DOES PERFORMANCE IMPROVE FOLLOWING TAKEOVERS: THE USE OF ACTUAL CASH FLOWS

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ABSTRACT

Although there have been many studies into the post-merger performance of takeovers, there remains a fundamental disagreement surrounding the question of whether performance actually improves. This study addresses a significant limitation of this prior research highlighted in Hribar and Collins (2002) and uses actual rather than implied cash flows to assess post-merger performance in Australia. Performance is also examined using accrual based ratios and sharemarket returns. Utilising the approach of Healy, Palepu and Ruback (1992) and subsequent research, we find that merged firms exhibit no improvement in performance in the three years after the offer. More detailed investigation, however, reveals that acquiring firms that offer cash achieve improvements in performance in the one and two years post-acquisition. In addition, once we control for method of payment, the results show that acquiring firm post-merger performance is at best constant or slightly negative. Industry overlap and takeover hostility are found to have no impact on the performance of the merged firm subsequent to the takeover.

KEY WORDS: Takeover, mergers, post-merger performance

1. Introduction

Despite being described as "one of the most researched areas in finance" (Agrawal, Jaffe and Mandelker, 1992), there are still fundamental questions regarding takeovers which are yet to be unequivocally answered. One of these questions is the effect that a takeover has on the long-run performance of newly merged firms. Due to the variety of performance measures and research methodologies employed in prior studies, it remains unclear whether takeovers make a positive contribution to firm performance.

The volume of literature in this area is indicative of the importance of understanding the effects and desirability of takeovers. Firstly, takeovers are a significant economic event with the acquiring firm often investing a significant portion of its resources in taking over the target company. Over and under payments will adversely affect acquiring and target shareholders respectively. Acquiring firms are generally large (Agrawal et al., 1992), making their performance a matter of greater public concern, as more stakeholders are likely to be affected by them.

Properly understanding the post-merger performance of takeovers also contributes to our understanding of the information efficiency of capital markets. Significant abnormal share returns for target firms around the bid period are well-attested in the literature (e.g., Jarrell, Brickley and Netter, 1988), with insignificant returns usually found for bidder firms (e.g., Jarrell et al., 1988; Bugeja and Walter, 1995). Understanding the long-run effects of a takeover will allow an evaluation of the nature of the returns experienced around the bid period and whether capital markets efficiently incorporate information about the merger into share price.

Evidence of the source of post-merger gains and the conditions under which improvements are more likely to occur, or be more pronounced will also be useful for stakeholders. This information will be of value to target management as they evaluate whether to recommend acceptance of an offer. Similarly, this knowledge will benefit

bidder management as they decide which firm to bid for and how to finance that bid. It is also useful for shareholders in deciding whether to accept or reject an offer.

The major contribution of this study is that it is the first to assess post-merger performance using a direct measure of operating cash flows, taken from the reported statement of cash flows. Although prior research has recognised that post-merger performance is best assessed through the use of cash flow measures,[1] the cash-flow measures used have been calculated indirectly. For example, Healy, Palepu and Ruback (1992) (i.e., HPR) approximate cash flow as: sales, less cost of goods sold and selling and administration expenses, plus depreciation and goodwill expenses. Similarly, the only prior Australian study on post-merger operating performance (Sharma and Ho, 2002), proxies cash flows by adjusting profit for non-cash items and the change in non-cash working capital accounts. Hribar and Collins (2002), show that this indirect approach to measuring the accrual component of revenues and expenses leads to measurement error after major non-operating events including mergers. They find that mergers result in an upward bias in balance sheet accruals of approximately 1.5% of lagged total assets. The implication of this result is that measures of post-merger cash flow performance approximated by adjusting for the movement in working capital accounts will be biased downwards. By using actual cash flow data, this study avoids this measurement problem and, as such, is the first 'genuine' test of whether cash flow performance actually improves after takeovers. As a means of assessing the sensitivity of prior results to the method of measuring cash flows, cash flows are also estimated using the indirect techniques used in prior literature.

In addition to measuring performance using cash-flow measures this study contributes to the literature by considering alternative definitions of performance. Post-merger performance is also measured using both accrual accounting ratios (i.e., ROA, ROE and profit margin) and long-run abnormal sharemarket returns. The investigation using multiple performance measures allows us to make a more definitive conclusion on the

[1] Unlike accrual accounting measures, cash flow measures of performance are unaffected by the choice of accounting methods for takeover related matters, particularly goodwill post-takeover.

impact of takeovers on performance. Additionally, this study examines whether our measures of post-merger performance are associated with the method of payment used in the takeover, takeover hostility and industry overlap.

This study also contributes to our knowledge as it provides a more comprehensive analysis of post-takeover performance in Australia than Sharma and Ho (2002). This paper uses a larger sample of acquisitions and makes use of both regression analysis and a comparison of pre and post-merger performance levels to assess whether there is any change in acquiring firm performance.

The Australian regulatory environment provides a number of advantages in which to study the post-merger performance of takeovers. During the period of this study, the United States of America (US) permitted a choice between purchase and pooling of interest accounting for a merger.[2] In contrast, Australian accounting standards only allowed the use of the purchase method, which allows for a comparison of accounting results between firms. Additionally, the Australian capital gains tax regime in place over the sample period means that there is no tax advantage to be gained from the choice of financing by means of stock or cash, making differences in performance between acquisitions funded by those two means easier to interpret.[3]

We find that post-merger performance improvements are restricted to those firms that use cash as payment in the takeover. Once we control for the method of payment our findings indicate that acquiring firms either achieve no improvement in performance when performance is measured using real cash flows or experience a slight decline in performance when accrual accounting or implied cash flows are used to assess performance. This difference in result highlights the importance of using actual cash flows when assessing post-merger performance. We find no evidence that takeover

[2] This situation has since changed with the introduction of FASB Opinion Number 142 "Goodwill and Other Intangible Assets" from December, 2001.

[3] The sample period includes takeovers from 1995 until 1999 and, hence, precedes the changes to the capital gains tax regime in December 1999, which allowed the roll-over of gains from share payments until the disposal of those shares.

hostility or industry relatedness between the target and bidder influence performance in the three years after the merger.

The remainder of this paper is organised as follows. Section 2 reviews prior studies that examine post-merger performance, whilst section 3 develops relevant hypotheses. In section 4, the research method used in this study is discussed, followed by a description of the data collection process. Results and conclusions are presented in section 6 and 7 respectively.

2. Prior research

2.1 Accounting Performance Studies

HPR examine the abnormal post-merger cash flow performance of acquiring firms, using a sample of the 50 largest mergers in the United States (US) between 1979 and mid-1984.[4] They find significant post-merger operating cash flow improvements for the combined firms after controlling for industry and prior performance.[5] HPR find that the source of these gains is the more efficient use of assets and a decline in long term research and development spending. Using a similar methodology: Switzer (1996), Linn and Switzer (2001) and Ramaswamy and Waegelein (2003) present consistent results. Ramaswamy and Waegelein (2003) find, however, that performance improvements are sensitive to the period of the takeover. Although there is evidence of post-merger performance improvements in mergers announced between 1975 and 1982, there is no evidence of a change in performance after this date.

Sharma and Ho (2002) provide the only published Australian study on post-merger operating performance. They compare acquiring firm accounting and cash flow performance to an industry and size matched control and find no significant improvement in post-merger operating performance.

[4] Cash flow was measured indirectly and scaled by the market value of assets.
[5] Abnormal post-merger performance is defined relative to the industry median cash flow return.

Following the recommendations of Barber and Lyon (1996), Ghosh (2001) measures abnormal operating performance relative to a control firm matched on sample firm size and pre-merger performance. A comparison of pre- and post-merger adjusted performance finds no evidence that operating performance improves following a takeover. In contrast, Manson, Powell, Stark and Thomas (2000) and Powell and Stark (2004) find improvements in operating and non-operating cash flow performance following a merger. Their results are, however, sensitive to research design, particularly the method used to measure abnormal performance (i.e., industry adjusted or matched control firm) and the technique used to assess whether post-merger operating performance improves (i.e., regression analysis or a calculation of the change between pre- and post-merger performance). Using a similar matching technique, Fee and Thomas (2004) study whether performance improves in a sample of US horizontal mergers from 1981 to 1997. They find a significant improvement in performance only for those firms in the more concentrated industries. The improvement in performance is, however, temporary as it is restricted to the first year after the takeover.

Overall, prior research results are inconsistent and do not conclusively indicate whether operating performance improves post-takeover. A limitation with all the prior research is the use of various techniques to approximate cash flows. The results of Hribar and Collins (2002) raise significant doubts as to whether these estimation techniques provide unbiased cash flow estimates. Thus, the prior research results need to be viewed in the light of this problem. By using actual cash flows, this study is the first to present results that are free of this estimation problem and will help resolve whether actual cash flow performance improves post-takeover.

