discussed below.

Justification of opting for a sample period spanning from 1993 to 2013. The methodological nature of operating performance measurement requires at least three years of post-acquisition accounting data to produce appropriate results. Hence, acquisitions that occurred after December 2013 are excluded from the initial sample. Next, databases show gaps in the availability of takeover records pre-1993 which could potentially lead to inconsistencies in the data. Accordingly, the historical boundaries are set at 1993 and 2013 to cover the most comprehensive set of acquisitions for examining operating performance. One must however acknowledge that the time period considered may include disturbing effects of the 'dot-com' bubble, GFC and different merger waves that occurred over de last decades.[9] Therefore, I carefully consider controlling for these effects by means of constructing different control variables, further discussed in the methodology section of this paper.

Justification of opting for US listed firms acquiring US public and private targets. Academics have extensively scrutinized the impact of the target's organisational form on market based performance measures, the existing literature however remains relatively silent on the matter of longer term operating performance. As most papers in this arena restrict their sample to the US market for corporate control, my geographical restriction will be analogous in order to provide a critical benchmark for studies on stock performance. Additionally, I observe an academic vacuum in the field of listing status versus operating performance which this research aims to fill by means of examining the underexplored yet highly representative US economy. Finally, measuring the operating performance of unlisted bidders faces severe limitations mainly due to the restricted access of accounting data on these firms, therefore only listed acquirers are considered.

Employing an additional peer group sample. To develop a set of comparable companies for the purpose of adjusting for industry effects, firm size and historical performance, a supplementary sample is retrieved from WRDS Compustat North America (Sample II).[10] This sample is developed to create a benchmark for industry- and peer performance and includes all US firms listed in Compustat

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[9] The dotcom bubble in generally referred to as the 1997-2001 time period in which excessive speculation on internet-based companies prompted a rapid rise in equity markets. It is considered a benchmark scenario of market participants disregarding companies' fundamentals (eg. Griffin et al., 2011). GFC refers to the 2008 Global Financial Crisis, in which the US housing bubble burst led subprime borrowers to default on their loans eventually causing a credit crunch that worked its way to the upper tiers of the financial system. The merger waves under consideration include the cross-border or mega-merger wave (fifth) from 1993-2000 and the (sixth) globalization, PE, LBO wave from 2003-2008.

[10] Section 5.2 provides a detailed composition and rationale for the different performance benchmarks.

North America solely filtered on the availability of appropriate accounting data and a time window restriction (1990-2015).[11] Simply using the main sample with M&A transactions (Sample I) as the pond to fish potential comparables from would be erroneous for different reasons. First, as we recall from the literature review, firms that engage in M&A activity on average tend to outperform the industry as a whole (Andrade, 2001). Thus, if one would determine a firm's abnormal operating performance based on set of companies that all engage in M&A, the performance measure will be biased up (down) when compared to peers that run in their pre-transaction (post-transaction) phase. Further, using a sample that only includes companies that pursue corporate transactions will severely limit the size of the comparable company 'fishing pond'. For instance, if I were merely to employ Sample I for benchmarking operating performance, over one-third of the observations would not have been matched to an appropriate industry peer. Applying a more exhaustive sample that includes numerous companies for any given industry enables a more robust comparison and provides a proper benchmark for all acquirers under consideration. Perhaps even more importantly, this way the sample includes both companies that engage in M&A activity and operate on a stand-alone basis thereby establishing an overall representativeness of industry performance.

4.2 Sampling procedure

Sample I. The first sample is extracted from ThomsonOne SDC Mergers and Acquisitions database and contains all US domestic M&A transactions on public- and private targets between 1983-2013. The initial sample is filtered in a similar way as Conn et al. (2007) where the transactions meet the following criteria: (I-01) the acquiring company is a public firm listed on the Center of Research in Security Prices (CRSP) during the event window; (I-02) the target is either a public company, private company or non-public subsidiary of a public or private company; (I-03) transactions that take the form of LBOs, tender offers, spin-offs, recapitalisations, self-tenders, exchange offers, repurchases, minority stock purchases and privatisations are excluded; (I-04) the bidder owns less than 50% of the target's voting shares before the takeover, and increases its ownership to at least 95% as a result of the takeover; (I-05) the transaction is completed; (I-06) the deal value is larger than $1 million; (I-07) the merger did not occur in utilities or the financial industry.[12] These initial requirements yield a sample of 25,508 acquisitions.

Subsequently, accounting data of the acquiring firm is obtained from WRDS Compustat North America and matched to the SDC query. Following this matching procedure, additional requirements are set in place to specify the ultimate sample of M&A transactions: (I-08) the transaction is completed after Jan-1993 and before Dec-2013; (I-09) the transaction value is at least 5% of the acquirer's market value of assets; (I-10) takeovers by companies that acquired both a public

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[11] Applying this particular time period provides 3 years of accounting data pre- and post-transaction for any given firm in the sample.
[12] The regulatory nature and differences in financial statements of the financial industry and utilities sector would severely limit the provision of a meaningful intra-industry comparison among transactions.

and private target in a given year are excluded; (I-11) the acquiring company is to be listed in the WRDS Compustat North America database; (I-12) Compustat query to yield satisfactory accounting data to complete the analysis on the acquirer's operating performance. After applying filters (I-01) – (I-12), Sample I includes 3,190 transactions.

Sample II. The second sample is established in order to provide an array of comparable companies for benchmarking purposes. The WRDS Compustat North America database was consulted to obtain accounting data of all available US companies after filtering for: (II-01) observations between fiscal years 1990 and 2015; (II-02) Compustat query to yield satisfactory accounting data to complete the analysis on the acquirer's operating performance. After applying these filters, Sample II includes 23,633 US firms with their respective accounting numbers.

Table 4.1: Overview of samples and sampling procedure

Filters	Description	No. of transactions	Private target acquirers	Public target acquirers
Sample I	**Sample of transactions**			
(I-01) - (I-07)	ThomsonOne SDC North America query	25,508		
(I-08)	Relative size restriction	11,851		
(I-09)	Time period restriction	11,537		
(I-10)	Compustat matching	7,292		
(I-11)	Opposite form acquisitions	6,933		
(I-12)	Sufficient accounting data	3,190	81.3%	18.7%

Filters	Description	No. of observations	No. firms	Avg. no. of annual firm observations
Sample II	**Peer group sample**			
(II-01)	Compustat query	277,020	27,307	10.1
(II-02)	Sufficient accounting data	231,562	23,633	9.8

5. Methodology

This chapter aims to provide a measurement method to test the different research hypotheses discussed in Section 3. By carefully constructing the methodology on operating performance, this research seeks to comprehensively measure the impact of the target's organisational form on M&A operating performance. First, a range of employed operating performance measures are discussed in Section 5.1 to provide context on the evolution of this accounting based method. Following this critical re-examination, Section 5.2 outlines the benchmarking procedure of the performance measure. The statistical tests used to determine the association between listing status and operating performance is covered in Section 5.3.

5.1 Measurement of operating performance

Throughout the academic literature on M&A performance, different accounting based metrics have been applied to measure post-acquisition operating performance. A discussion on the most widely-employed measures is covered in Section 5.1.1, followed by the composition of the performance measure used in the remainder of this paper, outlined in Section 5.1.2.

5.1.1 Evolution of operating performance measures

At the very beginning of the operating performance measure evolvement stands a body of literature that started to use EPS-yield as indicator of ex-post operating performance (e.g., Healy & Palepu, 1988; Asquith et al., 1989; Healy & Palepu, 1990; Horne, 1991; Dann et al., 1991). Subsequent studies recognised the blurring effects of special items, tax considerations and the accounting for non-controlling interest. Further, they acknowledge that studies on corporate transactions often involve capital structure changes which impact a company's interest expense and earnings, while leaving operating income unaltered (assuming that the firm's operations are unaffected by the changes in capital structure). As a result, these papers started to centre around cash flows as a measure of value creation (e.g., Healy et al., 1992; Miles, 1993; Denis & Denis, 1993; Mikkelson & Shah, 1994).

Scholars have documented various definitions of cash flow which essentially can be segmented into: (i) an accruals-based cash flow measure (operating income, EBITA), (ii) a semi-cash flow method (operating cash flow; OCF), and (iii) an authentic cash flow classification (free cash flow, FCF). While there is no strictly uniform definition of operating income, it is typically expressed as revenues minus cost of goods sold, minus selling, general and administrative expenses, minus depreciation (as in e.g., Jain & Kini, 1994). The semi-cash flow classification (OCF) is made by controlling for accrual adjustments, primarily resulting from any changes in net working capital (as in e.g., Kothari et al., 2005). By additionally subtracting capital expenditures, we arrive at the authentic cash flow measure (as in e.g., Lehn & Poulsen, 1989). Through a series of statistical test simulations, the research design study by Barber & Lyon (1996) suggests that the OCF and FCF measures are

consistently less powerful than other cash flow measures of operating income.[13] Hence, this paper proceeds by employing the accruals-based cash flow measure EBITA.

Following the rationale on applied cash flow measure, the analysis turns towards scrutinizing the asset base of the performance metric. A widely-acknowledged approach by Healy et al. (1992) deflates the cash flow measure by the market value of assets (MVA) to specify a returns metric that offers inter-company comparisons. However, as briefly touched upon in Section 2, market value considerations may suffer from significant drawbacks as they are based on the market participant's future expectations of the firm. The MVA may therefore at the same time be influenced by the market response of a transaction announcement. To further illustrate this, consider the two following arguments. First, findings by Agrawal et al. (1992) suggest that the operating performance metric may turn unreliable when market participants anticipate an increase in operating performance based on information disclosed during the takeover announcement. They argue that although prospected operating efficiency enhancements are ultimately displayed by improved levels of ROA, the prompt upsurge in the market value of equity (MVE) following the announcement initially biases the metric downwards. Second, Ghosh (2001) points towards an upward bias in the operating performance measure over a multi-year time window. He claims that, on average, the MVE tends to decline in the five years following an M&A transaction thereby causing an upward bias in the operating performance metric.

A series of academics preferred scaling the operating cash flow by the book value of assets (BVA) in order to circumvent the abovementioned limitations of using MVA (eg., Denis & Denis, 1993; DeGeorge & Zeckhauser, 1993; Miles, 1993; Mikkelson & Shah, 1994; Holthausen & Larcker, 1996). In their research design review, Barber & Lyon (1996) claim that scaling the operating income by BVA is inappropriate because it creates a discrepancy between the numerator and denominator of the operating performance metric. As the name suggests, operating income is generated merely by a firm's operating assets whilst the BVA includes assets of operating and non-operating nature. Barber & Lyon (1996) argue that in order to achieve a more precise measure of operating asset productivity, BVA ought to be adjusted by deducting cash and marketable securities because although every firm holds a certain 'operating cash level', a good deal of the time-series variation of cash holdings still results from a company's financing activities. Further, Lys et al. (2012) support the notion that goodwill is primarily associated with non-operating assets and should therefore also be subtracted from BVA to ultimately arrive at the recommended book value of operating assets (BVOA). For the sake of consistency, I will assume that the operating income has been generated evenly throughout the year and therefore apply an average of the beginning and ending book values for any given year.

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[13] I do acknowledge that from a practitioner's point of view the FCF method seems most appropriate, however in this paper I opt for the academic approach by following the recommendations put forward by Barber & Lyon (1996).

Alongside an asset deflation of cash flows, academics and practitioners routinely analyse a firm's cash flow margin as performance measure. Using it as a measure of operating performance however, the metric suffers from a significant drawback as it hides the impact of any efficiency gains (Holthausen & Larcker, 1996). Because the asset base is not unambiguously accounted for in the ratio of cash flow to sales, synergistic gains resulting from any efficiency improvements are not fully reflected by the metric. For instance, the firm may have achieved notable sales growth without correspondingly increasing the amount of assets. As we recall from section 2, corporate takeovers are generally motivated by the potential of efficiency enhancement by redistributing a firm's assets. Researchers in the field of M&A therefore specifically point towards this limitation when analysing the impact of any change in corporate control (e.g., Healy et al., 1992; Andrade et al., 2001).

Taking into consideration the arguments put forward in former research, I suggest using a semi-cash flow method (EBITA) scaled by the BVOA to arrive at an operating performance measure that is least susceptible to inconsistencies. To further grasp the complex nature of the operating performance measure, I construct a DuPont like analysis by breaking down ROA into its constituent components. By examining the underlying metrics of ROA, this paper is able to identify what is driving the changes in operating performance. A formalisation of the ROA decomposition is given below, for company i in year t:

$$ROA_{i,t} = \frac{EBITA_{i,t}}{BVOA_{i,t}} \qquad\qquad [1]$$

$$SG_{i,t} \quad = \frac{sales_{i,t}}{sales_{i,t-1}} \qquad\qquad [2]$$

$$CFM_{i,t} = \frac{EBITA_{i,t}}{sales_{i,t}} \qquad\qquad [3]$$

$$AT_{i,t} \quad = \frac{sales_{i,t}}{BVOA_{i,t}} \qquad\qquad [4]$$

where SG represents the year on year sales growth factor, CFM serves as an indicator of how much operating income the company is able to retrieve from its sales and AT refers to the firms' asset utilization. In order to remain within a succinct discussion on the performance metrics, the rest of the methodology section refers to ROA as the primary measure of operating performance.

5.1.2 Defining pre- and post- takeover operating performance

Starting with the pre-transaction phase, target and acquirer are still organised and managed as individual companies. The operating performance measure as presented by equation [1] cannot straightforwardly be consolidated to produce the pro forma pre-takeover ROA. Instead, this paper acknowledges that prior research follows a method known as the aggregated metric approach where the pro forma consolidated pre-takeover ROA is computed by scaling the ROAs of the target and

acquirer by the BVOA (e.g., Healy et al., 1992; Heron & Lie, 2002; Campa & Hernando, 2004; Powell & Stark, 2005):

$$ROA_{pre,(A+T),t} =$$

$$\frac{EBITA_{pre,(A),t}}{BVOA_{pre,(A),t}}\left(\frac{BVOA_{pre,(A),t}}{BVOA_{pre,(A),t}+BVOA_{pre,(T),t}}\right) + \frac{EBITA_{pre,(T),t}}{BVOA_{pre,(T),t}}\left(\frac{BVOA_{pre,(T),t}}{BVOA_{pre,(T),t}+BVOA_{pre,(T),t}}\right) \quad [5]$$

where (A+T) represents the pro forma pre-takeover company and *pre* denotes the pre-takeover time period for year *t*. However, taking an aggregated metric approach for private target acquirers is challenging since most private firms do not publish their accounting data. This limitation instantly showcases why public- versus private takeovers are so under-examined in the academic literature in terms of the operating performance measures. Nevertheless, this papers aims at tackling this issue by evaluating the operating performance of the acquirer only. Moreover, I propose a pioneering method of deflating the acquirer's post-takeover ROA to still provide a like-for-like comparison between pre- and post takeover performance (as in Shams & Gunasekarage, 2016)[14]. Equation 6 formalises the above:

$$ROA_{post,(A),t}^{deflated} = ROA_{post,(A),t}\left(\frac{MVA_{(A),t_{[w-4]}}}{MVA_{(A),t_{[w-4]}}+DV}\right) \quad [6]$$

where $MVA_{(A),t[w-4]}$ represents the acquirer's market value of assets four weeks prior to the acquisition announcement and DV represents the deal value of the transaction. The deflated ROA should reveal the sum of the stand-alone entity's performance and any performance improvements resulting from acquisition synergies.[15]

Contrary to the post-takeover ROA, the pre-takeover ROA for the acquirer (A) does not require any modifications and can be directly observed from the pre-transaction data:

$$ROA_{pre,(A),t} = \frac{EBITA_{pre,(A),t}}{BVOA_{pre,(A),t}} \quad [7]$$

Both the pre- and post- ROAs are evaluated based on their median values. The rationale for using a central tendency instead of averages is twofold: (i) median values are significantly less susceptible to the influence of outliers and skewed data, and (ii) the set of comparable companies used for industry benchmarking is variable over time. Therefore, the pre- and post-merger ROAs are determined by selecting the median values of equation [6] and [7] within the respective time periods.

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[14] Refer to the limitations section (8) for an acknowledgement of the deflated ROA measure drawbacks.
[15] Given the methodological nature of panel data, the deal value component in equation 4 is additionally adjusted when an acquirer takes over multiple targets in a given year. The deal value then represents the sum of all transaction values.

5.2 Assessing differences in operating performance

The assessment of post-takeover operating performance requires identifying a firm's estimated performance as if the transaction would not have taken place (Barber et al., 1999). Selecting a proper expected performance benchmark is regarded crucial for interpreting the findings of M&A performance (King et al, 2004). Over time, different performance benchmarks have been constructed and applied throughout the academic literature, none of which has been able to offer consistent superior results over the other. Nevertheless, three performance benchmarks seem to take the lead in M&A studies, each of them are discussed in the succeeding sub-sections of this chapter.

Selecting an appropriate time period for measuring differences in operating performance may turn out to be devious. While some scholars favour longer time periods and claim that these leave sufficient legroom for synergy realisations to become material (eg., Kaplan & Weisbach, 1992), others reason that briefer observation periods are preferable as these are less prone to the influences of confounding events (eg., Mitchel & Stafford, 2000). For instance, suppose that if the combined firm undertakes an additional acquisition, this may then complicate the evaluation of the previous acquisition's performance. Prior studies with comparable samples show that private target bidders in particular show repetitive acquisition behaviour over moderately short time windows (eg., Shams & Gunasekarage, 2016). Therefore, I deem a three year time period most suitable for the purpose of this research.

5.2.1 Raw operating performance returns (ΔU_ROA)

The most basic method of benchmarking a company's operating performance involves examining the difference in the acquirer's pre-takeover ROA and deflated post-takeover performance. The change in raw operating performance herein is formalised by subtracting [7] from [6]:

$$\Delta U\_ROA_{(A)} = \widehat{ROA}_{post,(A),t}^{deflated} - \widehat{ROA}_{pre,(A),t} \qquad [8]$$

5.2.2 Industry adjusted operating performance (ΔI_ROA)

Merely considering the above equation without controlling for any external effects comes with significant limitations. Prior studies widely acknowledge that raw pre-takeover performance most likely does not result just from acquisition effects, but instead that the lion's share of performance change might be the consequence of economy-wide trends, industry developments, or firm-specific performance. Prosperous economy-wide conditions may drive positive operating performance which may deceptively be linked to acquisitive effects. Along the same lines of reasoning may operating performance thrive on the back of positive industry trends or stand-alone entity efficiency gains, rather than post-takeover performance associated with the corporate transaction.

The industry benchmarks applied in earlier research successfully managed to cope with some of the main shortcomings of simply relying on the aggregated raw pre-takeover operating performance measure (eg., Loughran & Ritter, 1997; Megginson et al., 2004). To reconstruct this approach, one may decompose the process into four phases.

(i) Calculate the raw median ROAs for the acquirer pre-takeover period and the post-takeover deflated ROA as defined in equation [6] and [7].

(ii) Identify industry-wide comparable companies to compose a peer group. The acquirer is paired to the median industry peer group firm.[16]

(iii) The pre- and post- takeover abnormal ROAs are calculated as follows:

$$I\_ROA_{pre,(A)} = \widetilde{ROA}_{pre,(A),t} - I\_\widetilde{ROA}_{pre,I(A),t} \qquad [9]$$

$$I\_ROA_{post,(A)} = \widetilde{ROA}_{post,(A),t}^{deflated} - I\_\widetilde{ROA}_{post,I(A),t} \qquad [10]$$

(iv) The influence of acquisition effects can now be determined by means of computing the differences between equation [9] and [10]:

$$\Delta I\_ROA_{(A)} = I\_ROA_{post,(A),t} - I\_ROA_{pre,(A),t} \qquad [11]$$

5.2.3 Adjusting operating performance for industry, size and profitability (ΔP_ROA)

The benchmarking procedure discussed above is able to adjust for industry-wide performance stimulants. Arguably though, one does not merely adjust for industry effects to capture the post-takeover acquisition operating performance in isolation. Studies have identified a dual set of influences to systematically affect a firm's operating performance as well. Starting to address the company's relative size, researchers recognise that undersized firms demonstrate lower earnings on book equity than do larger entities (Fama & French, 1995). This disparity in deflated net income numbers is explained by means of the size effect and ought to be accounted for in benchmarking procedures.[17] Additionally, one should adjust for a firm's profitability track record, since accounting numbers have a tendency for mean reversion over time (Lipe & Kormendi, 1994). Periods of benchmark outperformance are usually transitory in nature because in the long run demand saturation and industry competition drive down profitability levels. Therefore, relatively short-lived periods of outperformance may account for elevated levels of pre-takeover operating performance.

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[16] Industry classification is made based on four-digit SIC, Limmack (1997) provides supporting arguments by stating that analyses of industry related mergers should be made based on four-digit SIC codes in order to capture the full effects of the intra-industry differences.

[17] For a swift revision of the principles underlying the size effect refer to Section 2.2.1.

Papers that stretch beyond solely adjusting for industry effects tend to produce more comprehensive explanations of M&A performance by additionally capturing the effects of historical profitability and adjusting for firm size (eg., Barber & Lyon, 1996; Ghosh, 2001). As mentioned, former research documents findings of significant correlation between operating performance, the firm size and historical profitability variables on multiple occasions. I will proceed accordingly by applying a multi-factor benchmarking procedure, as proposed by Ghosh (2001) to ascertain a robust view on operating performance following the change of corporate control. Having selected the leading benchmark, the issue remains on how to carry out the multiple adjustments.

The procedure of selecting an appropriate set of comparable companies for the purpose of benchmarking operating performance entails a raft of filtering processes. First, a time window is set at one year preceding the transaction. Next, we filter the candidate matching firms based on the conditions previously discussed: (i) industry, (ii) firm size and (iii) historical company performance. The opening condition of adjusting for industry performance involves pairing acquirer to candidate matching firms that are in the same industry. Screening for firm size is done by isolating firms with a relative BVOA in the range of 20% to 500% of the acquirer, conditional on being in the same industry (consistent with Ghosh, 2001). The filtering process proceeds by selecting firms that reveal the most comparable median pre-takeover ROA, conditional on being in the median 20% of the industry peer group.[18] To formalize the procedure discussed above, the pre- and post- takeover P_ROAs are constructed as follows:

$$P\_ROA_{pre,(A)} = \widehat{ROA}_{pre,(A),t} - P\_\widehat{ROA}_{pre,p(A),t} \qquad [12]$$

$$P\_ROA_{post,(A)} = \widehat{ROA}^{deflated}_{post,(A),t} - P\_\widehat{ROA}_{post,p(A),t} \qquad [13]$$

Lastly, the influence of acquisition effects is determined by means of subtracting equation [12] from [13]:

$$\Delta P\_ROA_{(A)} = P\_ROA_{post,(A)} - P\_ROA_{pre,(A)} \qquad [14]$$

To summarise, three benchmarks of operating performance have been considered: ΔU_ROA, ΔI_ROA, and ΔP_ROA. All benchmarks are applied as to improve the results' robustness. However, based on the literature review, I believe that ΔI_ROA and ΔP_ROA are the most appropriate and best mirror the acquisition's influence on post-merger operating performance. Therefore, I rely most on the outcomes for these adjustments.

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[18] A self-developed Excel-macro through a Python script is used to perform the peer group matching procedure. Refer to the appendix for a description on the specific double "FOR" loop in the Python script.

5.3 Statistical tests

All the test results are presented for the different benchmark adjusted operating performance measures: U_ROA, I_ROA and P_ROA.

1. Change model

Following research by Ghosh (2001) and Savor & Lu (2009), the change model in this paper provides a means of comparing the material impact of M&A for pre- and post-acquisition periods. More specifically, the model evaluates if the difference in median post-acquisition abnormal operating performance is statistically significant for public- and private target acquirers. I start the change model analysis by testing the sample for normality. As Table 6.3 indicates, running a Shapiro Francia test reveals that the null hypothesis of normal distribution in the sample should be rejected, even after a 5% winsorising of the dependent variables at both tails of the distribution (Table A2, Appendix). Following the outcome of non-normality, a paired t-test seems to be inappropriate and therefore I apply a non-parametric Wilcoxon signed rank test. As the name suggests, the non-parametric test does not require a normal distribution assumption when testing for statistical significance in the median difference between variables. The arguments put forward by Barber & Lyon (1996) justify this preference; their study suggests that the Wilcoxon test provides superior results over the t-statistic in operating performance research because the former studies often tend to exhibit extreme observations.

Applying a change model yields two main contributions to this research. Foremost, the statistical outcomes allow for an initial conclusion to be drawn on the public- versus private target operating performance before diving deeper into the underlying drivers of ROA. Subsequent to these preliminary findings, a univariate analysis offers a way of detecting any relatedness between the independent variables and changes in operating performance.

2. Intercept model

After determining the statistical significance of the change in operating performance, the analysis moves towards evaluating what is driving these differences. A multivariate analysis allows for a deeper assessment of the influence of bid- and firm characteristics on public- and private target takeover performance. In this section, I construct a linear model in which pooled OLS regressions are performed on the panel data. As a starting point, the regression equations typically take the following form:

$$Y_{i,t} = \alpha_t + \beta P_{i.t} + \xi HP_{i.t} + \theta X'_{i.t} + \varphi Z'_{i.t} + c_i + \delta_t + \varepsilon_{i,t} \qquad [15]$$

where $Y_{i,t}$ is the dependent variable for firm i in year t, α_t is the intercept, β and ξ are the coefficients for private target dummy $P_{i.t}$ and the historical performance variable $HP_{i.t}$ respectively. θ and φ are the vector coefficients for the bid characteristic variables $X'_{i.t}$ and the different firm characteristic variables $Z'_{i.t}$ respectively. c_i denotes the industry fixed effects, δ_t the time fixed effects and $\varepsilon_{i,t}$ the

error term. The private target dummy takes a value of one if the target is a private firm, zero otherwise. Adding a variable for historical performance to the equation ensures both (i) controlling for any persistence in performance, and (ii) that statistically significant coefficients from other explanatory variables effectively display the extent to which they drive changes in the dependent variable. The bid characteristic variables capture the acquirer's acquisition experience (multiple acquirer dummy), industry relatedness (commonality dummy) and other financials (market-to-book ratio, cash levels and leverage). The deal characteristics consist of payment method (stock-, cash-, mix dummies), blockholder creation (which takes a value of one if a blockholder is created in the new entity), deal hostility (hostile dummy) and a variable that measures the relative size of the transaction (transaction value as a percentage of total firm value 4 weeks prior to the acquisition).

The intercept, α_t, represents the change in the dependent variable that cannot be explained by the remaining variables in the regression equation. In a flawless model, α_t would indicate the proportional change in the dependent variable that purely results from the transaction. However, one should be cautious in straightforwardly interpreting the results as such, as very few models appear to be flawless causing the intercept coefficient to be blurred by the omitted variables bias.[19]

Following the methodological recommendations by Royston et al. (2009), I determine if the regression model demands any adjustments for time-specific fixed effects by running a Wald test. Using panel data, the Wald test does not require any assumptions about homoscedasticity or serial independence of error terms and provides a means of setting up hypotheses about θ and φ (Woolridge, 2010). It involves a joint test to evaluate whether the year dummies in the data sample are jointly equal to zero. The test results (Table A1, Appendix) indicate that I can reject the null hypothesis and confirm that the model requires time-specific fixed effects adjustments. In accordance with Baum (2001) and Drukker (2003), I additionally test the model for heteroscedasticity and autocorrelation by employing a Wald- and Woolridge test respectively. Again, Table A3 of the Appendix shows that I should control for these phenomena and I therefore proceed accordingly.

Recapitulating the above, by adding control variables for time- and industry specific effects, I neutralise the impact of time specific outcomes (eg. merger waves) and further ensure that the regression results are not affected by industry specific events (eg. 'dot com bubble'). I control for heteroscedasticity by applying Huber-White standard errors throughout the models. Further, as the analysis by Ghosh (2001) indicates, using the peer adjusted benchmark is especially important when employing the intercept model. Studies that rely on industry benchmarking mostly yield amplified post-takeover returns (eg., Healy et al., 1992) while papers relying on peer adjusted returns produce desired, unaltered results (eg., Barber & Lyon, 1996). Therefore, I deem the regression results for dependent variable P_ROA most appropriate.

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[19] Refer to the limitation sections for a more detailed discussion on the omitted variables bias.

6. Results

The following section includes the analysis and discussion on the empirical results of this research. Before diving into the statistical results, Section 6.1 details on the sample's descriptive statistics and provides a bird's eye view on the decomposition of the research variables. Section 6.2 covers the statistical findings and starts with a Du-Pont like analysis on operating performance to identify different sources of value creation across public- and private target takeovers. Next, the intercept model facilitates a cross sectional analysis on post-merger operating performance by means of discussing various multivariate regression outcomes.