2.2 Sharemarket Studies

Studies on the short-run sharemarket performance of target and bidding companies consistently find significant gains to target shareholders, and smaller or insignificant gains to bidding company shareholders around the takeover announcement (e.g., Jensen and Ruback, 1983; Jarrell, Brickley and Netter, 1988; for Australian evidence see Walter,

1984; Bishop, Dodd and Officer, 1987). In contrast, the literature on long-run sharemarket performance is inconsistent. The studies by Agrawal, Jaffe and Mandelker (1992), Gregory (1997) and Brown, Finn and Hope (2000) find that long-run sharemarket performance is negative post-merger. However, Brown and da Silva Rosa (1998), using Australian data demonstrate that these results are sensitive to research design. They suggest that the choice between cumulative abnormal returns (CAR) and buy-and-hold returns (BHAR) is important in controlling for biases in measuring long-run performance. They also highlight the importance of matching the control group on firm size and survival. Using a control group matched on firm size and survival, they find that acquiring firms achieve average BHARs in the 30 months commencing six months after the takeover announcement. However, when returns are measured on a monthly rebalanced basis the acquiring firms significantly underperform the controls.

3. Hypothesis Development

3.1 Merger Hypothesis

There are a number of reasons for expecting that the performance of merged firms will improve subsequent to a takeover. First, there is an expectation that firms make acquisitions in order to make a gain. Assuming that managers are acting in the best interests of their firm, they ought to purchase firms with an expectation of improving or at least maintaining constant, operating performance after the acquisition.[6] If managers' decisions are rational and made on the basis of reasonable information, then one would expect that, on average, the operating performance of merged firms will remain constant or improve. There is also an expectation that the merged firms will achieve synergies enabling the reduction of costs. Examples of such synergies include: the sharing of facilities and overheads between companies, the opportunity to participate in different geographic areas, and the sharing of knowledge and expertise, or the ability to raise finance at a lower cost (Sharma and Ho, 2002).[7]

[6] In the model developed by Roll (1986), some acquiring firm managers may overpay for the target due to hubris. Evidence of deteriorating operating performance post-merger would be consistent with this model.
[7] See Jensen and Ruback (1983) for further examples of potential synergies. Krishnan and Park (2002) find that the synergy of a reduction in workforce can have a negative impact on ROE.

Given the well-attested positive abnormal share returns over the bid period for target firms, one would expect an improvement in the performance of merged firms subsequent to a merger. If performance is found not to improve, or deteriorates, it may indicate an inefficient market. Hence, Hypothesis 1 (H1) is derived:

H1: *The long-run operating performance of merged firms will improve following a takeover.*

3.2 Financing Hypothesis

Based on prior research, it is expected that the post-merger performance of takeovers will differ according to the method of financing the acquisition.[8] Empirical evidence indicates that cash offers are associated both with stronger post-merger share return performance (e.g., da Silva Rosa, Izan, Steinbeck and Walter, 2000) and stronger accounting performance (e.g., Linn and Switzer, 2001) than a stock offer. Sharma and Ho (2002), however, find no difference in operating performance across consideration type. Theory suggests the performance difference is a result of managers offering their firm's shares as payment when they believe them to be overvalued (e.g., Myers and Majluf, 1984). If the acquiring firm's shares are overvalued, then one may expect a correction of this overvaluation over the long run. Additionally, the overvaluation may have been the result of unusually high and temporary pre-merger performance, which may level out following the merger. Additionally, evidence of earnings management prior to stock based takeover offers (e.g., Erickson and Wang, 1999; Heron and Lie, 2002; Louis, 2004), suggests that there ought to be a reversal of any upward revision of discretionary accruals in post-merger periods, affecting any accrual measures of accounting performance. For these reasons, Hypothesis 2 (H2) is proposed:

[8] However, Ramaswamy and Waegelein (2003) suggest that the direction of this relationship may be less clear due to the potential for additional debt financing costs for cash transactions.

H2: *The long-run improvement in operating performance of merged firms will be greater following takeovers where the method of payment is cash.*

3.3 Industry Overlap Hypothesis

Prior evidence indicates that merger firms experience greater improvement in performance if there is a higher degree of industry overlap between the two firms (e.g., Ghosh, 2001; Linn and Switzer, 2001; Megginson, Morgan and Nail, 2004). Australian findings, (Sharma and Ho, 2002) however, do not show any difference in performance between conglomerate and non-conglomerate mergers. Intuitively, the possibility of synergies is greater when firms operate in similar industries.[9] Additionally, a high degree of industry overlap indicates that the acquiring firm has a greater degree of familiarity with the target industry. This familiarity ought to reduce the likelihood of overpayment (e.g., Roll, 1986), contributing to an expectation that greater industry overlap will result in superior post-merger operating performance (Jensen, 1986). This leads to Hypothesis 3 (H3):

H3: *The long-run improvement in operating performance of merged firms will be greater following takeovers where there is a greater degree of industry overlap between the firms.*

3.4 Friendly Merger Hypothesis

Another factor which is expected to influence post-merger changes in performance is whether the acquisition is hostile or friendly. The evidence in this area however, is not clear cut (e.g., HPR; Ramaswamy and Waegelein, 2003). Ramaswamy and Waegelein (2003) suggest that one would expect stronger performance for a friendly transaction since there are no "bad feelings" which need to be dealt with subsequent to a merger taking place, and due to a friendly transaction signalling a willingness to work together.

[9] Ramaswamy and Waegelein (2003) counteract this by suggesting that downsizing and cuts may have an adverse effect on employee morale, possibly impacting performance detrimentally.

Also, in a hostile transaction a change in management is more likely (e.g., Harford 2003), which may lead to a decline in performance as the new management take time to familiarise themselves with the company. This leads to Hypothesis 4 (H4):

H4: *The long-run improvement in operating performance of merged firms will be greater in friendly takeovers.*

In contrast to the prediction of H4, it is possible that new management may improve performance if they are replacing inefficient incumbent target management or lead to the introduction of new ideas and management style (Jensen and Ruback, 1983). The results of Agrawal and Jaffe (2003), however, cast doubt on whether target management are performing poorly in the period prior to the offer. Another caveat to the hypothesis is the results in Clark and Ofek (1994). They find that takeovers of distressed targets are more likely to be involved in friendly acquisitions and have more negative post-merger performance than healthy targets. The failure to successfully restructure a failing firm may outweigh the additional synergies which may arise from increased cooperation.

4. Research Method

4.1 Accounting Performance Measures

Consistent with prior research, this study measures pre-merger performance by constructing proforma financial statements for the pre-merged firm. This involves adding the corresponding target and acquiring firm values for each financial statement item.[10] In contrast to the majority of previous studies which have concentrated primarily on a single measure of accounting performance (e.g., HPR; Switzer, 1996; Ghosh, 2001), this study utilises a variety of measures of operating performance.[11] The performance measures used to measure the pre- and post-merger performance of takeovers and their formulae,

[10] It is acknowledged that, due to a lack of disclosure, a notional consolidation is less than perfect as it fails to eliminate inter-company transactions.

[11] Even those studies with more than one measure of accounting performance (e.g., Manson et al., 2000; Powell and Stark, 2004) use variations of the same measure of performance. For instance, the measures which Powell and Stark (2004) use are pre-depreciation profit and pre-depreciation profit adjusted for changes in working capital.

are presented in Appendix 1. The first of these is the indirect cash flow measure adopted by HPR and a number of subsequent studies (HPR_{CF}).[12] Since this measure is essentially an estimate of earnings before interest, taxation, depreciation and amortization (EBITDA), EBITDA was used as a proxy for this measure.[13] The second measure is a 'pure' operating cash flow measure, adding back interest and tax paid to and subtracting interest received from operating cash flows (OCF), taken from the Statement of Cash Flows of sample and control firms. Unlike the HPR measure, this is a direct measure of the operating cash flow of a firm that is unaffected by any non-articulation of accruals after a merger event (Hribar and Collins, 2002).

The appropriate scalar for the two measures of cash-flow has been debated in the literature. HPR use a proxy for the market value of assets, a measure which is adjusted to remove the effect of the change in value around the announcement of the bid. The advantage of this measure is that it is unaffected by financing method and asset write-ups, and allows greater intertemporal and cross-sectional comparability. However, there is a potential circularity in using a market based measure to scale the cash-flows measures when the relation between stock returns and operating performance is the matter of interest.[14] Furthermore, as Powell and Stark (2004) note, the market value of a firm not only incorporates the current value of assets, but all the assets that a firm is expected to acquire. In contrast, book value of debt does not include the expected value of future debt. The HPR measure is, therefore, really the market value of current and expected future assets less the future value of liabilities, rendering it inaccurate unless expected future assets and debts are equal.[15] Ghosh (2001) utilises sales as an alternative deflator, and Powell and Stark (2004) suggest that book value of assets may also be used, adjusted

[12] This is not strictly speaking a cash flow measure since it does not take into account changes in working capital.
[13] It was necessary to use this proxy since cost of goods sold figures were not required to be reported under Australian accounting standards until the issue of AASB 1018, effective from the June 2001 financial year.
[14] As Ghosh (2001) notes, the market value of acquiring firms appears to decline post-merger (e.g., Agrawal et al., 1992). This suggests that the use of a market value of assets measure will cause improvements in a cash flow ratio even if cash flow itself does not improve since the denominator is shrinking.
[15] The Market Value of Equity = (Present Assets + Future Assets) – (Present Liabilities + Future Liabilities). If present liabilities are deleted from both sides of this equation, Estimation of Market Value of Assets = (Present Assets + Future Assets) – Future Liabilities.

for the presence of goodwill. For these reasons, two measures of HPR_{CF} and OCF are reported: one scaled by the average of opening and closing assets for the period and another scaled by sales revenue.