6.1 Descriptive statistics

The main sample of M&A transactions under analysis involves public- and private target takeovers that occurred in North America between 1993-2013. Table 6.1 presents a decomposition of the main sample by year (Panel A) and by industry (Panel B) and clearly shows that private target acquisitions occur more frequently (81%) than public target takeovers (19%), which seems to be in line with prior findings (eg. Faccio et al., 2006; Capron & Shen, 2007). Panel A confirms that the transactions are unequally distributed over the sample period, consistent with occurrence of different merger waves over time. The final years of each merger wave in particular display an upsurge in both M&A activity and M&A performance, with the 1997-1999 period accounting for over 21% of the total transaction volume. These wave clusters underline the relevance of controlling for time fixed effects, running a Wald test for time fixed effects indeed confirms this notion (Table A3, Appendix).

Panel B decomposes the sample into twelve different industry buckets, the industry classification shows a strong clustering of transactions around certain industries. Especially takeovers in the High Technology, Healthcare and Industrials space appear to be overrepresented. Collectively, these sectors cover more than 52% of the total sample while at the same time acting among the stronger performing industries. The tendency for takeovers to center around particular industries similarly highlights the need of controlling for industry effects.

To obtain a more detailed view of the industry- and year segmentation and to identify clusters within industries by time, Table 6.2 displays a two dimensional sample distribution. As expected, certain industries exhibit clusters that are largely in line with the merger wave taxonomy as illustrated by Rhodes-Kropf et al. (2005). Yet again, these clusters indicate that additional controlling factors should be included in the forthcoming statistical analyses to control for these wave fixed effects.

As Table 6.3 indicates, the majority of operating performance variables for both public- and private target acquirers exhibit extreme observations signaling skewness and kurtosis. Metrics as CFM tend to differ widely across industries, which may explain its vulnerability to outliers. To account for these outliers, I winsorise the operating performance variables at 5% for both tails (as in

Dixon & Tukey, 1968). Having considered a winsorising cut off at 1%, 2%, 5% and 10%, the 5% winsorisation offers the best conciliation between upholding sufficient variance and smoothing extreme values. Table A2 and A4 of the Appendix show the outcomes of the revised Shapiro Francia test for normality and the descriptive statistics for the winsorised variables respectively. The Shapiro Francia test again produces evidence to reject normality and therefore statistical tests will be conducted on a non-parametric basis. The descriptive statistics of winsorised variables demonstrate that outliers have been adequately dealt with showing reassuring values for μ, σ, skewness and kurtosis. Accordingly, the multivariate analysis will be based on the adjusted (winsorised) operating performance variables.

Table 6.1: Descriptive statistics

Panel A: Year decomposition

Year	Full Sample		Public Target Acquirers		Private Target Acquirers		Δ Operating Perf.
	N	%	N	%	N	%	ΔAROA3
1993	19	0.60%	4	0.13%	15	0.47%	-2.15%
1994	31	0.97%	21	0.66%	10	0.31%	1.00%
1995	113	3.54%	23	0.72%	90	2.82%	-0.70%
1996	179	5.61%	39	1.22%	140	4.39%	-1.20%
1997	202	6.33%	45	1.41%	157	4.92%	-0.87%
1998	238	7.46%	40	1.25%	198	6.21%	-1.02%
1999	240	7.52%	53	1.66%	187	5.86%	-0.04%
2000	176	5.52%	43	1.35%	133	4.17%	-1.46%
2001	153	4.80%	32	1.00%	121	3.79%	-3.46%
2002	178	5.58%	32	1.00%	146	4.58%	-1.34%
2003	171	5.36%	33	1.03%	138	4.33%	-2.32%
2004	197	6.18%	28	0.88%	169	5.30%	-0.67%
2005	172	5.39%	33	1.03%	139	4.36%	-1.17%
2006	169	5.30%	27	0.85%	142	4.45%	0.26%
2007	197	6.18%	39	1.22%	158	4.95%	-1.08%
2008	152	4.76%	26	0.82%	126	3.95%	-0.10%
2009	80	2.51%	11	0.34%	69	2.16%	-1.80%
2010	125	3.92%	21	0.66%	104	3.26%	-1.17%
2011	117	3.67%	10	0.31%	107	3.35%	-1.36%
2012	164	5.14%	19	0.60%	145	4.55%	-2.35%
2013	117	3.67%	16	0.50%	101	3.17%	-0.59%
Total	**3,190**	**100.00%**	**595**	**18.65%**	**2,595**	**81.35%**	**-1.1%**

Panel B: Industry decomposition

	Full Sample		Public Target Acquirers		Private Target Acquirers		Δ Operating Perf.
Cons. Prod. and Serv.	282	8.84%	40	1.25%	242	7.59%	-1.08%
Consumer Staples	161	5.05%	28	0.88%	133	4.17%	-0.65%
Energy and Power	319	10.00%	43	1.35%	276	8.65%	-1.24%
Financials	21	0.66%	3	0.09%	18	0.56%	-1.45%
Healthcare	393	12.32%	115	3.61%	278	8.71%	-0.71%
High Technology	818	25.64%	163	5.11%	655	20.53%	-0.73%
Industrials	466	14.61%	72	2.26%	394	12.35%	-0.93%
Materials	245	7.68%	45	1.41%	200	6.27%	-1.92%
Media and Ent.	187	5.86%	16	0.50%	171	5.36%	-0.50%
Real Estate	13	0.41%	1	0.03%	12	0.38%	-2.24%
Retail	135	4.23%	33	1.03%	102	3.20%	-0.96%
Telecommunications	150	4.70%	36	1.13%	114	3.57%	-3.24%
Total	**3,190**	**100.00%**	**595**	**18.65%**	**2,595**	**81.35%**	**-1.3%**

Panel A reports a year-by-year analysis on the main sample where N displays the number of transactions, % represents the fraction of total acquisitions and ΔAROA3 refers to the change in peer-adjusted pre- and post-merger median ROA for the year. Panel B decomposes the different acquisition targets' industries. Key findings of this table are considered in Section 6.1.

Table 6.2: Descriptive statistics | By year and industry

	(01)	(02)	(03)	(04)	(05)	(06)	(07)	(08)	(09)	(10)	(11)	(12)	Σ
1993	1	1	1		3	6	2	1	2	1		1	19
1994	1	3	2		6	8	5	3	1		1	1	31
1995	8	6	12	3	17	23	14	7	9	1	5	8	113
1996	12	10	12	2	17	38	34	23	12	3	10	6	179
1997	25	8	11	1	28	32	34	30	14	2	6	11	202
1998	29	14	23		19	39	45	26	15	1	13	14	238
1999	24	5	15		19	65	40	27	17	1	15	12	240
2000	14	8	13	1	17	51	26	11	16	1	8	10	176
2001	13	7	10	3	14	46	25	9	9		2	15	153
2002	17	11	22	1	15	53	27	10	6		4	12	178
2003	17	6	9	1	26	60	19	9	4		9	11	171
2004	21	9	22	3	23	63	19	11	14		7	5	197
2005	12	15	17		24	44	26	9	13	1	7	4	172
2006	14	7	20	1	30	46	19	9	6	1	12	4	169
2007	21	15	24	1	23	62	18	10	7		10	6	197
2008	15	5	19		16	44	24	10	4		8	7	152
2009	3	5	13	1	18	15	11	4	3	1	2	4	80
2010	12	8	16	1	24	37	13	3	4		2	5	125
2011	6	6	16	1	14	28	17	8	11		5	5	117
2012	6	6	22		19	46	28	15	12		5	5	164
2013	11	6	20	1	21	12	20	10	8		4	4	117
Σ	282	161	319	21	393	818	466	245	187	13	135	150	3,190

This table separates the sample into year and industry segments. The industry numbers refer to the industry classification in Table 6.1 Panel B, with (01) Consumer Products and Services, (02) Consumer Staples, (03) Energy and Power, (04) Financials, (05) Healthcare, (06) High Technology, (07) Industrials, (08) Materials, (09) Media and Entertainment, (10) Real Estate, (11) Retail and (12) Telecommunications.

Table 6.3: Descriptive statistics | Dependent variables

Descriptive statistics of dependent variables											
Public target acquirers						**Private target acquirers**					
Variable	**N**	**μ**	**σ**	**Skew.**	**Kurt.**	**Variable**	**N**	**μ**	**σ**	**Skew.**	**Kurt.**
ROA1	570	0.053	0.28	-3.15	33.0	ROA1	2,293	0.027	0.32	-6.79	91.8
AT1	570	0.767	0.60	2.23	9.8	AT1	2,293	0.897	0.72	3.25	21.7
SG1	568	0.160	0.31	8.30	111.4	SG1	2,280	0.162	0.40	17.13	492.9
CFM1	570	-0.086	1.25	-12.27	181.7	CFM1	2,292	-1.377	59.08	-47.69	2279.8
ROA2	570	0.109	0.45	3.07	24.4	ROA2	2,293	0.018	0.35	-1.30	67.3
AT2	570	-0.185	0.45	0.63	7.3	AT2	2,293	-0.068	0.61	2.99	26.1
SG2	568	0.149	0.32	6.01	76.7	SG2	2,280	0.153	0.42	14.13	388.3
CFM2	570	-0.093	1.24	-11.35	175.3	CFM2	2,292	-1.455	59.07	-47.69	2280.2
ROA3	570	0.002	0.33	2.86	43.4	ROA3	2,293	0.003	0.44	5.75	139.9
AT3	570	-0.689	0.97	-4.22	40.5	AT3	2,293	-0.637	1.31	-7.67	140.2
SG3	568	1.128	22.39	23.73	564.6	SG3	2,280	0.156	3.33	-18.71	584.7
CFM3	570	3.762	81.26	23.63	561.6	CFM3	2,292	-1.086	59.65	-46.49	2205.0

This table provides a summary on the four key variables on operating performance for public- and private target acquirers. The variables are segmented into their respective benchmark adjusted groups. Variables ending with 1 are unadjusted, 2 are industry adjusted and 3 are peer adjusted. N refers to the number of observations, μ is the median, σ standard deviation followed by measures for skewness and kurtosis respectively.

6.2 Correlations

Before conducting statistical analyses on the data, one should first examine the bivariate correlations between the dependent operating performance measures and the explanatory variables used throughout the models. Rejecting the null-hypothesis of normal distribution following the Shapiro Francia test suggests that tests for statistical significance should occur on a non-parametric basis. Therefore, I examine the non-parametric Spearman correlation matrix to gain both a deeper understanding of expected and non-expected relationships between the variables and to identify the existence of any multicollinearity concerns. Both considerations are discussed in turn.

Performance measures. A preliminary examination of Table 6.4 instantly reveals that the strongest correlations subsist between the operating performance measures themselves. All six variables correlate with each other in a statistically significant fashion, which should not be surprising given the fact that the benchmark adjusted measures are derived from their unadjusted counterparts. The post-acquisition unadjusted ROA shows a stronger correlation with the industry adjusted measure than does the peer adjusted metric with unadjusted- and industry adjusted ROA (0.62 versus 0.37 and 0.40). This appears to be in line with the way the variables are constructed. U_ROA and I_ROA are only separated by industry performance whilst P_ROA also includes the effects of firm size and historical performance. Comparing pre- and post- acquisition performance measures, I find a similar positive and significant correlation explained along the same lines of reasoning, with U_ROA (0.61), I_ROA (0.59) and P_ROA (0.16). The decrease in correlation between pre- and post- takeover ROAs suggest that the benchmarking adjustments might be the driving factor behind these positive associations. Ideally though, post-merger ROAs are only affected by the pure impact of the transaction. As mentioned earlier, I rely most on the outcomes of P_ROA as this measure controls for all three features thereby serving as most accurate indicator of the pure takeover impact.

Characteristics. Starting with an inter explanatory variable comparison, Table 6.4 shows that the private target dummy is negatively associated with stock payments (-0.30) suggesting that private target takeover are mostly paid for in cash (0.02) or through a mixed consideration (0.18). In line with what one might expect based on the literature review, private target takeover show a significant negative correlation with both relative deal size (-0.15) and the hostility dummy (-0.13). As listed firms are characterised by dispersed equity ownership, takeover resistance appears to be more prevalent. Further, private target takeovers often involve relatively small transaction values explaining the former correlation figure. Positive correlation between leverage and experience (0.10) suggests that firms with an acquisitive history take a more aggressive approach in their capital structuring.

Multicollinearity. When interpreting the high correlations between the pre- and post- takeover performance measures, the question on multicollinearity issues soon arises. However, this should not be regarded troublesome as the different performance indicators are not added to the regression equation at the same time. A closer inspection of the matrix reveals no perilous correlations; only variables that form each other's counterpart logically show increased levels of correlation.[20] Running a Variance Inflation Factor (VIF) test for multicollinearity yields reassuring outcomes with mean-VIF levels well below 2.0, indicating reasonable stability across the regression coefficients (Table A3, Appendix).

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[20] Eg. payment method variables, slack versus leverage and blockholder creation versus stock payments.

Table 6.4: Correlation Matrix | Non-parametric Spearman correlations

Spearman Correlation	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
01 U_POST_ROA	1.00																	
02 I_POST_ROA	0.62***	1.00																
03 P_POST_ROA	0.37***	0.40***	1.00															
04 U_PRE_ROA	0.61***	0.37***	-0.02	1.00														
05 I_PRE_ROA	0.41***	0.59***	0.01	0.64***	1.00													
06 P_PRE_ROA	0.20***	0.15***	0.16***	0.27***	0.29***	1.00												
07 Private dummy	-0.07***	-0.10***	0.00	-0.06**	-0.07***	0.01	1.00											
08 Experience dummy	0.13***	0.11***	0.06***	0.07***	0.06**	-0.02	-0.02	1.00										
09 Relatedness dummy	-0.04**	0.02	-0.04*	-0.02	0.02	-0.04*	-0.06***	0.00	1.00									
10 MTB	0.19***	0.25***	0.10***	0.12***	0.15***	0.05**	-0.13***	0.03	0.01	1.00								
11 Leverage	0.06***	-0.06***	-0.01	-0.03	-0.13***	-0.07***	0.01	0.10***	0.06***	-0.09***	1.00							
12 Slack	-0.14***	0.08***	0.00	-0.09***	0.13***	0.03	-0.06***	-0.08***	-0.03	0.17***	-0.53***	1.00						
13 Blockholder dummy	-0.15***	-0.05**	-0.02	-0.12***	-0.07***	-0.03	0.00	-0.03	0.00	0.14***	-0.10***	0.10***	1.00					
14 Cash dummy	0.19***	0.08***	0.02	0.20***	0.13***	0.06***	0.02	0.05***	-0.05**	-0.09***	0.01	-0.01	-0.21***	1.00				
15 Stock dummy	-0.09***	0.03	0.01	-0.09***	-0.01	0.01	-0.30***	-0.03	0.00	0.22***	-0.13***	0.16***	0.71***	-0.30***	1.00			
16 Mix dummy	-0.12***	-0.10***	-0.03	-0.13***	-0.12***	-0.06	0.18***	-0.03	0.05**	-0.06**	0.08***	-0.09***	-0.27***	-0.77***	-0.38***	1.00		
17 Hostility dummy	0.03	0.01	-0.01	0.05**	0.04*	0.01	-0.13***	-0.02	0.03	0.02	0.01	-0.04*	-0.02	0.01	0.02	-0.02	1.00	
18 Relative deal size	-0.20***	-0.18***	-0.09***	-0.14***	-0.17***	-0.07***	-0.15***	-0.04*	0.04*	-0.19***	0.12***	-0.11***	0.03	-0.12***	0.00	0.11***	0.04**	1.00

The Spearman correlation matrix shows the bivariate non-parametric correlations for all dependent- and independent variables included in the pooled OLS regressions (Intercept Models I-III). Prefixes U_, I_ and P_ refer to the unadjusted, industry adjusted and peer adjusted performance measures respectively. POST and PRE refer to the respective post- and pre- takeover periods where ROA variables are based on median values. Interpretation and analysis of the correlation outcomes is provided by Section 6.2. Significance levels: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

6.3 Statistical models

The following section provides a discussion and analysis on the statistical results of the different models applied in this paper. First, the main findings of the change model are discussed in Section 6.3.1 after which the estimates of the intercept model are reviewed in Section 6.3.2.

Ahead of the results revision below, one should be thoughtful of the impact of the applied methodology on operating performance outcomes. As explicitly underlined in Section 2, results from operating performance studies greatly depend on the methodology employed. Hence, I predominantly mirror the results of this research against well-regarded papers that use comparable performance measures (eg., Barber & Lyon, 1996; Ghosh, 2001; Martynova et al., 2006; Shams & Gunasekarage, 2016).

6.3.1 Change model

To take full advantage of the explanatory power of the statistical change model, I utilize the test in three ways. First, the change model is used to draw preliminary conclusions on the public- and private takeover comparison by examining the pre- and post- takeover performance across the four DuPont metrics (Model I). Second, the model is used to provide a univariate analysis that concentrates on the stand-alone effects of bid- and firm characteritics and the benchmark adjusted operating performance measures (Model II). Third, I extend Model II by highlighting some key variables of interest and subdividing them into multiple categories to facilitate a multidimensional analysis.

Model I. The outcomes of Model I are presented in Table 6.5. At first glance, the results indicate that on the aggregate level public- and private target acquirers experience a decline in operating performance under the considered time window. For the unadjusted performance measure ROA, both acquirer types show a significant performance decline following their respective acquisitions (-2.20% and -1.90%). When I adjust for industry and peer performance, outcomes still remain negative but the statistical significance for public target acquirers disappears. As one might expect, abnormal returns tend to approach zero when applying additional controls for industry performance (-1.3%), firm size and historical performance (-0.80%). Interestingly, the difference in abnormal performance is less negative for private target acquirers across all three benchmarks suggesting superior M&A performance over public target acquisitions, in line with prior findings on listing status (eg., Hansen & Lot, 1996; Fuller et al., 2002; Capron & Shen, 2007; Shams & Gunasekarage, 2016). However, as I mostly rely on the industry and peer adjusted outcomes, and given the fact that public target acquisition outcomes are insignificant for these two benchmarks, still no definitive conclusion can be drawn on the target status comparison.

Shifting the analysis from ROA to its underlying drivers, Table 6.5 reveals highly significant outcomes for differences in asset turnover (AT). Private target acquirers experience a significant smaller decline in AT post-acquisition, even after controlling for industry- and peer performance (-0.126 versus -0.135). Strikingly, these differences become more prounced when we move from the first (unadjusted) benchmark towards the latter two adjustments (+0.033 and +0.030 respectively). Prior studies identified a phenomenon of 'merger accounting' as root cause for the asset turnover outperformance of private target acquisitions (Kim & Mandal, 2016). Under US GAAP, the acquirer has to report the entire transaction value on its balance sheet, recognizing associated bid premiums as goodwill. As public target acquirers generally pay higher premiums, their respective accounting asset base will also show a larger increases, negatively affecting the asset utilization ratio. In this study, the denominator of the AT metric is defined as the BVOA (which excludes goodwill) thereby mitigating this concern. The results therefore suggest that private target acquirers are more capable of managing their productive asset utilization, and confirm that this is not due to industry wide effects nor does it stem from historical company performance, the acquirer's size or any effects of 'merger accounting'.

Examining the acquirer's sales growth (SG), Table 6.5 shows positive values for industry and peer adjusted performance. The peer adjusted SG measure is statistically significant for both private target acquirers as for the full sample, while the industry adjusted variable turns out insignificant. This indicates that private target acquirers benefit from revenue-based synergies significantly more than their direct peers. Hence, private acquirer's AT improvements may result from a declining asset base or from sales growth. Examing profitability in terms of cash flow margin (CFM) for both type of acquirers yields uniform results. All three benchmark adjusted variables of CFM report a statistical significant profitability decline in the post-merger period, with a larger negative change for public acquisitions. Academics have pointed towards a more difficult digestion of (large) public takeovers as one of the reasons for decreased CFMs (Clark & Ofek, 1994). Prolonged periods of merger integration along with increased operating leverage may put downward pressure on the CFM metric.

Table 6.5: Change Model I | Benchmark adjusted performance measures

Change Model I

	Raw performance				Industry adjusted				Peer group adjusted			
	Full Sample	Public	Private	Difference	Full Sample	Public	Private	Difference	Full Sample	Public	Private	Difference
Pre-ROA	0.095	0.108	0.091	-0.017	0.023	0.034	0.020	-0.014	0.000	-0.002	0.000	0.002
Post-ROA	0.074	0.085	0.072	-0.014	0.010	0.022	0.007	-0.015	-0.008	-0.010	-0.007	0.003
Difference	-0.021***	-0.022***	-0.019***	0.003***	-0.013***	-0.012	-0.013***	-0.002	-0.008***	-0.009	-0.007***	0.001
Pre-AT	0.861	0.771	0.882	0.111	-0.077	-0.123	-0.066	0.056	-0.434	-0.444	-0.432	0.012
Post-AT	0.727	0.636	0.756	0.120	-0.136	-0.207	-0.118	0.089	-0.523	-0.553	-0.511	0.042
Difference	-0.134***	-0.135***	-0.126***	0.010***	-0.059***	-0.084***	-0.052***	0.033**	-0.089***	-0.109***	-0.079***	0.030**
Pre-SG	0.134	0.154	0.127	-0.027	0.090	0.119	0.085	-0.034	0.053	0.048	0.055	0.007
Post-SG	0.106	0.109	0.105	-0.004	0.104	0.101	0.106	0.005	0.100	0.082	0.105	0.023
Difference	-0.028***	-0.044***	-0.022***	0.023**	0.014	-0.018	0.021	0.039	0.047***	0.034	0.049***	0.015*
Pre-CFM	0.076	0.093	0.071	-0.022	-0.021	-0.007	-0.024	-0.018	0.006	0.006	0.006	0.000
Post-CFM	0.058	0.066	0.056	-0.011	-0.035	-0.026	-0.039	-0.013	-0.005	-0.006	-0.005	0.002
Difference	-0.017***	-0.027***	-0.015***	0.012***	-0.014***	-0.019***	-0.014***	0.005***	-0.011***	-0.013*	-0.010***	0.002**

This table reports the outcomes of Change Model I. Pre- and post- takeover performance measures are quoted at their median values. Return on assets (ROA) serves as main indicator of operating performance whilst asset turnover (AT), sales growth (SG) and cash flow margin (CFM) serve as decomposing elements of ROA in a DuPont-like fashion. The last column in all three benchmark adjustments represents the outperformance of private target acquirers against public target acquirers. The difference is computed by subtracting the public column from private column values (private – public). The difference between pre- and post-takeover values is calculated by subtracting Pre- from Post-. Statistical significance between the medians of the differences in pre- and post- takeover measures is determined using a non-parametric paired sample Wilcoxon signed rank test. Significance levels: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

Model II. The outcomes of Model II are presented in Table 6.6. Following the discussion on different measures of operating performance, Change Model II provides a univariate analysis of the performance measure ROA against several bid- and firm characteristics. Panel A shows that cash financed acquisitions see a statistically significant decrease in operating performance compared to overall industry performance, with a decrease of -1.40% for the full sample, -1.50% for public acquisitions and -1.40% for private targets. For the same benchmark, stock financed takeovers of listed firms are associated with positive abnormal operating returns, albeit insignifcant. Acquisitions financed through a combination of cash & stock appear to hold a negative relation with operating performance, especially with regard to the peer adjusted measure. Based on the literature review and prior findings on payment method, one should expect public target acquisitions to perform significantly better when financed with cash. My results seem to dispute the findings of Denis & Denis (1995) and Ghosh & Ruland (1998) who argue that cash offers stimulate performance through an increased probability of replacing entrenched management. Additionally controlling for firm size and historical performance (moving from industry to peer adjustement), eliminates most of the statistical significance for cash offers (only the full sample being significant at the 10% level). Therefore, this variant of the change model is unable to provide conclusive evidence on payment method. I align these findings with Healy et al. (1992) and Powell & Stark (2005) who find no material impact from deal structure.

The results on relative deal size indicate that public target acquirers experience significant negative returns when taking over a relatively large firm. Across both benchmarks and for all organisational forms, high relative deal size shows a significant negative relation with operating performance. These results may be interpreted along Clark & Ofek's (1994) lines of reasoning, they argue that the costs associated with managing large and bulky firms often overshadow the potential for operational and financial synergies. Intriguingly, based on the change model, this seems to only hold for public target acquisitions. Panel C presents the change model outcomes of the operating performance – industry commonality relation. Sample firms show negative performance when acquiring companies from different industries (i.e. after diversifying takeovers). While some of the prior literature explicitly suggest that focusing takeovers result in improved performance (eg., Healy et al., 1992; Heron & Lie, 2002), my results provide a reverse argumentation by indicating a performance decline following diversifying takeovers of public- and private firms. Addressing Panel D and E, the results imply that the level of cash reserves increasingly decrease operating performance for private target acquirers. Moving from the 1st to 3rd quartile of the cash reserve distribution, peer adjusted operating returns become progressively significant and negative (-0.20%, -0.70% and -1.10% respectively). Jensen (1986), Moeller & Schlingemann (2004) and Martynova et al. (2006) all show similar findings and present the free cash flow theory as explanatory element. The results from Panel D augment prior evidence by specifying that the association particularly holds for private target acquirers. For debt levels, the opposite holds as increased leverage results in operating performance improvements. Panel E suggests that low MTB private target acquirers outperform low MTB public target acquirers.

Table 6.6: Change Model II | Univariate analysis of explanatory variables

Change Model II	Industry adjusted AROA				Peer adjusted AROA			
	Full Sample	Public	Private	Difference	Full Sample	Public	Private	Difference
Panel A: Payment Method								
Cash	-0.014***	-0.015***	-0.014***	0.001***	-0.043*	-0.003	-0.005	-0.003
	1,084	203	881		1,084	203	881	
Stock	0.003	0.015	-0.002	-0.017	-0.013	-0.008	-0.017	-0.007
	373	183	190		373	183	190	
Mixed	-0.008***	-0.004	-0.009***	-0.005	-0.008**	-0.005**	-0.008**	-0.003
	1,406	184	1,222		1,406	184	1,222	
Panel B: Relative deal size								
Large	-0.010***	-0.013**	-0.010*	0.003*	-0.010***	-0.015***	-0.008	0.007
	1,431	285	1,146		1,431	285	1,146	
Small	-0.007***	0.003	-0.009***	-0.012	-0.007	0.007	-0.004	-0.011
	1,432	285	1,147		1,432	285	1,147	
Panel C: Industry commonality								
Diversifying	-0.009***	-0.003**	-0.011**	-0.008**	-0.010***	-0.004***	-0.006**	-0.002*
	1,727	308	1,419		1,727	308	1,419	
Focusing	-0.009	-0.006	-0.009	-0.003	-0.003	-0.011	-0.002	0.009
	1,136	262	874		1,136	262	874	
Panel D: Cash reserves (slack)								
< 1st quartile	-0.007*	0.000	-0.007*	-0.007	-0.003	-0.008	-0.002	0.006
	544	110	434		544	110	434	
Median	-0.009***	-0.008	-0.009***	-0.001	-0.005**	-0.002	-0.007*	-0.005
	1,086	218	868		1,086	218	868	
>3rd quartile	-0.010***	-0.002	-0.014***	-0.012	-0.010**	-0.006	-0.011**	-0.005
	1,233	242	991		1,233	242	991	
Panel E: Leverage								
< 1st quartile	-0.020***	-0.035	-0.018**	0.016	-0.015	-0.024	-0.018	0.006
	544	109	434		544	109	434	
Median	-0.010***	0.000	-0.012***	-0.012	-0.007**	0.004	-0.010***	-0.014
	1,086	219	868		1,086	219	868	
>3rd quartile	-0.008***	-0.004	-0.008***	-0.004	-0.004	-0.011**	-0.003	0.008
	1,233	242	991		1,233	242	991	
Panel F: Market-to-book ratio								
High	-0.003	0.010*	0.005*	-0.005	-0.001	0.004	0.001	-0.003
	1,438	287	1,152		1,438	287	1,152	
Low	-0.014***	-0.019***	-0.014***	0.004***	-0.011***	-0.011***	-0.012***	-0.001***
	1,425	283	1,141		1,425	283	1,141	

This table presents the results of the univariate tests produced by Change Model II. AROA is the difference between the median pre- and post-takeover values (top number). The second number is the number of observations. The difference column represents the outperformance of private target acquirers against public target acquirers (private − public). A transaction is classified as focusing if target and acquirer hold the same SIC-code. Cash reserves are defined as Cash & Short Term Investment over Total Assets. Leverage is defined as Long Term Debt over Total Assets. The acquirers market-to-book ratio is computed by dividing Total Book Value by market capitalization 4 weeks prior to the acquisition announcement. Cash reserves and leverage are split into three categories; the first contains variable values between $0 - 25\%$ of the distribution; second between $25 - 75\%$, and the third includes variable values that exceed the 75% border of the distribution. MTB is classified as high if the value is greater than the respective MTB median. Statistical significance between the medians of the differences in pre- and post-takeover measures is determined using a non-parametric paired sample Wilcoxon signed rank test. Significance levels: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

Model III. The outcomes of Model III are presented in Table 6.7. Based on a set of recommendations put forward by prior studies on M&A operating performance, this paper further zooms into a dual set of variables namely: (i) the quantity of acquirer's acquisitions experience and (ii) the impact of blockholder creation following stock financed acquisitions.