Accounting performance is also measured using the following non-cash ratios: return on assets (ROA), return on equity (ROE) and profit margin (PM). Extraordinary items are excluded in order to give a better measure of ROA and ROE on a permanent basis.[16] These three measures of accrual accounting performance have generally not been used in previous studies of this nature. They are included in this study for a number of reasons. The first is that the accounting standards in Australia during this period required the use of purchase accounting for all takeovers, allowing comparison between different firms in the post-merger period.[17] Second, despite perceived shortfalls in the use of accrual profit, these ratios remain an important benchmark by which firms are judged.

A major advantage of using accounting numbers as the denominator for accounting performance ratios is that it allows a relatively simple method of aggregating data across periods. For this study, cumulative ratios for the one, two or three years preceding and following a merger are used to determine changes in post-merger performance, in effect, producing one pre- and one post-merger financial reporting period for comparison. This is done by adding profit and loss or cash flow measures across all periods of interest. For instance, if the measure of interest is ROA measured over a three year period, then operating performance for each year is added and the average of the opening assets for the first year and the closing assets for the third year is taken (i.e., year -4 for 3 years before, year 0 for all post-period performance).

4.2 Share Return Measures

[16] The results have also been calculated including extraordinary items and remain substantially the same as those reported.

[17] Unfortunately, it was not possible to calculate the amortisation of goodwill specifically relating to the takeover transactions of interest in this study due to insufficient disclosure in the financial statements.

The measurement of post-merger long-run sharemarket performance introduces a number of potential biases which must be overcome in order that results are not tainted by measurement error. Brown and da Silva Rosa (1998) prefer the use of BHAR as the biases affecting this measure are more easily controlled for and less severe than for rebalanced returns such as CAR (see also Simmonds, 2003). Therefore, long-run share market performance is assessed using the BHAR of each firm.[18] To control for the effect of bid period returns, pre-merger returns are calculated up to six months before the effective date of the takeover, and post-merger returns are calculated from six months after the effective date.[19] The returns are calculated across one, two and three years to enable comparison with the accounting ratios.[20] As a means of comparison to prior research, BHARs are also calculated for short event windows around the takeover announcement.

4.3 The Control Group

Control firms are matched to the sample "proforma pre-merged" firms first by industry, then size and then by similarity of performance in the year preceding the takeover. By selecting only those firms which are the most similar to the sample firms, the potential for pre-performance and size biases is reduced. A further selection criteria was the requirement that the control firm be listed on the Australian Stock Exchange (ASX) over the same time period that sample firms were listed, within the three year window either side of the acquisition. This ensured that for each year of available sample data, the sample firm's performance could be adjusted against the same control firm to produce a measure of abnormal performance.[21]

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[18] BHAR over a period [a, b] is calculated as $BHAR_{i,(x,y)} = [\prod_{t=x}^{y}(1+ar_{i,t})]-1$. Where ar_{it} is the discrete abnormal return of the stock for firm *i* in period *t*. ar_{it} is given by $r_{it} - E(r_{it})$, where r_{it} is observed return and $E(r_{it})$ is expected return. Expected return is measured using the All Ordinaries Accumulation Index.

[19] The effective date is the date at which the acquirer begins to consolidate the target firm.

[20] However, due to the difficulty of combining pre-merger stock returns into one 'consolidated' measure, only acquiring firm returns are used in the regression analysis.

[21] It is unclear what effect this requirement may have on survivorship bias. The control group attains at least the minimum survivorship characteristics of the sample firms, but is populated with firms that survive longer, on average, than sample firms post-merger. Given the advantages of this selection requirement and the uncertain implications of this restriction on survivorship bias, the requirement was retained.

The best match for each firm was placed in the control group, subject to the following conditions. Control firms have only been selected once, excepting where there were no other suitable control firms. Additionally, the same control firm was generally used for each acquisition by the same sample acquiring firm, because it remained the best match and ensured some consistency in abnormal performance measures for that firm in any given year. Sample firms were excluded as control firms.

4.4 Regression model

The regression model presented in HPR and adopted by a majority of subsequent studies will be used for the purpose of analysing the data. The basic HPR regression model is:

$$IAOP_{post} = \alpha + \beta IAOP_{pre} + \varepsilon \quad (1)$$

Where $IAOP_{post}$ is post-merger performance of the sample firm and $IAOP_{pre}$ is pre-merger performance of the combined target and acquiring firms, both adjusted against the control group by subtracting the control's performance from the sample firm performance. The expectation is that β will capture the correlation between pre- and post-merger performance and so α will capture the actual improvements in post-merger performance resulting from the merger itself. H1 predicts that α will be positive, representing an improvement in post-merger performance.

Equation (2) is used to investigate H2, adding the variable CASH to differentiate takeovers where cash is offered as payment for a target from those where only shares or a mixture of cash and shares are offered.

$$IAOP_{post} = \alpha + \beta IAOP_{pre} + \gamma CASH + \varepsilon \quad (2)$$

The value for the variable CASH is coded as 1 when shareholders are offered cash or can elect to receive cash, and 0 otherwise. The coefficient γ captures the association between

the method of payment and post-merger operating performance. The expected sign of γ is positive.

Equation (3) tests the impact of industry relatedness on post-merger performance.

$$IAOP_{post} = \alpha + \beta IAOP_{pre} + \delta INDUSTRY + \varepsilon \quad (3)$$

In (3), INDUSTRY is 1 if the target or bidder companies are in related industries and 0 otherwise. The coefficient δ should capture the degree to which the industry relatedness of the target and acquiring companies impacts upon the post-merger performance of the combined firm. The expected sign of δ is positive, in accordance with H3.

Equation (4) uses a similar methodology to test what impact takeover hostility has on post-merger performance. The variable FRIENDLY is defined as 1 where the initial recommendation of target firm's directors is that shareholders accept the bid. The coefficient λ captures the association between a transaction being friendly and post-merger performance. In accordance with H4, λ is expected to be positive.

$$IAOP_{post} = \alpha + \beta IAOP_{pre} + \lambda FRIENDLY + \varepsilon \quad (4)$$

In addition to these individual tests, H2, H3 and H4 are tested simultaneously by means of equation (5), produced below:

$$IAOP_{post} = \alpha + \beta IAOP_{pre} + \gamma CASH + \delta INDUSTRY + \lambda FRIENDLY + \varepsilon \quad (5)$$

In (5), the expectation is that γ, δ and λ will capture the association between post-merger operating performance and method of payment, industry relatedness and whether a transaction is hostile or friendly respectively. The anticipated direction of all three coefficients is positive. The coefficient α captures the changes in post-merger performance not related to the three other factors identified in the equation.

5. Data Collection

5.1 Sample Selection

The sample consists of all successful takeovers for publicly listed Australian targets announced between January 1995 and December 1999. A takeover is successful if the acquiring firm consolidates the target firm in the period following the date of acquisition (year 0), having not consolidated the target firm in the previous period.[22] The period was chosen to ensure that sufficient data, including reported cash flows, was available for three years before and after the merger. From an initial list of 280 takeover bids over the sample period, a final sample of 81 successful takeovers was identified. The reasons for the exclusion of takeovers are outlined in Table 1. The main reason for exclusion is that the bidder is not publicly listed in Australia.

INSERT TABLE 1 HERE

The final sample of 81 firms comprises respectively: 48 cash bids, 40 friendly transactions and 69 takeovers where the bidder and target are in overlapping industries.

5.2 Accounting and Company Information

Required accounting information was hand collected from sample and control firms' annual reports. The annual reports were taken from a University of Sydney database of all ASX company announcements since September 1996, or from the Securities Institute Research Centre Asia-Pacific (SIRCA) ASX Library Collection if the report was released before that time. Data was collected for three years leading up to the merger and for three years following the merger, as well as opening balances for those balance sheet

[22] By this definition, acquiring firms which were already consolidating a partly owned target and made a bid for some or all of the remaining shares were not included as part of the sample.

items used in calculating ratios from four years prior to the merger. Share return data was collected from the Core Research Data (CRD) database maintained by SIRCA.

5.3 Descriptive Statistics

The individual target and acquirer performances (not reported), indicate that acquiring firms experience a period of strong financial performance leading up to a takeover, whereas targets are experiencing a decline in financial performance.[23] Table 2 contains information about individual financial statement items for the acquiring, target and control firms for the year prior to the takeover announcement. The table shows that target firms are, in general, considerably smaller than acquiring firms, using both assets and sales revenue as a measure of size.

INSERT TABLE 2 HERE

Table 3 provides the short-run BHARs for various event windows around the takeover announcement. Consistent with prior literature, target firms earn significant positive abnormal returns around the takeover announcement, whilst acquiring firm returns are insignificant.