Quantity of acquisition experience. Klasa & Stegemoller (2007) paved the avenue for research on acquisition track records. Although they find evidence that takeover sequences are an efficient response to changes in a firm's investment opportunity set, no conclusion can be drawn on the shape of the relationship between operating performance and acquisition experience because their study only regards firms that engaged in at least five takeovers. It is therefore interesting to segment and examine different levels of acquisition experience. Panel A and B provide a subdivision of takeover experience for both public- and private target acquirers across the three benchmarking measures of operating performance. The results from Model III show a curved relationship between the deal sequence and operating performance. For public target acquirers, this curved relationship is comparable to the U-shaped curve documented by Haleblian & Finkelstein (1999), who suggest that relatively inexperienced acquirers inappropriately generalize their first acquisition to following, dissimilar takeovers. Further, the findings of Panel A may be held against the traditional agency theory where the empire building hypothesis predicts a performance deterioration following takeovers induced by manager's self-interest motives (Hope & Thomas, 2008). However, the results are unable to provide a legitimate and academically sound confirmation of the theories above, as only the 'no acquisition' bucket shows statistical significance. Private target acquirers on the other hand show a relationship curve that is inverted to their public counterpart, and do experience performance improvements along the deal sequence. For the unadjusted and industry adjusted measures of operating performance, increased acquisition experience is statistically significant associated to improved levels of ROA. Moving from zero to four acquistions for these benchmarks yields ROA improvements of +0.7% and +1.1% respectively. The results indicate that the theory of organisational learning (as proposed by Haleblian & Finkelstein, 1999) might be applicable to private target acquirers in this research sample. These firms seem to learn from their prior takeovers, potentially enhancing their ability of merger integration and target selection.

Blockholdership creation. Results from Panel C indicate that there is an upward trend in performance with the size of public companies' blockholders. This pattern is consistent across the three considered time periods but remain uninterpretable due to the statistical insignificance. Panel D shows a sharp performance improvement for private target acquirers with large blockholders in the post-crisis period, while indicating a statistical significant decline in the years preceeding the crisis. These findings may be linked to the empirical evidence of Grossman & Hart (1980) and Thomsen et al. (2006). Further examination of the intercept model will have to demonstrate more statistically sound results to make the analysis on public- versus private targets more conclusive.

Table 6.7: Change Model III | Acquisition experience and blockholdership creation

Panel A: Public target acquirers - Acquisition experience and M&A performance

Number of acquisitions	Observations	Fraction	ΔU_ROA	ΔI_ROA	ΔP_ROA
No acquisitions	322	56%	-2.0%***	-1.1%**	-0.9%**
One acquisition	130	23%	-1.1%	0.9%	-1.0%
Two acquisitions	54	9%	-1.2%	1.2%	-1.3%
Three acquisitions	32	6%	-1.3%	-0.7%	2.1%
Four acquisitions	15	3%	-0.2%	-3.2%	-3.1%
> Five acquisitions	17	3%	-0.5%	0.6%	-0.7%

Panel B: Private target acquirers - Acquisition experience and M&A performance

Number of acquisitions	Observations	Fraction	ΔU_ROA	ΔI_ROA	ΔP_ROA
No acquisitions	1,330	58%	-1.5%***	-1.2%***	-1.2%***
One acquisition	507	22%	-1.4%***	-0.8%***	-1.6%***
Two acquisitions	217	9%	-1.7%***	-1.2%***	-2.0%***
Three acquisitions	116	5%	0.1%	-1.0%	0.4%
Four acquisitions	57	2%	-0.8%**	-0.1%*	0.4%
> Five acquisitions	66	3%	-0.6%	-0.9%	-0.8%

Panel C: Public blockholders and ΔI_ROA

Blockholdership	Observations	Fraction	Pre crisis	Post crisis	Full sample period
(A) No blockholder	524	92%	-0.2%	-0.8%	-0.4%
(B) 05 - 08 %	26	5%	-2.8%	-2.4%	-2.8%
(C) 08 - 11 %	11	2%	-3.2%	-0.9%	-0.9%
(D) 11 - 14 %	3	1%	2.1%	na	2.1%
(E) > 14 %	6	1%	0.7%	na	0.7%

Panel D: Private blockholders and ΔI_ROA

Blockholdership	Observations	Fraction	Pre crisis	Post crisis	Full sample period
(A) No blockholder	2,111	92%	-1.1%***	-0.8%**	-1.0%***
(B) 05 - 08 %	62	3%	0.8%	14.0%	1.7%
(C) 08 - 11 %	34	1%	2.0%	9.2%	2.0%
(D) 11 - 14 %	20	1%	-0.2%	13.4%	0.0%
(E) > 14 %	66	3%	-5.9%*	19.7%	-4.7%

This table presents the results of the univariate tests produced by Change Model III. Panel A and B provide results on the relation between acquisition experience and operating performance for both public and private target acquirers. U_ROA, I_ROA and P_ROA refer to the unadjusted-, industry adjusted-, and peer adjusted ROA respectively. Δ represents the change in median pre- and post-takeover performance for the respective benchmark adjustments. Panel C & D show the industry adjusted performance results of different blockholder categories for public and private target acquirers across the entire sample period (1993-2013), the pre-crisis sample period (1993-2007) and the post-crisis period (2008-2013). A blockholder is defined as single shareholder holding at least 5% the company's shares. Statistical significance between the medians of the differences in pre- and post- takeover measures is determined using a non-parametric paired sample Wilcoxon signed rank test. Significance levels: * (p < 0.10), ** (p < 0.05), *** (p < 0.01).

6.3.2 Intercept model

As with the change model, this paper constructs three version of the intercept model introduced by Healy et al. (1992). Intercept Model I is used to perform a regression analysis of the different bid- and firm characteristics against the benchmark adjusted operating performance measure ROA. Model II produces the multivariate regression outcomes of the characteristics against the peer adjusted DuPont metrics ROA, AT, CFM and SG. Finally, Intercept Model III provides a deeper analysis on the impact of bid/firm characteristics on the target status seperation by adding multiple interaction terms to the regression environment.

Intercept Model I – Multivariate regression analysis on ROA
The outcomes of the first multivariate regression analyses are presented in Table 6.8.

Intercept. The constant in the regression equation, α, is the expected mean value of the dependent variable when all explanatory variables hold a value of zero. In other words, α estimates the change in operating performance that cannot be justified by any of the bid or firm characteristics, nor can it be explained by pre-takeover performance or the control variables. Comparing the three benchmark adjusted performance measures in Table 6.8 shows that the intercept is mostly significant for the unadjusted- and industry adjusted ROA, whilst the peer adjusted benchmark shows insignifcant results. As discussed earlier, I_ROA adjusts for industry performance and P_ROA additionally controls for historical performance and firm size. The statistical insignificance of the intercept for all peer adjusted models therefore implies that the change in U_ROA and I_ROA is driven by one of the controlling characteristics of the peer benchmark.

Pre-takeover performance. In line with the observation from the Spearman correlation matrix (Table 6.4), the results of the intercept model suggest that pre-takeover operating performance is a very strong predictor of post-merger operating performance. This appears to be consistent with the evidence provided by most studies on M&A operating performance (eg., Ravenscraft & Scherer 1989; Healy et al., 1992; Andrade et al., 2001; Fee & Thomas, 2004; Powell & Stark, 2005; Martynova et al., 2006; Carline, 2009).

Firm characteristics. The private target dummy is significant for all unadjusted and industry adjusted models, the positive sign of the coefficients indicates that private target acquirers significantly outperform public target acquirers when controlling for overall industry performance. The significance level is reduced to 10% when additionally controlling for time- and industry fixed effects (I_ROA model 4). As mentioned earlier, I rely most on the outcomes of peer performance benchmark adjusted variables, especially in a multivariate regression context. As the private target dummy does not show any statistical significance for this benchmark, no definitive conclusions can be drawn on private target performance since the results of U_ROA and I_ROA might be explained

through historical company performance and relative size (peer group benchmark adjustments). The quantity of acquirer's acquisition experience is statistically signifcant across all models and for each benchmark adjustment. Altough the significance level drops from 1% to 10% in model 4, the results strongly suggest that acquisition experience matters when evaluating post-takeover operating performance. These outcomes are in line with prior empirical evidence on acquisition experience (eg., Haleblian & Finkelstein, 1999; Klasa & Stegemoller, 2007) and highlight the need for a closer examination of the acquistion experience interaction term in Intercept model III. In contrast to Change Model II, the intercept model shows varying results for the industry relatedness dummy and does not reveal a significant relationship with post-merger operating performance. Effects of the acquirer's MTB ratio also appear small and insignificant. If anything, the results suggest that overvalued acquirers in terms of MTB experience negative takeover performance, regardless of acquiring a public or private target. These results tie in with theories of self-attribution bias leading to hubris (eg., Conn et al., 2005; Billet & Qian, 2008). Evaluating the association between the acquirer's capital structure and operating performance only yields some statistical significant results for the unadjusted benchmark performance measure. In line with the free cash flow theory (Jensen, 1986; Moeller & Schlingemann, 2004; Martynova et al., 2006), holding excess cash reserves may lead to unprofitable investments that put pressure on its operating performance. The leverage variable shows statistical significance in the least sophisticated benchmark measure, which disappears when adding control variables.

Deal characteristics. For all deal characteristic regression model specifications controlled for time- and industry fixed effects, only the cash and blockholder dummy produce statistical significant results. The outcomes of the most advanced regression model (P_ROA model 4) suggest that the creation of a blockholder in the merged entity is associated with a decline in operating performance. Further, the industry- and peer adjusted results of model 4 indicate that cash financed transactions perform significantly worse than stock financed deals, in line with Fuller et al. (2002). Significance levels for the relative size variables are likely captured by the control variables as none of the (04) models indicates any statistical significance for the relative deal size of the acquisition.

Model checks. The intercept models have been tested for any manifestations of heteroscedasticity (Wald test), autocorrelation (Woolridge test) and multicollinearity (VIF-test). The results of these tests are summarised in Table A3 of the Appendix. Following these results, standard errors are adjusted for heteroscedasticity following the Huber-White procedure. Further, autocorrelation is effectively controlled for in all regression models. Outcomes of the Variance Inflation Factor (VIF) test for multicollinearity produce reassuring outcomes with mean-VIF levels well below 2.0, indicating reasonable stability across the regression coefficients (Table A3 Appendix).

Table 6.8: Intercept Model I | Multivariate regression analysis on ROA

Intercept Model I

	Unadjusted ROA_w				Industry adjusted ROA_w				Peer adjusted ROA_w			
	(01)	(02)	(03)	(04)	(01)	(02)	(03)	(04)	(01)	(02)	(03)	(04)
Intercept	0.028***	0.021**	0.088***	0.056**	0.004	0.041***	0.074***	-0.005	-0.016	0.007	0.011	0.021
Pre-merger performance	0.532***	0.574***		0.523***	0.610**	0.629***		0.587***	0.228***	0.265***		0.218***
Firm Characteristics												
Private target dummy	0.015***		0.017**	0.012**	0.028***		0.034***	0.014*	-0.003		0.004	0.003
Experience dummy	0.026***		0.039***	0.025***	0.024**		0.039***	0.025***	0.016**		0.015*	0.016*
Relatedness dummy	-0.005		-0.001	-0.001	0.002		0.008	0.002	-0.009		-0.008	-0.008
MTB	0.000		0.000	0.000	0.000		0.000	0.000	-0.000*		-0.000**	0.000
Leverage	-0.002		-0.035**	0.002	0.010		-0.025	0.012	-0.008		-0.011	-0.004
Slack	-0.091***		-0.180***	-0.090***	0.001		0.046	-0.017	-0.001		-0.004	-0.006
Deal Characteristics												
Blockholder creation		-0.053***	-0.067***	-0.043***		-0.041**	-0.065***	-0.031*		-0.038**	-0.041**	-0.035*
Cash dummy		0.005	0.030**	-0.003		-0.041***	-0.028	-0.034**		-0.016	-0.029*	-0.029*
Mix dummy		-0.010	-0.014	-0.017		-0.041***	-0.053***	-0.033		-0.016	-0.030*	-0.026
Hostility		0.008	0.033	0.006		-0.008	0.023	0.000		-0.024	-0.012	-0.008
Relative size		0.000	-0.021***	-0.007		0.000	-0.019***	-0.006		0.000	-0.008	-0.006
Control Variables												
Time fixed effects	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Industry fixed effects	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Model Statistics												
R Squared	0.420	0.426	0.164	0.464	0.414	0.419	0.054	0.454	0.024	0.030	0.009	0.039

This table presents the results produced by Intercept Model I. Outcomes represent estimates from a linear regression analysis where the dependent variable is the primary measure of operating performance, post-merger ROA. The dependent variable is adjusted for three benchmarks: unadjusted, industry adjusted and peer adjusted performance and is winsorised at 5% of both distribution tails (suffix _w). Column (01) shows the results for bid characteristics and pre-merger performance. Column (2) shows estimates for deal characteristics and pre-merger performance. Column (3) includes both bid- and firm characteristics while excluding pre-merger performance. Column (4) includes all variables and additionally controls for time fixed effects and industry fixed effects. Standard errors are adjusted for heteroscedasticity following the Huber-White procedure. Significance levels: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

Intercept Model II – Multivariate regression analysis on DuPont performance metrics

The outcomes of the first multivariate regression analyses are presented in Table 6.9. All variables are adjusted for peer performance, a discussion on the results is provided below.

Return on Assets (ROA). The regression models of ROA are identical to the outcomes of the previous peer adjusted ROA results and therefore should be interpreted as such. In summary, acquisition experience is positively associated with operating performance, blockholder creation holds a negative relation with operating performance, while cash financed takeovers perform worse than stock financed acquisitions. These variables are statistically significant in model 3 at the 10% level.

Asset Turnover (AT). Within the firm characteristic factors, all variables but leverage lose their statistical significance in model 3. Results on the acquirer's pre-takeover leverage ratio provide strong evidence to suggest that leverage appears to drive the firm's asset utilization. These results seamlessly fit with the monitoring role of debt proposition as discussed in Jensen's (1986) free cash flow theory. Higher debt levels discpline management and force the firm to make more efficient use of its assets. The relative deal size of the acquisition shows a strong significant negative relationship with the asset turnover metric, indicating significance at 1% for all three models. Scholars previously identified greater corporate complexity and increased human resources inefficiencies as negatives for productivity. My results may be interpreted accordingly (Schweiger and Denisi, 1991; Galpin & Herndon, 2014). Lastly, acquisitions with mixed deal strucures have a greater detrimental impact on asset turnover than stock-only deal structures (significance at 5%).

Cash Flow Margin (CFM). Table 6.9 indicates that the creation of a blockholder is the only variable that significantly impacts the cash flow margin metric. As we recall from the previous model, blockholder creation holds a negative relationship with post-merger operating performance in terms of ROA. Model II identifies a margin deterioration being the primary source of this operating performance decline. My results are consistent with Thomsen et al. (2006) who show that conflicts of interest are likely to arise between blockholders and minority investors, especially for firms with high initial levels of blockholder ownership (more than 10%). Further, as applies to all performance metrics, the pre-performance variable serves as a strong predictor for post-merger outcomes.

Sales Growth (SG). Statistical significance of the private target dummy at 5% for all three models of SG suggests that private target acquirers experience superior sales growth over public target acquirers. Also, high MTB acquirers and firms with large cash reserves are positively associated to increased sales levels, with significance at 5% and 1% respectively. Table 6.9 produces some evidence to suggest that higher relative deal sizes lead to increased sales growth and that cash financed takeovers encounter a more gradual sales development than mergers with a shares deal structure.

Table 6.9: Intercept Model II | Multivariate regression analysis on DuPont performance metrics

Intercept Model II

	Peer adjusted ROA_w			Peer adjusted AT_w			Peer adjusted CFM_w			Peer adjusted SG_w		
	(01)	(02)	(03)	(01)	(02)	(03)	(01)	(02)	(03)	(01)	(02)	(03)
Intercept	0.011	0.006	0.021	-0.482***	-0.217***	-0.372**	0.004	0.000	-0.042*	0.231***	0.235***	-0.054
Pre-merger performance		0.222***	0.218***		0.710***	0.708***		0.299***	0.298***		0.064***	0.064***
Firm Characteristics												
Private target dummy	0.004	0.002	0.003	0.056	0.026	0.023	0.006	0.002	0.004	0.090**	0.089**	0.096**
Experience dummy	0.015*	0.016**	0.016*	-0.022	0.025	0.034	0.021***	0.017**	0.017	-0.048	-0.050	-0.055
Relatedness dummy	-0.008	-0.008	-0.008	0.055*	0.024	0.002	-0.006	-0.007	-0.008	-0.038	-0.023	-0.042
MTB	0.000**	0.000	0.000	0.000	0.000	0.001	0.000*	0.000	0.000	0.001**	0.001**	0.001**
Leverage	-0.011	-0.007	-0.004	0.255*	0.220***	0.180***	-0.019	-0.010	-0.006	0.010	-0.017	-0.012
Slack	-0.004	-0.003	-0.006	-0.603***	-0.049	-0.013	0.002	0.010	0.014	0.324***	0.284***	0.283***
Deal Characteristics												
Blockholder creation	-0.041**	-0.035*	-0.035*	-0.126	-0.061	-0.088	-0.049***	-0.037**	-0.035*	-0.018	-0.069	-0.103
Cash dummy	-0.029*	-0.026	-0.029*	-0.133*	-0.097*	-0.065	-0.021	-0.017	-0.016	-0.174**	-0.192***	-0.189**
Mix dummy	-0.030*	-0.024	-0.026	-0.138*	-0.131**	-0.115**	-0.027*	-0.019	-0.018	-0.094	-0.114	-0.122*
Hostility	-0.012	-0.017	-0.008	0.198	0.018	0.012	-0.020	-0.030	-0.028	-0.027	-0.008	-0.013
Relative size	-0.008	-0.006	-0.006	-0.134***	-0.152***	-0.160***	-0.004	0.000	0.000	0.042	0.050*	0.045*
Control Variables												
Time fixed effects	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Industry fixed effects	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Model Statistics												
R Squared	0.009	0.027	0.039	0.056	0.537	0.558	0.015	0.088	0.104	0.025	0.042	0.065

This table presents the results produced by Intercept Model II. Outcomes represent estimates from a linear regression analysis where return on assets (ROA) serves as main indicator of operating performance whilst asset turnover (AT), sales growth (SG) and cash flow margin (CFM) serve as decomposing elements of ROA in a DuPont-like fashion. Variables are winsorised at 5% of both distribution tails (suffix _w) and benchmark adjusted for peer performance. Column (01) excludes pre-merger performance to provide a benchmark for columns (02) and (03). Column (02) shows estimates for firm and deal characteristics, controlling for pre-merger performance while excluding control variables. Column (03) includes all characteristics and additionally controls for time fixed effects and industry fixed effects. Standard errors are adjusted for heteroscedasticity following the Huber-White procedure. Significance levels: * (p < 0.10), ** (p < 0.05), *** (p < 0.01).

Intercept Model III – Interaction terms for public and private target acquirers

The outcomes of the third multivariate regression analyses are presented in Table 6.10. All bid/firm characteristic variables are combined with private/public target dummies to create interaction terms. In the models labeled (01), TS dummy represents the private target dummy. For the models labeled (02), TS refers to public target dummy. A discussion on the results is provided below.

Firm characteristics. Comparing public- versus private target takeovers, Table 6.10 portrays that the positive effect of acquisition experience is related to private target acquirers. Interaction terms between public target dummy and acquisition experience produces negative but insignifcant outcomes for all three benchmark adjustments. While these results are mainly uninterpretable due to statistical insignificance, interaction terms for private targets produce positive and significant outcomes for the first two benchmarks (at 1% and 5% respectively). Combining these results with the findings of Change Model III, I find evidence partially in support of hypothesis H(A01) that private target acquirers are able to improve target selection and integration processing capabilities along the deal sequence, consistent with the theory of organizational learning (e.g., Haleblian & Finkelstein, 1999; Hayward, 2002, Aktas et al., 2011). Outcomes of the industry relatedness interaction term suggest that private target acquirers experience a performance decline following 'focussing' transactions, with statistical significance at 1% for the peer adjusted benchmark. The interaction term coefficient between leverage and private takeovers is mainly negative and insignificant, for public target acquirers the outcomes are positive and statistically significant at 10% for the industry adjusted benchmark. This may causiously be interpreted as public target acquirers benefitting from a more aggressive capital structure. I find mixed evidence on the effects of acquirer's cash reserves, these turn out generally negative for both public and private takeovers.

Deal characteristics. The results from Table 6.10 clearly indicate that public target acquisitions involving a blockholder creation are associated with negative operating performance. Consistent with the findings of Thomsen et al. (2006) and the results of Change Model III, I find that blockholder creations in public target acquisitions may lead to conflicts of interest between shareholders which dampens companies' operating performance. Intercept Model III provides no meaningful results on the acquisition deal structure and hostility. The most statistically profound outcomes of this model are on the relative size interaction terms. In line with Shams & Gunasekarage (2016), I find that relative size has differential effects on the performance of the two types of bidders. There lies significant potential for public target acquirers to engage in relatively small M&A transactions and for private target acquirers to make relatively large acquisitions. Both observations are supported with statistical significance across all models and benchmarks, ranging from the 10% to 1% level.

Table 6.10: Intercept Model III | Interaction terms for public and private target acquirers

Intercept Model III		U_ROA_w				I_ROA_w				P_ROA_w			
		(01)	(01)	(02)	(02)	(01)	(01)	(02)	(02)	(01)	(01)	(02)	(02)
Intercept		0.114***	0.040	0.129***	0.048*	-0.008	-0.046	-0.119	-0.105*	-0.009	0.005	-0.053	-0.046
Pre-merger performance			0.523***		0.524***		0.584***		0.600***		0.217***		0.295**
Firm Characteristics													
Private target dummy		-0.002	0.020	0.002	-0.020	0.021	0.047	-0.021	-0.047	0.059	0.056	-0.059	-0.056
Experience dummy	* TS dummy	0.046***	0.026**	-0.010	-0.007	0.055***	0.036**	-0.029	-0.018	0.026	0.023	-0.015	-0.012
Relatedness dummy	* TS dummy	0.002	0.013	-0.004	-0.016	-0.014	-0.011	0.014	0.011	0.012	-0.023***	0.012	0.015
MTB	* TS dummy	-0.002	-0.001	0.001	0.001	-0.001	-0.001	0.001	0.001	-0.000	-0.000	-0.000	-0.000
Leverage	* TS dummy	0.013	-0.038	-0.028	0.050	-0.042	-0.059	0.013	0.067*	-0.060	-0.073	0.053	0.061
Slack	* TS dummy	0.010	-0.032	-0.176***	-0.081**	-0.150***	-0.110**	0.083	0.049	-0.090	-0.096*	0.073	0.082
Deal Characteristics													
Blockholder creation	* TS dummy	0.019	-0.004	-0.087***	-0.057**	0.015	-0.030	-0.079**	0.017	-0.002	0.002	-0.058	-0.067***
Cash dummy	* TS dummy	-0.019	-0.025	0.029*	-0.001	0.018	-0.011	-0.035	-0.040**	-0.041	-0.035	-0.017	-0.023
Mix dummy	* TS dummy	-0.021	-0.030	-0.008	-0.008	0.001	-0.027	-0.045*	-0.025	-0.037	-0.035	-0.014	-0.021
Hostility	* TS dummy	-0.013	-0.008	-0.048	0.021	0.010	-0.011	0.072	0.016	0.011	0.016	0.005	0.012
Relative size	* TS dummy	0.027*	0.021*	-0.045***	-0.025**	0.038**	0.029**	-0.047***	-0.027**	0.031**	0.031*	-0.033**	-0.036**
Control Variables													
Time fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model Statistics													
R Squared		0.198	0.467	0.267	0.559	0.150	0.460	0.305	0.593	0.044	0.027	0.126	0.097

This table presents the results produced by Intercept Model III. Outcomes represent estimates from a linear regression analysis with post-merger ROA serving as dependent variable. The dependent variable is winsorised at 5% of both distribution tails (suffix _w) and is benchmarked against: unadjusted, industry adjusted and peer adjusted performance (prefixed U_, I_ and P_ respectively). Results under (01) relate to private target acquisitions where TS refers to the private target dummy in the interaction terms. Results under (02) relate to public target acquisitions where TS refers to the public target dummy in interaction terms. Standard errors are adjusted for heteroscedasticity following the Huber-White procedure. Significance levels: * (p < 0.10), ** (p < 0.05), *** (p < 0.01).

6.4 Robustness checks

This section includes a range of robustness checks to verify the reliability and consistency of the results. First, the change model is analysed by modifying the considered time window and comparing pre- and post-crisis outcomes as displayed by Table 6.11 – 6.13. This section concludes with a summary of the robustness procedure for the intercept models, as the results of these checks have previously been discussed in Section 6.3.

Change model. Although the intercept models include control variables for time fixed effects, the change model results still remain susceptible to the confounding effects of time specific events. In line with Farinos et al. (2017), I therefore alter Change Model I and Change Model II by presenting the results for the pre- and post- GFC periods.[21] A number of interesting issues arise following these alterations. As Table 6.11 indicates, the industry adjusted metrics remain stable in the pre-crisis window but the difference between public- and private target acquirers becomes more pronounced in the post-crisis period. While the significance levels reassuringly remain the same, private target acquirers increasingly seem to outperform public target acquirers in the years following the GFC, in line with the results of Golubov & Xiong (2016). Moving towards Change Model II, Table 6.12 shows that the effect of stock financed deals for private target acquirers in the pre-crisis period becomes statistically significant thereby providing evidence in support of H(B02b). The results further imply that highly levered private target acquirers outperform highly levered public target acquirers in the post-crisis period (Table 6.13). Despite these secondary empirical findings, the statistical results of the change models can be classified as moderately robust given the key determinants of this research.

Intercept model. Throughout Intercept Model I-III, three main robustness checks are employed: (i) separate vector variable analysis, (ii) cluster controls and (iii) benchmark adjustments. Separate vector variable control refers to adding $\theta X'_{i.t}$ and $\varphi Z'_{i.t}$ to the regression environment sequentially (as in models 01-03 from Intercept Model I). Table 6.8 shows increased statistical significance resulting from additional explanatory variables in the regression equation. Table 6.9 shows that the cluster controls capture the statistical significance of the CFM – acquisition experience relation which may be explained through the elimination of any merger wave effects. All remaining firm- and deal characteristic results show a strong consistency after the cluster controls. Benchmark adjustments seize a large share of the statistical significance, as extensively discussed in Section 5 and Section 6.3. For the peer group adjusted results, the significance of acquisition experience and blockholder creation in Intercept Model I combined with the significance of relative size in Intercept Model III confirm its robustness and validate the conclusions made in Section 6.3.

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[21] As mentioned in footnote 9, GFC refers to the 2008 Global Financial Crisis, in which the US housing bubble burst led subprime borrowers to default on their loans eventually causing a credit crunch that worked its way to the upper tiers of the financial system.