INSERT TABLE 3 HERE

6. Results

6.1 Cumulative Period Abnormal Results

Table 4 presents abnormal performance for the three years before and after the merger for both the accounting and share measures of performance. In the year prior to the acquisition, the pro-forma merged firm is performing better than the matched control other than for the OCF/Sales performance measure. The difference in performance,

[23] The pre-merger measures of performance show that median ratios for acquiring firms increase from year -3 to year -1 indicating continual improvements in performance. In contrast, the median performance ratios for target firms decrease from year -3 to year -1.

however, is only significant for the HPR_{CF}/Assets and ROE measures. Looking at the three years prior to the acquisition, the acquiring firm is performing above their control for four of the seven accounting measures. Again, this difference in performance is generally insignificant from zero, although HPR_{CF}/Assets and ROE indicate that the pro-forma merged firm is performing significantly better than control firms in the one and two year period prior to the merger. In addition, ROA is significant for the two year period prior to the merger. Importantly, although HPR_{CF}/Assets indicates that the pre-merger firms are performing significantly better than their control, this result is eliminated when actual cash flows are used.

The results subsequent to the takeover generally indicate that acquiring firm performance is insignificantly different from their respective control. The only significant result is found for ROE for the two year period after the acquisition and this indicates that acquiring firms are performing worse than their controls. A closer perusal of results gives mixed signals. Although insignificant, the pattern of four of the accounting ratios suggests better abnormal post-takeover performance, whilst three suggest performance improves. Overall, the results indicate that acquiring firm operating performance is equal to their control pre- and post-merger, suggesting that the acquisition has no significant impact on acquiring firm performance.

INSERT TABLE 4 HERE

The BHARs in Panel H indicate that acquiring firms are earning significantly higher abnormal returns than their control for the two and three year periods pre-merger. In the one year before and after the merger, acquirers are performing better than the control firm, although the difference is no longer significant. Two and three years after the merger, acquiring firms are performing below their control, this result is, however, also insignificant. Our results indicate that acquiring firms make acquisitions after a period of superior performance. Performance then declines immediately prior to the acquisition and decreases further subsequent to the acquisition.

6.2 Regression Results of Changes in Post-Merger Performance

Hypothesis 1 was tested by estimating regression (1) for each of the performance measures, with the results presented in Table 5. Results are presented for one year pre- and post-merger in Panel A, two years pre- and post-merger in Panel B and three years pre- and post-merger in Panel C. Except for ROE measured two years pre- and post-merger, the intercept term for cash-flow, accrual and stock performance measures are insignificant. This indicates that performance of merged firms does not significantly change following a merger with the only significant coefficient pointing towards a fall in post-merger ROE. Importantly, for prior research, there is no difference in results for the pure and indirect cash flow measures.

The coefficient on $IAOP_{pre}$ is generally positive and significant for the different performance measures when performance is measured from one year before until one year after the merger. Over the longer event windows, the relationship between pre- and post-merger performance shows greater inconsistency across the various measures of performance.

INSERT TABLE 5 HERE

The influence of the method of payment on post-merger performance is examined by estimating regression model (2). The results on the accounting performance measures presented in Table 6 support Hypothesis 2 with the coefficient on the cash variable being positive in all but one case. Additionally, these coefficients are significantly different from zero for all accounting performance measures over the one and two year periods (other than ROE and OCF/Sales over the two year period). For the period three years pre- and post-merger the influence of payment method diminishes with a positive coefficient only found on the ROA performance measure. Our findings indicate that cash bids experience an improvement in post-merger operating performance for approximately two years after the takeover. Although the share market measure of performance

suggests that cash bids perform worse post-takeover, the coefficient on this variable is insignificant.

INSERT TABLE 6 HERE

The intercept terms presented in Table 6 indicate that, after controlling for method of payment and prior firm performance, there is some evidence of a decline in merged firm performance. The coefficients on ROA, ROE and HPR_{Cf}/ASSETS over the one and two period pre- and post–merger are all significantly negative. These results should be viewed cautiously, however, as the intercept terms for the pure cash flow measures are insignificant.

Table 7 presents the results of testing for a relationship between post-merger performance and industry overlap between the target and bidder. Consistent with Hypothesis 3, the coefficient on the accounting measures for INDUSTRY for the one and two year period pre- and post-merger are generally positive. However, as none of the coefficients are significant, the results suggest industry overlap does not influence post merger performance. This finding is consistent with Sharma and Ho (2002). The intercept term in all regressions is insignificant, indicating that there is no improvement in performance after controlling for industry overlap. Interestingly, however, the vast majority of intercept terms are negative, giving some suggestion of a decline in post-merger performance. Similar results arise when analysing share performance, although there is a significant negative coefficient in the three year period at the 10% level.

INSERT TABLE 7 HERE

The results presented in Table 8 measure the relation between post-merger performance and the characterisation of a takeover transaction as friendly or hostile. There is no consistency across the sign of the coefficients on the accounting and share performance measures. Furthermore, as all the coefficients are insignificant, it is possible to reject Hypothesis 4 and conclude that there is no relationship between takeover hostility and

post merger performance. Controlling for takeover hostility does not influence the significance of the intercept term, although ROE is negative and significant over the two year period.

INSERT TABLE 8 HERE

In Table 9, all hypotheses are tested simultaneously using regression model (5). Overall, the results are consistent with those reported above with industry overlap or takeover hostility not influencing post-merger performance. There is continued support for Hypothesis 2 with the coefficient on the method of payment variable positive in all but one case for the accounting variables. In addition, the majority of these coefficients are significant for the one and two year period pre- and post-takeover. As significant coefficients are found on some of the direct and indirect measures of cash flow performance, our findings do not appear sensitive to how cash flow is measured. The intercept term across all accounting measures are insignificant, with the exception of ROE for the two year period pre- and post–takeover, which is negative and significant at the 5% level. Despite this lack of significance, it is interesting that all the coefficients over the one and two year period post-takeover are negative. This suggests that after controlling for: method of payment, hostility and industry overlap post merger performance is constant or perhaps slightly negative.

INSERT TABLE 9 HERE

7. Conclusion

This study investigates whether the long-run cash flow performance of acquiring firms improves following a merger and whether any improvement is related to method of payment, takeover hostility or industry overlap between the target and bidder. The main contribution of this study over prior research is that cash flow is measured directly rather than approximated using accounting variables and, as such, our results are free from the error in accrual estimation following mergers identified in Hribar and Collins (2002). In

addition, this study comprehensively investigates performance by using accrual accounting and sharemarket performance measures in addition to cash flow measures.

Our results find no evidence that mergers per se result in improvements in the long-run operating performance of firms following a merger. This contrasts with a number of studies which find significant improvements in operating performance (e.g., Healy et al., 1992; Switzer, 1996), but confirms the findings of other studies (e.g., Ghosh, 2001; Sharma 2002). This study also finds that long-run sharemarket performance does not change significantly following a merger and remains unaffected by characteristics of the takeover transaction, consistent with the presence of an informationally efficient capital market. This finding is in contrast with much of the literature, which reports negative CARs in the years following a merger (e.g., Agrawal et al., 1992; Gregory, 1997). However, it is consistent with the findings of Brown and da Silva Rosa (1998).

Although there was no evidence of improvements in post-merger operating performance in all acquisitions, we find support for the hypothesis that takeovers financed through cash experience improvements in post-merger performance over the one and two year periods post-merger. This finding is consistent with other studies (e.g., Linn and Switzer, 2001; Ghosh, 2001; c.f. Ramaswamy and Waegelein, 2003). The other conclusion from this study is that industry relatedness and takeover hostility are not significantly related to changes in post-merger performance, consistent with previous findings in the literature (e.g., Linn and Switzer, 2001; Ghosh, 2001; Ramaswamy and Waegelein, 2003).

Overall, our results find that after controlling for payment method the post-merger performance of acquirers is at best constant or slightly negative. When real cash flow performance measures are employed there is no evidence of a change in performance post-merger beyond the method of payment effect. However, accrual accounting performance measures (i.e., ROA and ROE) and indirect cash flow measures (i.e., HPR_{CF}/Assets) indicate that after controlling for method of payment, there is a decline in firm performance. This inconsistency in results highlights the importance of using actual

cash flows as opposed to cash flow estimates as employed in prior research to measure performance post-merger.

An opportunity for further research in this area is to examine whether post-merger performance is influenced by the decision to retain or remove target management. In addition, it may be fruitful to investigate the post-takeover bid performance of target companies following an unsuccessful takeover offer to determine if the threat of takeover results in a change in target company performance.

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Table 1

The Sample Selection Process

The initial sample includes all takeovers for targets listed on the Australian Stock Exchange (ASX) between 1995 and 1999. Takeovers are identified from the Current Takeovers section of the Australian Financial Review.