Table 6.11: Change Model I | Robustness: Time window adjustment

Change Model I | Pre- & post- crisis comparison

	PRE CRISIS								POST CRISIS							
	Industry adjusted				Peer group adjusted				Industry adjusted				Peer group adjusted			
	Full Sample	Public	Private	Difference	Full Sample	Public	Private	Difference	Full Sample	Public	Private	Difference	Full Sample	Public	Private	Difference
Pre-ROA	0.023	0.034	0.020	-0.014	-0.000	-0.001	-0.000	0.001	0.023	0.049	0.022	-0.027	0.001	-0.002	0.001	0.003
Post-ROA	0.009	0.021	0.006	-0.015	-0.012	-0.015	-0.012	0.003	0.011	0.027	0.010	-0.018	-0.008	-0.017	-0.007	-0.010
Difference	-0.013***	-0.012	-0.014***	-0.001	-0.011***	-0.013*	-0.011***	0.002*	-0.012**	-0.022	-0.012**	0.010	-0.010***	-0.015**	-0.009***	-0.013*
Pre-AT	-0.086	-0.123	-0.075	0.048	-0.425	-0.416	-0.432	-0.015	-0.051	-0.115	-0.040	0.075	-0.465	-0.640	-0.438	0.202
Post-AT	-0.141	-0.205	-0.129	0.076	-0.584	-0.589	-0.580	0.008	-0.110	-0.227	-0.093	0.135	-0.583	-0.665	-0.548	0.117
Difference	-0.055***	-0.082***	-0.054***	0.028**	-0.159***	-0.172***	-0.148***	0.024**	-0.060***	-0.113***	-0.053***	0.060**	-0.119***	-0.025***	-0.111***	-0.085**
Pre-SG	0.094	0.123	0.088	-0.035	0.058	0.048	0.061	0.013	0.070	0.082	0.069	-0.013	0.029	0.038	0.029	-0.009
Post-SG	0.117	0.100	0.125	0.025	0.122	0.100	0.126	0.026	0.071	0.103	0.066	-0.037	0.028	-0.007	0.036	0.043
Difference	0.023	-0.023	0.036	0.060	0.064***	0.053*	0.065***	0.013*	0.001	0.020	-0.003	-0.024	-0.001	-0.045	0.007	0.052
Pre-CFM	-0.019	-0.006	-0.023	-0.017	0.006	0.006	0.006	0.001	-0.026	-0.016	-0.028	-0.012	0.002	0.013	0.001	-0.012
Post-CFM	-0.034	-0.024	-0.037	-0.013	-0.007	-0.008	-0.007	0.001	-0.040	-0.035	-0.040	-0.006	-0.013	-0.019	-0.012	0.007
Difference	-0.015***	-0.019***	-0.015***	0.004***	-0.012***	-0.013**	-0.013***	-0.001**	-0.012***	-0.017***	-0.011***	0.006***	-0.014***	-0.031***	-0.013***	0.019**

This table reports the outcomes of the first statistical test – Change model I. Pre- and post- takeover performance measures are quoted at their median values. Results are categorized for public and private target acquirers across the pre-crisis sample period (1993-2007) and the post-crisis period (2008-2013). Return on assets (ROA) serves as main indicator of operating performance whilst asset turnover (AT), sales growth (SG) and cash flow margin (CFM) serve as decomposing elements of ROA in a DuPont-like fashion. The last column of the two benchmark adjustments represents the outperformance of private target acquirers against public target acquirers. The difference is computed by subtracting the public column from private column values (private – public). The difference between pre- and post-takeover values is calculated by subtracting Pre- from Post-. Statistical significance between the medians of the differences in pre- and post- takeover measures is determined using a non-parametric paired sample Wilcoxon signed rank test. Significance levels: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

Table 6.12: Change Model II | Robustness: Pre-crisis evaluation

Change Model II - Pre crisis

	Industry adjusted ROA					Peer adjusted ROA			
	Full Sample	Public	Private	Difference		Full Sample	Public	Private	Difference
Panel A: Payment method									
Cash	-0.017***	-0.014	-0.017**	-0.002		-0.008**	-0.008	-0.008**	-0.000
	750	152	598			750	152	598	
Stock	0.001	0.015	0.005*	-0.021		-0.017*	-0.010	0.025*	-0.014
	355	171	184			355	171	184	
Mixed	-0.008***	-0.004	-0.009***	-0.005		-0.009***	-0.004	-0.012***	-0.008
	1,078	148	930			1,078	148	930	
Panel B: Relative deal size									
Large	-0.010**	0.012*	-0.010*	0.002*		-0.014***	-0.018***	-0.014	0.004
	1,092	236	856			1,092	236	856	
Small	-0.009***	0.004	-0.012***	-0.016		-0.003*	0.006	-0.006	-0.012
	1,091	235	856			1,091	235	856	
Panel C: Industry commonality									
Diversifying	-0.009***	-0.006	-0.009	-0.007		-0.004*	-0.005	-0.004*	0.002
	857	211	646			857	211	646	
Focusing	-0.009***	-0.003***	-0.011***	-0.010***		-0.014***	-0.008	-0.017***	-0.009
	1,326	260	1,066			1,326	260	1,066	
Panel D: Cash reserves (slack)									
< 1st quartile	-0.007*	0.000	-0.007*	-0.008		-0.010**	-0.013*	-0.008	0.005
	495	89	321			495	89	321	
Median	-0.009***	-0.008	-0.009***	0.003		-0.007*	-0.008	-0.007	0.000
	728	178	640			728	178	640	
>3rd quartile	-0.010***	-0.002	-0.014***	-0.025		-0.015***	-0.001	-0.018***	-0.016
	960	204	751			960	204	751	
Panel E: Leverage									
< 1st quartile	-0.020***	-0.035	-0.018**	0.017		-0.009	-0.010	-0.013	-0.003
	410	89	320			410	89	320	
Median	-0.010***	0.000	-0.012***	-0.015		-0.010***	-0.003	-0.014**	-0.011
	818	178	640			818	178	640	
>3rd quartile	-0.008***	-0.004	-0.008***	-0.007		-0.011***	-0.014**	-0.010***	0.005**
	955	204	752			955	204	752	
Panel F: Market-to-book ratio									
High	-0.003	0.010*	-0.005*	-0.020		-0.008*	0.001	-0.011**	-0.011
	1,097	238	860			1,097	238	860	
Low	-0.014***	-0.019***	-0.014***	0.005***		0.013***	-0.015***	-0.013***	0.002***
	1,086	233	852			1,086	233	852	

This table presents the results of the univariate tests produced by change model II. The pre-crisis period covers the sample years between 1993 -2007. AROA is the difference between the median pre- and post- takeover values (top number). The second number is the number of observations. The difference column represents the outperformance of private target acquirers against public target acquirers (private – public). A transaction is classified as focusing if target and acquirer hold the same SIC-code. Cash reserves are defined as Cash & Short Term Investment over Total Assets. Leverage is defined as Long Term Debt over Total Assets. The acquirers market-to-book ratio is computed by dividing Total Book Value by market capitalization 4 weeks prior to the acquisition announcement. Cash reserves and leverage are split into three categories; the first contains variable values between $0 - 25\%$ of the distribution; second between $25 - 75\%$, and the third includes variable values that exceed the 75% border of the distribution. MTB is classified as high if the value is greater than the respective MTB median. Number of observations are reported in parentheses. Statistical significance between the medians of the differences in pre- and post- takeover measures is determined using a non-parametric paired sample Wilcoxon signed rank test. Significance levels: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

Table 6.13: Change Model II | Robustness: Post-crisis evaluation

Change Model II - Post crisis	Industry adjusted ROA					Peer adjusted ROA			
	Full Sample	Public	Private	Difference		Full Sample	Public	Private	Difference
Panel A: Payment method									
Cash	-0.009**	-0.018*	-0.009*	0.009*		-0.01**	-0.006	-0.011**	-0.005
	334	51	283			334	51	283	
Stock	0.059	0.017	0.569	0.551		0.010	-0.020	0.302	0.322
	18	12	6			18	12	6	
Mixed	-0.009	-0.003	-0.009	-0.006		-0.015***	-0.062***	-0.012**	0.050*
	328	36	292			328	36	292	
Panel B: Relative deal size									
Large	-0.013**	-0.013	-0.013**	0.000		-0.012**	-0.024***	-0.010	0.013
	323	64	259			323	64	259	
Small	-0.002	0.001	-0.003	-0.004		-0.011***	-0.010	-0.011***	-0.001
	357	35	322			357	35	322	
Panel C: Industry commonality									
Diversifying	-0.003	-0.007	-0.001	0.006		-0.015***	-0.026**	-0.011	0.015
	279	51	228			279	51	228	
Focusing	-0.012***	-0.013	-0.012**	0.001		-0.011**	-0.012**	-0.011**	0.001*
	401	48	353			401	48	353	
Panel D: Cash reserves (slack)									
< 1st quartile	-0.007	-0.028	-0.006	0.022		-0.006**	-0.012	-0.006	0.006
	259	20	230			259	20	230	
Median	-0.014**	0.019	-0.015**	-0.034		-0.029***	-0.007	-0.030***	-0.023
	145	42	112			145	42	112	
>3rd quartile	-0.009	-0.032**	-0.008	0.023		-0.011	-0.058**	-0.008	0.051
	276	37	239			276	37	239	
Panel E: Leverage									
< 1st quartile	-0.024*	-0.033	-0.023*	0.011*		-0.052***	-0.015	-0.052**	-0.036*
	154	32***	134			154	32***	134	
Median	-0.007	0.003	-0.007	-0.010		-0.012**	0.010	-0.012**	-0.003
	249	29	208			249	29	208	
>3rd quartile	-0.006	-0.008	-0.004	0.005		-0.008*	-0.022***	-0.002	0.020
	277	38	239			277	38	239	
Panel F: Market-to-book ratio									
High	-0.002	-0.006	-0.002	0.005		-0.008	0.010	-0.005	0.005
	341	49	292			341	49	292	
Low	-0.011***	-0.015	-0.012***	0.004		-0.017***	-0.032***	-0.018***	0.014***
	339	50	289			339	50	289	

This table presents the results of the univariate tests produced by change model II. The post-crisis period covers the sample years between 2008 -2013. AROA is the difference between the median pre- and post- takeover values (top number). The second number is the number of observations. The difference column represents the outperformance of private target acquirers against public target acquirers (private – public). A transaction is classified as focusing if target and acquirer hold the same SIC-code. Cash reserves are defined as Cash & Short Term Investment over Total Assets. Leverage is defined as Long Term Debt over Total Assets. The acquirers market-to-book ratio is computed by dividing Total Book Value by market capitalization 4 weeks prior to the acquisition announcement. Cash reserves and leverage are split into three categories; the first contains variable values between $0 – 25\%$ of the distribution; second between $25 – 75\%$, and the third includes variable values that exceed the 75% border of the distribution. MTB is classified as high if the value is greater than the respective MTB median. Number of observations are reported in parentheses. Statistical significance between the medians of the differences in pre- and post- takeover measures is determined using a non-parametric paired sample Wilcoxon signed rank test. Significance levels: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

7. Conclusions

Studying the impact of the target's organisational form on post-acquisition operating performance, the objective of this study has essentially been four-fold. First, by employing both a statistical change- and intercept model I try to assess whether the target's organisational form is a driver of M&A operating performance. Second, by breaking down ROA into its constituent components, I seek to pinpoint the underlying financial statement line items that serve as source of value creation. Third, to identify any relationships between bid- and firm charateristics and the operating performance metrics. Fourth, by augmenting the work of Rahman & Limmack (2004) and Shams & Gunasekarage (2016), this paper endeavors to provide a benchmark for stock performance studies that investigate targets' organizational form.

The empirical results show insufficient evidence to fully support the notion of private target acquirers outperforming their public counterpart in terms of the primary operating performance measure ROA. Following a decomposition of ROA and in support of Hypothesis 1, the statistical models do show that private target acquirers achieve a significant post-merger performance increase in terms of sales growth and asset turnover compared to public target acquirers. These results provide a further specification of the findings by Healy et al. (1992) and suggest that private target acquirers are better capable of managing their productive asset utilization and more likely to realize revenue based synergies from the acquisition.

A unified assessment on the impact of bid- and firm characteristics on the operating performance of both type of acquirers yields captivating insights. Most notably, the statistical analyses indicate that relative size has differential effects on the performance of the two types of bidders. There lies substantial potential for public target acquirers to engage in relatively small M&A transactions and for private target acquirers to make relatively large acquisitions to achieve significant post-merger operating performance improvements. Further, I find evidence that private target acquirers are able to improve their target selection and integration processing capabilities along the deal sequence, consistent with the theory of organizational learning (Haleblian & Finkelstein, 1999). None of the characteristics related to payment method, deal hostility and industry relatedness had a significant impact on operating performance. Contrary to the corporate monitoring hypothesis by Chang (1998) but in support of Hypothesis (B01), my results show that the creation of a blockholder following stock-financed public target acquisitions leads to significant operating performance deterioration. These results tie in with the findings of Thomsen et al. (2006) and suggest that the decline may be the result of a conflict of interests between blockholders and minority investors. Results on both type of acquirers' pre-takeover leverage ratios provide strong evidence to suggest that leverage appears to drive the firm's asset utilization. These results seamlessly fit with the monitoring role of debt proposition as discussed in Jensen's (1986) free cash flow theory. Higher debt levels discpline

management of both public- and private target acquirers and forces the firm to increase its asset utilization. I further document that the pre-takeover operating performance of both types serves as very strong predictor of post-merger operating performance, consistent with most of the prior literature on operating performance (e.g. Andrade et al., 2001 and Martynova et al., 2006).

Lastly, this paper can be classified as a study on operating performance within the 'fourth movement' and makes several contributions to the existing body of academic literature.[22] By applying a DuPont like performance analysis, I provide novel perspective on operating performance measures particularly by finding that private target acquirers possess superior asset utilization and revenue realization capabilities over public target acquirers. Further, by extending the methodological work of Shams & Gunasekarage (2016) this research circumvents the problematic pre-takeover aggregated metric approach for private target acquisitions and thereby opens the door to a widely underexplored area of academic research. Table 7.1 below presents a summary of the research hypotheses outcomes, which can be benchmarked against prior studies on listing status and operating performance (eg., Healy et al., 1992; Ghosh, 2001; Andrade, 2001; Fuller et al., 2002; Faccio et al., 2006; Capron & Shen, 2007; Draper & Paudyal, 2006; Martynova et al., 2006).

Table 7.1: Summary of research hypotheses outcomes

Hypotheses	Expected		Findings		Result
	Public	Private	Public	Private	
H1	$\neq$	$\neq$	$\neq$	$\neq$	*Accept*
A01	+	++	n/s	+	*Partly reject*
A02	$\neq$	$\neq$	n/s	n/s	*Reject*
A03	--	-	n/s	n/s	*Reject*
A04	+	-	n/s	n/s	*Reject*
A05	-	+	n/s	n/s	*Reject*
B01	-	+	-	n/s	*Partly reject*
B02a	+/-	>	n/s	+*	*Reject*
B02b	n/a	>	n/a	n/s	*Reject*
B03	-	+	-	+	*Accept*

The 'expected' columns indicate the predictive signs based on the formulated hypotheses, 'findings' refer to the actual empirical results. $\neq$ indicates unequal gains (losses), + (-) refer to a positive (negative) coefficient, > indicates an outperformance, n/a is not applicable, n/s indicates that the empirical results were not statistically significant and * refers to the pre-crisis period.

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[22] Fourth movement as referred to on page 15 and 16 in Section 2.2.2.

8. Limitations

Before entering into this study's recommendations for future research, I provide the reader with an acknowledgement of the limitations of my research. While the methodology of this paper has been carefully constructed and is bolstered by different robustness tests, I still identify a set of three noteworthy limitations.

(i) First and foremost, I highlight an impeding element that is at the heart of studies on private firms – accounting data availability. By definition, these firms show a very limited disclosure of their financials which complicates the methodology construction on performance measures. Especially for studies on operating performance, constructing a pro forma pre-takeover performance measure turns out most devious. I considered the approach of consulting the Orbis database on US private firms to extract the required data. Regrettably, this query only produced limited accounting data on 41 private companies over a 21 year time window. Proceeding with such sample would yield non-meaningful, uninterpretable and insignificant results. Therefore, this paper employs a more recent developed methodology published in a top-tier academic journal by adjusting the post-merger performance measure to evaluate the performance of the acquirer only (as in Shams & Gunasekarage, 2016).[23] Still, I place some critical notes by the performance measure adjustment made in this research. Using MVA / (MVA + DV) as a deflator essentially puts downwards pressure on the abnormal performance outcomes regardless of potential efficiency improvements resulting in above average negative M&A performance outcomes. Following this recognition, one must also acknowledge that by consistently applying the deflator across public targets, private targets, and selected peer companies an examination of the impact of the legal form on operating performance still remains profound.