Description	Number Excluded	Number in Sample
Number of Takeover Bids: 1995-1999		280
Withdrawn Bids	37	
Unsuccessful Bids	51	
Number of Successful Bids		192
Non-ASX Listed Bidder	98	
Multiple Bids in Period	2	
Previously Consolidated Target	10	
Target Listing Suspended	1	
Final Sample		81

Table 2
Descriptive Statistics of Financial Statement Data

This table reports financial statement information collected from the annual report of acquiring, target and control firms in the year before a merger. The following abbreviations are used in this table: OPBT is operating profit before tax; OPAT is operating profit after tax, excluding extraordinary items; and CF is cash flows. All values reported are in thousands of Australian Dollars, rounded to the nearest dollar.

Item	n.	Mean	Std. Dev.	Max.	75th %	Median	25th %	Min.
Panel A: Acquiring firms								
OPBT	80	100,572	309,792	2,525,000	83,929	18,096	1,887	-87,052
OPAT	80	71,767	196,983	1,511,000	62,400	11,310	1,486	-87,052
Sales	72	1,018,872	2,306,941	17,696,000	1,164,695	161,996	48,232	1,947
Depreciation	76	56,640	197,076	1,630,000	34,754	4,709	692	20
Amortisation	67	7,366	11,793	60,500	7,374	1,940	569	0
Interest Exp.	71	22,294	54,901	407,000	21,000	4,843	600	13
Dividends	61	61,774	132,581	732,689	54,400	12,354	2,808	-33
Preference Div.	12	4,086	11,365	39,218	297	6	0	0
Total Assets	80	1,308,192	3,596,689	30,287,000	1,037,335	247,558	46,036	4,164
Total Equity	80	624,082	1,748,531	14,807,000	574,060	140,029	26,171	2,223
Pref. Capital	12	13,511	45,783	158,879	522	2	0	0
Operating CF	80	134,129	480,002	4,090,000	105,814	16,098	675	-15,430
Panel B: Target firms								
OPBT	81	5,844	20,011	126,498	11,269	2,189	-1,192	-44,154
OPAT	81	3,495	15,376	88,810	7,890	1,388	-1,192	-44,815
Sales	71	192,207	424,428	2,939,495	194,261	44,573	13,338	0
Depreciation	77	5,086	9,244	51,299	5,543	1,010	258	3
Amortisation	70	3,287	8,642	64,439	2,352	514	130	0
Interest Exp.	75	3,601	8,726	54,029	2,775	568	82	0
Dividends	45	6,208	8,246	45,703	7,493	3,839	894	0
Preference Div.	5	122	255	578	28	5	0	0
Total Assets	81	172,353	267,932	1,225,845	200,097	43,676	15,984	453
Total Equity	81	86,464	129,049	629,860	119,786	26,556	8,866	149
Pref. Capital	10	47,191	130,589	416,533	8,194	50	0	0
Operating CF	81	12,259	21,798	106,129	14,505	3,249	85	-3,858
Panel C: Control firms								
OPBT	81	142,005	676,370	5,320,000	43,968	9,233	-1,295	-137,048
OPAT	81	93,326	445,746	3,488,000	33,598	6,456	-1,295	-183,800
Sales	80	1,109,966	2,644,725	17,571,000	819,607	165,131	24,753	0
Depreciation	80	63,768	267,655	2,290,000	33,430	4,100	605	0
Amortisation	76	11,381	35,027	212,000	7,194	1,077	74	0
Interest Exp.	75	28,070	77,323	578,000	14,099	3,342	350	0
Dividends	71	104,434	512,076	4,247,000	46,632	7,315	670	0
Preference Div.	47	1,063	6,136	41,523	0	0	0	0
Total Assets	81	1,493,496	4,038,806	27,682,000	800,338	166,973	38,618	654
Total Equity	81	678,210	1,720,343	10,370,000	398,166	90,174	27,402	517
Pref. Capital	48	5,943	29,342	173,006	0	0	0	0
Operating CF	81	191,007	819,528	6,574,000	105,104	13,910	1,584	-6,373

Table 3
Takeover Announcement Abnormal Returns

This table reports percentage BHARs for acquiring and target firms around the bid announcement date (Day 0). [-x, +y] represents days relative to the announcement date, (i.e., the BHAR from x days before the announcement until y days after the announcement).

Period	n.	Mean	Std. Dev.	Max.	75th %	Median	25th %	Min.
Panel A: Acquiring Firm								
[-60, +10]	81	-1.183	21.004	77.056	5.467	-4.170	-12.767	-54.172
[-60, +2]	81	0.546	19.943	85.602	8.032	-1.274	-10.795	-55.067
[-60, +1]	81	0.566	18.771	85.385	7.874	-1.226	-11.417	-41.858
[-60, 0]	81	0.803	17.458	75.577	7.151	-1.212	-9.839	-41.954
[-10, +10]	81	-2.009	12.647	52.789	3.640	-1.647	-7.954	-48.377
[-1, +1]	81	-0.475	6.623	38.114	3.294	-0.799	-3.658	-18.495
[-1, 0]	81	-0.079	6.232	38.505	1.189	-0.591	-2.328	-14.206
Day 0	81	0.300	6.030	35.374	1.028	-0.215	-1.629	-14.035
Panel B: Target Firm								
[-60, +10]	81	18.825***	31.407	144.531	35.891	20.745	0.972	-51.679
[-60, +2]	81	19.259***	28.040	114.941	35.514	20.146	-0.474	-37.689
[-60, +1]	81	18.468***	26.168	114.926	33.691	20.288	0.753	-35.540
[-60, 0]	81	15.129***	26.956	111.440	32.370	14.026	-3.060	-41.242
[-10, +10]	81	16.282***	24.229	103.250	29.840	16.410	2.084	-59.268
[-1, +1]	81	13.122***	13.278	49.950	19.970	12.005	2.494	-15.436
[-1, 0]	81	9.585***	12.439	50.330	15.421	5.384	0.012	-8.091
Day 0	81	7.971***	12.131	49.791	15.282	5.037	-0.125	-17.569

*** Significant at the 0.01 level

Table 4
Sample Firm Cumulative Period Accounting and Share Performance Adjusted Against the Control Group

This table reports ratios of accounting performance and abnormal share performance cumulated over periods of one, two and three years before and after the merger. Sample firm ratios in the pre-merger period are calculated using a combination of target and acquiring firm financial statement data and using a process which cumulates ratios over multiple periods. Adjusted ratios are calculated by taking the ratio of a sample firm and subtracting from it the corresponding ratio of its matched control firm.

Period	n.	Mean	Std. Dev.	Max.	75th %	Median	25th %	Min.
Panel A: HPR_{CF}/Sales								
Pre-3	47	-4.937	35.303	6.980	0.135	0.023	-0.035	-241.714
Pre-2	60	-1.620	20.492	46.113	0.128	0.032	-0.049	-150.783
Pre-1	70	1.376	18.082	138.056	0.136	0.021	-0.073	-58.294
Post-1	69	-0.012	1.728	6.150	0.158	0.045	-0.074	-11.182
Post-2	60	0.490	4.162	22.972	0.123	0.027	-0.113	-16.510
Post-3	48	-0.030	6.388	31.768	0.093	0.012	-0.082	-22.411
Panel B: HPR_{CF}/Assets								
Pre-3	51	0.063	0.473	1.408	0.206	0.004	-0.172	-1.072
Pre-2	66	0.144**	0.502	3.210	0.158	0.028	-0.073	-0.551
Pre-1	76	0.075*	0.369	2.745	0.092	0.015	-0.057	-0.481
Post-1	76	0.017	0.229	1.336	0.077	0.017	-0.045	-0.743
Post-2	66	0.034	0.577	2.829	0.117	0.012	-0.126	-1.642
Post-3	51	-0.041	0.699	2.427	0.165	0.000	-0.280	-2.050
Panel C: Operating Cash Flows/Sales								
Pre-3	47	-7.310	52.007	11.135	0.098	0.010	-0.044	-356.098
Pre-2	60	-4.149	35.822	16.911	0.083	0.019	-0.053	-276.280
Pre-1	70	-2.982	35.365	60.596	0.082	-0.003	-0.083	-287.846
Post-1	69	0.173	2.037	13.478	0.124	0.031	-0.068	-7.963
Post-2	60	0.425	3.466	22.903	0.123	0.025	-0.051	-11.432
Post-3	48	-0.182	3.352	8.962	0.110	0.004	-0.049	-15.436
Panel D: Operating Cash Flows/Assets								
Pre-3	51	0.011	0.419	1.579	0.166	-0.068	-0.193	-0.979
Pre-2	66	0.041	0.332	1.364	0.131	-0.005	-0.109	-0.769
Pre-1	76	0.010	0.240	1.247	0.062	-0.010	-0.087	-0.605
Post-1	76	0.024	0.223	1.407	0.062	0.001	-0.053	-0.726
Post-2	66	0.045	0.314	1.303	0.122	0.003	-0.070	-0.982
Post-3	51	0.032	0.452	1.321	0.182	-0.028	-0.098	-1.619
Panel E: Return on Assets								
Pre-3	51	0.063	0.408	1.428	0.072	-0.013	-0.093	-0.843
Pre-2	66	0.128**	0.454	2.910	0.092	0.017	-0.046	-0.344
Pre-1	76	0.070	0.345	2.602	0.059	0.006	-0.039	-0.437
Post-1	76	0.008	0.203	1.256	0.054	0.010	-0.044	-0.563
Post-2	66	0.004	0.555	3.136	0.113	0.000	-0.132	-1.565
Post-3	51	-0.082	0.666	2.732	0.134	-0.052	-0.282	-2.121

Period	n.	Mean	Std. Dev.	Max.	75th %	Median	25th %	Min.
Panel F: Return on Equity								
Pre-3	51	0.182	0.867	3.763	0.241	0.025	-0.185	-1.183
Pre-2	66	0.208**	0.684	3.227	0.252	0.026	-0.120	-0.631
Pre-1	76	0.082*	0.415	2.812	0.112	0.010	-0.063	-0.463
Post-1	76	0.016	0.520	3.709	0.092	0.025	-0.086	-0.851
Post-2	66	-0.335*	1.487	1.962	0.130	-0.022	-0.347	-7.671
Post-3	51	-0.645	4.228	9.464	0.315	-0.151	-0.794	-27.565
Panel G: Profit Margin								
Pre-3	47	-5.310	37.746	7.055	0.067	0.008	-0.026	-258.484
Pre-2	60	-1.758	21.542	46.104	0.079	0.008	-0.037	-159.325
Pre-1	70	1.233	18.611	138.218	0.085	0.008	-0.041	-68.495
Post-1	69	-0.031	1.731	6.561	0.075	0.022	-0.073	-11.377
Post-2	60	0.466	4.225	22.993	0.066	0.005	-0.073	-16.814
Post-3	48	-0.299	7.383	31.875	0.058	-0.004	-0.069	-33.575
Panel H: BHARs								
Pre-3	55	52.569**	152.538	743.241	65.423	15.186	-21.482	-164.399
Pre-2	66	59.740***	174.473	776.612	55.287	10.643	-30.355	-190.365
Pre-1	75	1.367	62.560	164.030	34.242	0.859	-24.951	-250.343
Post-1	78	0.465	53.011	294.641	16.746	-4.214	-28.317	-147.247
Post-2	70	-4.725	66.464	262.359	29.356	-6.679	-45.160	-259.575
Post-3	65	-13.108	111.058	354.038	43.201	1.057	-52.669	-428.153

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

Table 5
Tests of Improvement in Post-Merger Performance

The table examines whether there is an improvement in post-merger performance using the regression model $IAOP_{post} = \alpha + \beta\ IAOP_{pre} + \varepsilon$. In Panel A, post-merger performance is measured for one year pre- and post-merger, whilst in Panel B, post-merger performance is measured for two years pre- and post-merger. In Panel C, post-merger performance is measured for three years pre- and post-merger. Performance is measured in turn using various accounting ratios and BHAR.

Measure	n.	Constant	$IAOP_{pre}$	*F*-Stat	*p*-value	Adj-R^2
Panel A: 1 year pre- and post-merger						
HPR_{CF}/Sales	69	-0.0497	0.017	1.85	0.1787	0.0123
		(-0.24)	(2.78)***			
HPR_{CF}/Assets	76	-0.0021	0.1844	6.32	0.0143	0.0726
		(-0.08)	(2.40)**			
OCF/Sales	69	0.1179	4.7088	26.27	<.0001	0.2709
		(0.62)	(1.82)*			
OCF/Assets	76	0.0233	0.0071	4.16	0.0452	0.0445
		(0.89)	(5.12)***			
ROA	76	-0.0042	0.1222	2.86	0.0956	0.0266
		(-0.18)	(1.80)*			
ROE	76	0.005	0.2175	2.03	0.1591	0.0149
		(0.09)	(1.25)			
PM	69	-0.0694	0.0172	1.89	0.1740	0.0129
		(-0.34)	(2.78)***			
BHAR	75	4.0331	0.2992	6.57	0.0142	0.117
		(0.47)	(1.33)			
Panel B: 2 years pre- and post-merger						
HPR_{CF}/Sales	60	0.2924	-0.1219	32.67	<.0001	0.3493
		(0.66)	(-3.50)***			
HPR_{CF}/Assets	66	0.0097	0.4193	10.22	0.0023	0.1351
		(0.14)	(3.36)***			
OCF/Sales	60	0.063	6.8174	35.89	<.0001	0.3716
		(0.22)	(2.02)**			
OCF/Assets	66	0.0598	0.0006	0.32	0.5731	-0.0116
		(1.56)	(1.14)			
ROA	66	-0.005	0.3445	5.56	0.0218	0.0717
		(-0.07)	(1.91)*			
ROE	66	-0.4003	0.295	1.08	0.3029	0.0014
		(-2.26)**	(1.36)			
PM	60	0.2598	-0.1171	32.08	<.0001	0.345
		(0.57)	(-3.67)***			
BHAR	66	-7.7488	0.1395	7.44	0.0094	0.1329
		(-0.94)	(1.38)			
Panel C: 3 years pre- and post-merger						
HPR_{CF}/Sales	47	-0.2026	-0.1314	107.09	<.0001	0.6975
		(-0.46)	(-60.46)***			
HPR_{CF}/Assets	51	0.0611	0.3542	3.50	0.0678	0.0516
		(0.76)	(2.41)**			
OCF/Sales	47	0.0509	3.0537	12.78	0.0008	0.2039
		(0.15)	(1.92)*			
OCF/Assets	51	0.0805	-0.0015	2.27	0.1390	0.0268
		(1.56)	(-7.36)***			
ROA	51	0.0272	0.1672	0.58	0.4508	-0.0092
		(0.33)	(0.98)			
ROE	51	-0.7426	-0.2837	0.16	0.6903	-0.0186
		(-1.50)	(-0.44)			
PM	47	-0.2474	-0.1235	104.50	<.0001	0.6923
		(-0.55)	(-60.61)***			
BHAR	55	-13.5551	-0.0043	0.00	0.9639	-0.0243
		(-0.99)	(-0.04)			

***, **, * Denote significance using a two tailed White's adjusted t-test at the 1%, 5% and 10% levels respectively.

Table 6
Association Between Improvement in Post-Merger Performance and Payment Method

The table examines whether post-merger performance is related to the method of payment using regression model $IAOP_{post} = \alpha + \beta\ IAOP_{pre} + \gamma\ CASH + \varepsilon$. In Panel A, post-merger performance is measured for one year pre- and post-merger, whilst in Panel B, post-merger performance is measured for two years pre- and post-merger. In Panel C, post-merger performance is measured for three years pre- and post-merger. Performance is measured in turn using various accounting ratios and BHAR.

Measure	n.	Constant	$IAOP_{pre}$	Cash	*F*-Stat	*p*-value	Adj-R^2
Panel A: 1 year pre- and post-merger							
HPR_{CF}/Sales	69	-0.6241	0.0143	0.9101	3.31	0.0426	0.0637
		(-1.36)	(2.61)**	(1.87)*			
HPR_{CF}/Assets	76	-0.0792	0.1679	0.1225	5.82	0.0047	0.1242
		(-1.96)*	(2.29)**	(2.45)**			
OCF/Sales	69	-0.2563	4.4321	0.5919	14.17	<.0001	0.2793
		(-0.91)	(1.75)*	(2.32)**			
OCF/Assets	76	-0.0306	0.0064	0.0858	3.37	0.0404	0.0652
		(-0.89)	(4.84)***	(1.72)*			
ROA	76	-0.0814	0.1059	0.1226	4.52	0.0144	0.0939
		(-2.21)**	(1.65)	(2.68)***			
ROE	76	-0.1171	0.1992	0.1934	2.10	0.1309	0.0313
		(-1.99)**	(1.18)	(1.89)*			
PM	69	-0.6453	0.0145	0.9124	3.34	0.0415	0.0644
		(-1.41)	(2.62)***	(1.88)*			
BHAR	75	7.1524	0.304	-4.977	3.25	0.0494	0.0966
		(0.62)	(1.4)	(-0.35)			
Panel B: 2 years pre- and post-merger							
HPR_{CF}/Sales	60	-0.8091	-0.1301	1.7649	19.16	<.0001	0.381
		(-1.08)	(-3.86)***	(2.11)**			
HPR_{CF}/Assets	66	-0.1728	0.4091	0.2983	8.15	0.0008	0.1951
		(-2.49)**	(3.72)***	(2.63)**			
OCF/Sales	60	-0.4469	6.7133	0.8357	18.70	<.0001	0.375
		(-0.78)	(2.03)**	(1.4)			
OCF/Assets	66	-0.0377	0.0002	0.1557	2.21	0.1195	0.0393
		(-0.72)	(0.48)	(2.21)**			
ROA	66	-0.1826	0.3308	0.2907	5.41	0.0071	0.13
		(-2.72)***	(2.00)*	(2.51)**			
ROE	66	-0.5181	0.2888	0.1931	0.64	0.5290	-0.0122
		(-1.70)*	(1.36)	(0.48)			
PM	60	-0.8259	-0.1246	1.739	18.64	<.0001	0.3742
		(-1.09)	(-4.05)***	(2.04)**			
BHAR	66	-3.5352	0.1453	-7.3067	3.71	0.0333	0.1142
		(-0.32)	(1.41)	(-0.47)			
Panel C: 3 years pre- and post-merger							
HPR_{CF}/Sales	47	-1.3021	-0.1361	1.6868	58.06	<.0001	0.7127
		(-1.12)	(-28.35)***	(1.43)			
HPR_{CF}/Assets	51	-0.0313	0.3479	0.1454	2.13	0.1308	0.0469
		(-0.28)	(2.44)**	(0.98)			
OCF/Sales	47	-0.3211	2.9936	0.5856	6.72	0.0028	0.1991
		(-0.40)	(2.00)*	(0.77)			
OCF/Assets	51	-0.0306	-0.0018	0.1705	2.42	0.1004	0.0582
		(-0.40)	(-7.56)***	(1.70)*			
ROA	51	-0.0757	0.1531	0.1625	0.80	0.4569	-0.0089
		(-0.88)	(0.9)	(1.17)			
ROE	51	-0.0518	-0.2258	-1.0985	0.45	0.6400	-0.0245
		(-0.27)	(-0.37)	(-1.28)			
PM	47	-1.3374	-0.1278	1.6721	56.39	<.0001	0.7066
		(-1.13)	(-27.92)***	(1.39)			
BHAR	55	-13.2288	-0.0041	-0.5385	0.00	0.9989	-0.0499
		(-1.07)	(-0.04)	(-0.02)			