(ii) Even though the regression equation in the intercept model includes the most influential explanatory variables from earlier studies, it still remains susceptible to the omitted variable bias. The employed control variables might not fully capture the cross-sectional variation in the dependent variable which may cause the model outcomes to represent a higher statistical significance than if these omissions were controlled for.

(iii) At first glance, using a scaled metric of EBITA over BVOA as performance measure seems like an appropriate like-for-like measure in terms of applying the right numerator and denominator. However, when we zoom in to the underlying assumptions from a corporate valuation point of view it becomes clear that the metric does not explicitly account for the cost of capital against which EBITA should be discounted. As a result, the implicit assumption is made that the acquirer's cost of capital basically remains the same following a takeover, or that at least the cost of capital is changed in the

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[23] The Journal of Contemporary Accounting & Economics is included in the Erasmus ERIM Journals List (EJL) and holds a STAR EJL classification which is considered "to contain the absolute top ones and among the best journals in the field" (Erasmus ERIM website).

same proportion for all acquisitions. While this assumption may fortuitously hold for certain acquisitions, it incorrectly simplifies and surrogates the full spectrum of corporate transactions.

9. Recommendations for future research

This paper identifies a set of three recommendations for scholars interested in further examining the impact of mergers and acquisitions, specifically public- and private target takeovers in the context of operating performance.

(i) To achieve an even more complete view on the operating performance drivers, future academics should extend my DuPont-like analysis by collecting accounting data on deeper financial statement line items. For instance, the CFM metric might be decomposed into a Gross Profit Margin and SG&A Margin metric. In similar fashion, the denominator of the AT metric might be subdivided into a Tangibles, Intangibles and Working Capital components. Although constructing such a dataset seems intricate, there lies great potential in penetrating a dreadfully underexplored line of research to provide both practitioners and professionals with valuable input in the M&A decision making process.

(ii) The main results of this research should encourage scholars - interested in further examining M&A performance - to carefully consider both the benchmark and variable inputs when constructing their statistical regression environment. The primary findings of this paper suggest that relative deal size, historical company performance, acquisition experience and blockholdership creation all have a material impact on the operating performance of public- and private target acquirers. Future academics should therefore control for these variables in their statistical regression equation in order to prevent any omitted variables bias. Further, to circumvent the potential impact of company-specific elements and broader market events I advocate for using the peer adjusted performance benchmark to arrive at the most 'clean' measure of takeover performance.

 (iii) Touching upon the final point of recommendation, I recognise that the employed measures of operating performance do not account for any opportunity costs that might be associated to the decision of acquiring a public- or private target. Studies like Capron & Shen (2007) for example were able to construct a research design that captures the acquirer's performance as if it had acquired a target of the opposite organisational form. Properly adopting such methodology could yield additional insights into the association between synergistic gains and the merging firm's attributes.

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Appendix

Table A1: Shapiro Francia | Test for normality

Shapiro Francia Test											
Public target acquirers						**Private target acquirers**					
Variable	*N*	**W'**	**V'**	**z**	**Prob>z**	**Variable**	*N*	**W'**	**V'**	**z**	**Prob>z**
U_ROA	570	0.638	146.54	11.03	0.000	U_ROA	2,293	0.524	678.04	15.74	0.000
U_AT	570	0.825	71.10	9.43	0.000	U_AT	2,293	0.826	247.76	13.31	0.000
U_SG	554	0.049	376.04	13.09	0.000	U_SG	2,185	0.062	1277.70	17.22	0.000
U_CFM	570	0.116	358.41	13.01	0.000	U_CFM	2,291	0.014	1401.45	17.49	0.000
I_ROA	570	0.659	138.13	10.90	0.000	I_ROA	2,293	0.556	631.86	15.57	0.000
I_AT	570	0.869	52.94	8.78	0.000	I_AT	2,293	0.842	225.52	13.08	0.000
I_SG	554	0.053	374.12	13.08	0.000	I_SG	2,185	0.067	1270.98	17.21	0.000
I_CFM	570	0.121	356.45	13.00	0.000	I_CFM	2,291	0.014	1401.45	17.49	0.000
P_ROA	570	0.526	192.24	11.63	0.000	P_ROA	2,293	0.475	747.19	15.98	0.000
P_AT	570	0.659	138.19	10.90	0.000	P_AT	2,293	0.879	171.48	12.42	0.000
P_SG	546	0.078	359.85	12.99	0.000	P_SG	2,159	0.046	1285.43	17.22	0.000
P_CFM	569	0.022	395.81	13.23	0.000	P_CFM	2,278	0.022	1383.62	17.46	0.000

This table presents the results of the Shapiro Francia test for the four main variables on operating performance, grouped by private target acquirers and public target acquirers. U_, I_, and P_ prefixes refer to the unadjusted, industry adjusted and peer adjusted benchmarks respectively. N represents the number of observations, W' is the Shapiro Francia test statistic, V' serves as an index for departure from normality, z represents the z statistic and significance is displayed through Prob>z.

Table A2: Shapiro Francia | Test for normality after winsorising

Shapiro Francia Test											
Public target acquirers						**Private target acquirers**					
Variable	*N*	**W'**	**V'**	**z**	**Prob>z**	**Variable**	*N*	**W'**	**V'**	**z**	**Prob>z**
U_ROA_w	570	0.947	21.30	6.77	0.000	U_ROA_w	2,293	0.946	77.03	10.49	0.000
U_AT_w	570	0.950	20.13	6.64	0.000	U_AT_w	2,293	0.967	47.59	9.33	0.000
U_SG_w	554	0.917	32.83	7.71	0.000	U_SG_w	2,185	0.913	118.63	11.50	0.000
U_CFM_w	570	0.858	57.56	8.97	0.000	U_CFM_w	2,291	0.861	197.82	12.77	0.000
I_ROA_w	570	0.952	19.27	6.55	0.000	I_ROA_w	2,293	0.952	67.74	10.18	0.000
I_AT_w	570	0.976	9.71	5.03	0.000	I_AT_w	2,293	0.976	33.59	8.49	0.000
I_SG_w	554	0.957	16.95	6.25	0.000	I_SG_w	2,185	0.963	51.04	9.47	0.000
I_CFM_w	570	0.841	64.48	9.22	0.000	I_CFM_w	2,291	0.859	200.64	12.80	0.000
P_ROA_w	570	0.942	23.44	6.98	0.000	P_ROA_w	2,293	0.951	70.32	10.27	0.000
P_AT_w	570	0.984	6.61	4.18	0.000	P_AT_w	2,293	0.987	18.18	7.00	0.000
P_SG_w	546	0.901	38.64	8.06	0.000	P_SG_w	2,159	0.941	79.84	10.54	0.000
P_CFM_w	569	0.871	52.29	8.75	0.000	P_CFM_w	2,278	0.897	146.22	12.03	0.000

This table presents the results of the Shapiro Francia test for the four main variables on operating performance, grouped by private target acquirers and public target acquirers. U_, I_, and P_ prefixes refer to the unadjusted, industry adjusted and peer adjusted benchmarks respectively. _w indicates a winsorising adjustment to the variable at 5% of both distribution tails. N represents the number of observations, W' is the Shapiro Francia test statistic, V' serves as an index for departure from normality, z represents the z statistic and significance is displayed through Prob>z.

Table A3: Diagnostic tests

Time-specific fixed effects	Unadjusted	Industry adjusted	Peer adjusted
H₀: time dummies are jointly equal to zero			
$F (20, 2119)$	2.38	1.77	0.90
$Prob > F$	0.001	0.019	0.592
Heteroskedasticity			
$H_0: \sigma_i^2 = \sigma^2$ for all i			
$X^2 (1363)$	3.0E + 36	8.3E + 36	3.3E + 37
$Prob > X^2$	0.000	0.000	0.000
Autocorrelation			
H₀: No first-order autocorrelation			
$F(1, 33)$	35.759	3.932	0.047
$Prob > F$	0.000	0.056	0.829

Multicollinearity						
	Unadjusted		Industry adjusted		Peer adjusted	
Variables	VIF	1 / VIF	VIF	1 / VIF	VIF	1 / VIF
Pre-merger performance	1.1	0.912	1.03	0.967	1.03	0.967
Private target	1.27	0.790	1.27	0.788	1.27	0.789
Experience	1.02	0.981	1.02	0.982	1.02	0.980
Relatedness	1.02	0.981	1.02	0.983	1.02	0.982
MTB	1.01	0.992	1.01	0.993	1.01	0.985
Leverage	1.13	0.882	1.13	0.884	1.13	0.885
Slack	1.19	0.840	1.14	0.879	1.14	0.879
Blockholder creation	2.27	0.440	2.28	0.439	2.27	0.441
Cash	5.47	0.183	5.46	0.183	5.47	0.183
Mix	5.86	0.171	5.86	0.171	5.88	0.170
Hostility	1.02	0.980	1.02	0.980	1.03	0.973
Relative size	1.03	0.966	1.03	0.968	1.03	0.971
Mean VIF	**1.949**		**1.939**		**1.942**	

The first section of the table presents the outcome of a Wald test for time-specific fixed effects in the main regression models. For both the unadjusted an industry adjusted performance measure, the null hypothesis is rejected ($p < 0.05$) indicating that time-specific fixed effects should be controlled for in the regression equation. The next section shows the outcome of a modified Wald test for group wise heteroscedasticity in the fixed effect regression model. Consistent levels of Chi-Squared < 0.05 indicate that the null hypothesis is rejected for all three benchmark adjusted performance measures and heteroscedasticity should be controlled for. The third section provides the results following a Woolridge test for autocorrelation in panel data and signals the presence of autocorrelation in the unadjusted performance measure equation. The final section shows the results of the Variance Inflation Factor test for multicollinearity. Cash and Mix dummy variables signal moderate multicollinearity while at the aggregate level, the regression model does not face any multicollinearity concerns (with VIF values < 2.0 across all benchmark adjusted performance measures).

Table A4: Descriptive statistic | Dependent variables after winsorising

Descriptive Statistics of dependent variables after winsorising

Public target acquirers						Private target acquirers					
Variable	*N*	μ	σ	Skew.	Kurt.	Variable	*N*	μ	σ	Skew.	Kurt.
U_ROA_w	570	-0.016	0.12	-0.11	4.0	U_ROA_w	2,293	-0.025	0.12	-0.38	3.8
U_AT_w	570	-0.160	0.30	-0.67	3.2	U_AT_w	2,293	-0.126	0.32	-0.59	3.0
U_SG_w	554	-0.090	0.30	-1.09	4.4	U_SG_w	2,185	-0.087	0.33	-1.08	4.1
U_CFM_w	570	-0.008	0.12	1.19	5.7	U_CFM_w	2,291	-0.004	0.12	1.06	5.5
I_ROA_w	570	-0.003	0.14	-0.14	3.7	I_ROA_w	2,293	-0.020	0.13	-0.23	3.8
I_AT_w	570	-0.104	0.31	-0.46	3.1	I_AT_w	2,293	-0.083	0.33	-0.45	3.0
I_SG_w	554	-0.042	0.36	-0.72	3.7	I_SG_w	2,185	-0.046	0.39	-0.67	3.3
I_CFM_w	570	-0.002	0.14	1.35	5.8	I_CFM_w	2,291	0.001	0.13	1.20	5.6
P_ROA_w	570	-0.008	0.16	-0.09	4.1	P_ROA_w	2,293	-0.019	0.17	-0.11	3.7
P_AT_w	570	-0.146	0.47	-0.28	3.2	P_AT_w	2,293	-0.152	0.52	-0.18	2.8
P_SG_w	546	-0.027	1.44	-0.36	4.8	P_SG_w	2,159	-0.016	1.63	-0.34	3.8
P_CFM_w	569	0.004	0.16	0.98	5.2	P_CFM_w	2,278	-0.001	0.17	0.81	4.7

This table provides a summary on the four key variables on operating performance for public and private target acquirers. The variables are segmented into their respective benchmark adjusted groups. U_, I_, and P_ prefixes refer to the unadjusted, industry adjusted and peer adjusted benchmarks respectively. _w indicates a winsorising adjustment to the variable at 5% of both distribution tails. N refers to the number of observations, μ is the mean, σ standard deviation followed by measures for skewness and kurtosis respectively.

Table A5: Peer group construction | Employed Python script

```
import pandas as pd import numpy as np#Dataset Algoritmacquirer = pd.read_excel('acquirer.xlsx', 0)peer_group =
pd.read_excel('peer_group.xlsx',    0)acquirer['CUSIP']    =    acquirer['CUSIP'].astype(str)peer_group['CUSIP']    =
peer_group['CUSIP'].astype(str)result = []##TEST Loop##def partner(index): tst = acquirer.iloc[index]    industry =
peer_group[peer_group.SICYR == tst.SICYR] #Selects peers in same industry    similar1 = industry[tst.TW <
industry.BVOA] #Selects peers from industry with 20<BVOA similar2 = similar1[tst.FIVE > similar1.BVOA] #Selects
peers from similar1 with BVOA<500 nonsimilar = similar2[~similar2.CUSIP.isin([tst.CUSIP])] #Selects peers from
similar2 that are not same as acquirer nonsimilar2 = nonsimilar.copy() nonsimilar2['DROA'] = (tst.ROA -
nonsimilar.ROA)**2  Adds additional column with delta ROA squared      minimum = nonsimilar2['DROA'].min()
#Gets peer with minimum dROA final = nonsimilar2[nonsimilar2.DROA == minimum] #Selects found
peer#print(final.iloc[0,0])#print(tst) if len(final) == 0: result.append([tst.NAME, tst.CUSIP, "NO PEER", "NO PEER"])
else:result.append([tst.NAME, tst.CUSIP, final.iloc[0,0], final.iloc[0,1]]) i = 0 while i < len(acquirer): partner(i) i +=
1result_dataframe    =    pd.DataFrame(np.array(result),    columns=['Acquirer','CUSIP    cq.','Peer','CUSIP
Peer'])#print(result_dataframe) result_dataframe.to_excel('resultyear.xlsx')
```

Table A5 provides details on the self-developed Python script for appropriate peer group construction. The code executes the following criteria in chronological order: (1) CUSIP identification code of acquirer and peer cannot be identical, (2) SIC-code for industry classification must be identical, (3) The potential peer company's Book Value of Operating Assets (BVOA) must lie in the 20% < BVOA < 500% range of the acquirer's BVOA. (4) Select peer company that shows the closest match with respect to median pre-takeover ROA.