***, **, * Denote significance using a two tailed White's adjusted t-test at the 1%, 5% and 10% levels respectively.

Table 7
Association Between Improvement in Post-Merger Performance and Industry Overlap

The table examines whether post-merger performance is related to target and bidder industry overlap using regression model $IAOP_{post} = \alpha + \beta\ IAOP_{pre} + \delta\ INDUSTRY + \varepsilon$. In Panel A, post-merger performance is measured for one year pre- and post-merger, whilst in Panel B, post-merger performance is measured for two years pre- and post-merger. In Panel C, post-merger performance is measured for three years pre- and post-merger. Performance is measured in turn using various accounting ratios and BHAR.

Measure	n.	Constant	$IAOP_{pre}$	Industry	*F*-Stat	*p*-value	Adj-R^2
Panel A: 1 year pre- and post-merger							
HPR_{CF}/Sales	69	0.0193	0.0171	-0.0824	0.92	0.4035	-0.0024
		(0.05)	(2.80)***	(-0.18)			
HPR_{CF}/Assets	76	-0.0098	0.1839	0.0092	3.12	0.0506	0.0587
		(-0.17)	(2.41)**	(0.14)			
OCF/Sales	69	0.1007	4.7095	0.0205	12.94	<.0001	0.2599
		(0.29)	(1.82)*	(0.05)			
OCF/Assets	76	-0.0157	0.0069	0.0465	2.27	0.1111	0.0361
		(-0.41)	(4.97)***	(0.96)			
ROA	76	-0.0149	0.1215	0.0128	1.43	0.2477	0.0124
		(-0.26)	(1.82)*	(0.21)			
ROE	76	-0.0298	0.217	0.0414	1.03	0.3636	0.0008
		(-0.44)	(1.26)	(0.42)			
PM	69	-0.0472	0.0172	-0.0266	0.93	0.3993	-0.002
		(-0.13)	(2.80)***	(-0.06)			
BHAR	75	-3.1556	0.2986	8.5873	3.28	0.0481	0.0979
		(-0.12)	(1.31)	(0.32)			
Panel B: 2 years pre- and post-merger							
HPR_{CF}/Sales	60	-0.0538	-0.1216	0.4246	16.17	<.0001	0.3395
		(-0.20)	(-3.50)***	(0.7)			
HPR_{CF}/Assets	66	-0.0216	0.4174	0.0386	5.05	0.0096	0.1207
		(-0.24)	(3.31)***	(0.32)			
OCF/Sales	60	-0.1063	6.8118	0.2077	17.68	<.0001	0.3611
		(-0.23)	(2.02)**	(0.35)			
OCF/Assets	66	0.0334	0.0006	0.0325	0.21	0.8095	-0.0274
		(0.43)	(1.16)	(0.36)			
ROA	66	-0.0192	0.3435	0.0176	2.74	0.0733	0.0556
		(-0.21)	(1.88)*	(0.14)			
ROE	66	-0.0956	0.2972	-0.3737	0.80	0.4539	-0.0068
		(-0.82)	(1.37)	(-1.45)			
PM	60	-0.0719	-0.1168	0.4068	15.86	<.0001	0.335
		(-0.24)	(-3.67)***	(0.65)			
BHAR	66	-11.9276	0.1406	4.907	3.65	0.0350	0.112
		(-0.52)	(1.39)	(0.2)			
Panel C: 3 years pre- and post-merger							
HPR_{CF}/Sales	47	-0.1912	-0.1314	-0.0141	52.36	<.0001	0.6907
		(-0.95)	(-51.61)***	(-0.02)			
HPR_{CF}/Assets	51	-0.0331	0.3555	0.1164	1.89	0.1630	0.0373
		(-0.26)	(2.34)**	(0.75)			
OCF/Sales	47	-0.0894	3.0504	0.1736	6.28	0.0040	0.1866
		(-0.30)	(1.92)*	(0.34)			
OCF/Assets	51	0.0593	-0.0015	0.0263	1.13	0.3323	0.0056
		(-0.61)	(-6.67)***	(0.23)			
ROA	51	-0.047	0.169	0.0917	0.39	0.6786	-0.0272
		(-0.37)	(0.99)	(0.6)			
ROE	51	0.0267	-0.3386	-0.9393	0.26	0.7736	-0.0333
		(0.07)	(-0.49)	(-1.00)			
PM	47	-0.2268	-0.1236	-0.0256	51.09	<.0001	0.6853
		(-1.02)	(-51.50)***	(-0.04)			
BHAR	55	18.1187	-0.0029	-37.9442	0.40	0.6722	-0.0294
		(1.2)	(-0.03)	(-1.71)*			

***, **, * Denote significance using a two tailed White's adjusted t-test at the 1%, 5% and 10% levels respectively.

Table 8
Association Between Improvement in Post-Merger Performance and Takeover Hostility

The table examines whether post-merger performance is related to takeover hostility using regression model $IAOP_{post} = \alpha + \beta\ IAOP_{pre} + \lambda\ FRIENDLY + \varepsilon$. In Panel A, post-merger performance is measured for one year pre- and post-merger, whilst in Panel B, post-merger performance is measured for two years pre- and post-merger. In Panel C, post-merger performance is measured for three years pre- and post-merger. Performance is measured in turn using various accounting ratios and BHAR.

Measure	n.	Constant	$IAOP_{pre}$	Friendly	*F*-Stat	*p*-value	Adj-R^2
Panel A: 1 year pre- and post-merger							
HPR_{CF}/Sales	69	-0.0529	0.0169	0.0062	0.91	0.4077	-0.0027
		(-0.13)	(2.66)***	(0.01)			
HPR_{CF}/Assets	76	-0.0175	0.184	0.0294	3.27	0.0441	0.0627
		(-0.54)	(2.35)**	(0.56)			
OCF/Sales	69	0.1725	4.6926	-0.1042	12.98	<.0001	0.2606
		(0.5)	(1.83)*	(-0.26)			
OCF/Assets	76	0.0156	0.007	0.015	2.09	0.1314	0.0312
		(0.55)	(4.67)***	(0.29)			
ROA	76	-0.0209	0.1205	0.0323	1.62	0.2048	0.018
		(-0.77)	(1.79)*	(0.68)			
ROE	76	-0.0552	0.2123	0.116	1.42	0.2491	0.0122
		(-1.07)	(1.23)	(0.98)			
PM	69	-0.0701	0.0172	0.0014	0.93	0.3997	-0.0021
		(-0.17)	(2.65)***	(0.00)			
BHAR	75	-0.8236	0.3037	8.692	3.34	0.0455	0.1003
		(-0.16)	(1.35)	(0.54)			
Panel B: 2 years pre- and post-merger							
HPR_{CF}/Sales	60	0.2668	-0.1221	0.0507	16.06	<.0001	0.3379
		(0.35)	(-3.53)***	(0.06)			
HPR_{CF}/Assets	66	0.0478	0.4199	-0.0763	5.22	0.0083	0.1252
		(0.41)	(3.19)***	(-0.60)			
OCF/Sales	60	0.2561	6.7946	-0.3839	17.87	<.0001	0.3638
		(0.46)	(2.05)**	(-0.57)			
OCF/Assets	66	0.0568	0.0006	0.0059	0.16	0.8519	-0.0293
		(1.05)	1.15	(0.08)			
ROA	66	0.0514	0.3437	-0.1125	3.13	0.0515	0.0672
		(0.4)	(1.79)*	(-0.87)			
ROE	66	-0.5055	0.2971	0.2097	0.67	0.5145	-0.0112
		(-1.77)*	1.44	(0.54)			
PM	60	0.2768	-0.1169	-0.0336	15.76	<.0001	0.3336
		(0.35)	(-3.68)***	(-0.04)			
BHAR	66	-15.0555	0.1389	13.1679	3.93	0.0277	0.1224
		(-1.54)	(1.43)	(0.78)			
Panel C: 3 years pre- and post-merger							
HPR_{CF}/Sales	47	-0.3661	-0.1321	0.3425	5.26	<.0001	0.6917
		(-0.44)	(-36.14)***	(0.4)			
HPR_{CF}/Assets	51	0.1431	0.3053	-0.1683	2.29	0.1136	0.053
		(0.99)	(1.63)	(-1.00)			
OCF/Sales	47	-0.1099	3.1558	0.3369	6.41	0.0036	0.1903
		(-0.15)	(1.78)*	(0.4)			
OCF/Assets	51	0.1303	-0.0014	-0.1044	1.63	0.2066	0.0269
		(1.51)	(-4.84)***	(-1.04)			
ROA	51	0.1258	0.0965	-0.2018	1.10	0.3416	0.0044
		(0.82)	(0.42)	(-1.17)			
ROE	51	-1.2403	-0.2177	1.0379	0.44	0.6496	-0.0252
		(-1.27)	(-0.38)	(1.01)			
PM	47	-0.3768	-0.124	0.271	51.23	<.0001	0.6859
		(-0.44)	(-35.72)***	(0.31)			
BHAR	55	-3.8058	0.0051	-18.5791	0.17	0.8462	-0.0413
		(-0.30)	(0.05)	(-0.65)			

***, **, * Denote significance using a two tailed White's adjusted t-test at the 1%, 5% and 10% levels respectively.

Table 9

Joint Test of Improvement in Post-Merger Performance Payment Method, Industry Overlap and Takeover Hostility

The table examines whether post-merger performance is related to payment method, target and bidder industry overlap and takeover hostility using regression model $IAOP_{post} = \alpha + \beta\ IAOP_{pre} + \gamma\ CASH + \delta\ INDUSTRY + \lambda\ FRIENDLY + \varepsilon$. In Panel A, post-merger performance is measured for one year pre- and post-merger, whilst Panels B and C measure post-merger performance for two years and three years pre- and post-merger respectively.

Measure	n.	Constant	$IAOP_{pre}$	Cash	Industry	Friendly	*F*-Stat	*p*-value	Adj-R^2
Panel A: 1 year pre- and post-merger									
HPR_{CF}/Sales	69	-0.554	0.0135	1.0292	-0.3516	0.29	1.80	0.1398	0.0449
		(-0.96)	(2.17)**	(1.63)	(-0.62)	(0.52)			
HPR_{CF}/Assets	76	-0.0985	0.1659	0.1432	-0.0335	0.0659	3.25	0.0172	0.117
		(-1.33)	(2.17)**	(2.40)**	(-0.50)	(1.08)			
OCF/Sales	69	-0.1894	4.4211	0.6195	-0.1265	0.0421	6.89	0.0001	0.2573
		(-0.48)	(1.74)*	(2.01)**	(-0.27)	(0.1)			
OCF/Assets	76	-0.0702	0.0061	0.0923	0.0208	0.0349	1.79	0.1419	0.0444
		(-1.14)	(3.77)***	(1.41)	(0.41)	(0.55)			
ROA	76	-0.1049	0.1009	0.1439	-0.0306	0.0689	2.74	0.0363	0.0927
		(-1.52)	(1.57)	(2.74)***	(-0.49)	(1.28)			
ROE	76	-0.2035	0.187	0.2439	-0.0447	0.1774	1.49	0.2171	0.0278
		(-1.52)	(1.11)	(1.90)*	(-0.45)	(1.29)			
PM	69	-0.612	0.0137	1.0209	-0.2919	0.2773	1.78	0.1444	0.0437
		(-1.06)	(2.17)**	(1.61)	(-0.53)	(0.49)			
BHAR	75	-4.1215	0.307	-4.7877	8.6136	7.0596	1.63	0.1866	0.0566
		(-0.16)	(1.39)	(-0.31)	(0.32)	(0.39)			
Panel B: 2 years pre- and post-merger									
HPR_{CF}/Sales	60	-1.0555	-0.1322	1.8619	-0.0375	0.4277	9.34	<.0001	0.3611
		(-1.26)	(-3.88)***	(1.80)*	(-0.05)	(0.43)			
HPR_{CF}/Assets	66	-0.1462	0.4101	0.2957	-0.0153	-0.0254	3.95	0.0069	0.1666
		(-1.40)	(3.63)***	(2.90)***	(-0.12)	(-0.20)			
OCF/Sales	60	-0.3582	6.7021	0.7768	0.0999	-0.2666	9.07	<.0001	0.3538
		(-0.52)	(2.05)**	(1.14)	(0.15)	(-0.35)			
OCF/Assets	66	-0.0556	0.0001	0.1649	-0.0092	0.0386	1.13	0.3523	0.0087
		(-0.66)	(0.23)	(1.87)*	(-0.10)	(0.45)			
ROA	66	-0.1245	0.3323	0.2831	-0.0273	-0.0626	2.69	0.0403	0.1029
		(-1.34)	(1.91)*	(2.98)***	(-0.22)	(-0.51)			
ROE	66	-0.3474	0.2911	0.3087	-0.4865	0.3096	0.62	0.6498	-0.0264
		(-2.01)**	(1.43)	(0.86)	(-1.66)	(0.89)			
PM	60	-1.0171	-0.1261	1.8141	-0.0291	0.332	9.05	<.0001	0.3529
		(-1.19)	(-4.04)***	(1.72)*	(-0.03)	(0.32)			
BHAR	66	-15.0018	0.1443	-5.4223	4.5757	11.6838	1.89	0.1323	0.0781
		(-0.62)	(1.44)	(-0.31)	(0.19)	(0.67)			
Panel C: 3 years pre- and post -merger									
HPR_{CF}/Sales	47	-1.12	-0.1387	1.9914	-0.8272	0.5967	28.5	<.0001	0.7051
		(-1.12)	(-16.23)***	(1.27)	(-0.69)	(0.6)			
HPR_{CF}/Assets	51	0.0048	0.3037	0.1116	0.0783	-0.1601	1.30	0.2859	0.0254
		(0.03)	(1.66)	(0.77)	(0.5)	(-0.96)			
OCF/Sales	47	-0.4736	3.1071	0.6352	-0.0783	0.3862	3.31	0.0191	0.1672
		(-0.58)	(1.84)*	(0.63)	(-0.09)	(0.42)			
OCF/Assets	51	0.0398	-0.0017	0.17	-0.0376	-0.0835	1.36	0.2634	0.0305
		(0.43)	(-3.83)***	(1.33)	(-0.26)	(-0.80)			
ROA	51	-0.0014	0.0892	0.1357	0.0449	-0.1919	0.75	0.5621	-0.022
		(-0.01)	(0.4)	(1.11)	(0.3)	(-1.15)			
ROE	51	-0.1731	-0.2125	-0.8526	-0.6109	0.974	0.40	0.8092	-0.0553
		(-0.58)	(-0.36)	(-1.26)	(-0.79)	(0.99)			
PM	47	-1.1143	-0.1301	1.9667	-0.8259	0.5222	27.57	<.0001	0.6979
		(-1.09)	(-15.95)***	(1.23)	(-0.68)	(0.51)			
BHAR	55	23.8246	0.0045	0.9539	-35.8607	-15.2893	0.25	0.9095	-0.0772
		(0.83)	(0.04)	(0.03)	(-1.87)*	(-0.48)			

***, **, * Denote significance using a two tailed White's adjusted t-test at the 1%, 5% and 10% levels respectively.

Appendix 1

Calculation of Accounting Ratios

Accounting Ratio Used	Method of Calculation
HPR_{CF}/Sales	$HPR_{CF}/Sales = \frac{(OPBT + Interest\ Expense + Depreciation + Amortisation)}{Sales\ Revenue}$
HPR_{CF}/Assets	$HPR_{CF}/Sales = \frac{(OPBT + Interest\ Expense + Depreciation + Amortisation)}{(Total\ Assets_n + Total\ Assets_{n-1})}$
OCF/Sales	$OCF/Sales = \frac{(OCF + Interest\ Paid + Income\ Tax\ Paid - Interest\ Received)}{Sales\ Revenue}$
OCF/Assets	$OCF/Assets = \frac{(OCF + Interest\ Paid + Income\ Tax\ Paid - Interest\ Received)}{(Total\ Assets_n + Total\ Assets_{n-1})}$
ROA	$ROA = \frac{(OPAT + [1 - tax\ rate] * Interest\ Expense)}{(Total\ Assets_n + Total\ Assets_{n-1})}$
ROE	$ROE = \frac{(OPAT - Preference\ Dividends)}{([Total\ Equity - Pref\ Share]_n + [Total\ Equity - Pref\ Share]_{n-1})}$
Profit Margin (PM)	$PM = \frac{(OPAT + [1 - tax\ rate] * Interest\ Expense)}{Sales\ Revenue}$

The following abbreviations are used in this table: OPBT is operating profit before tax; OCF is operating cash flows; OPAT is operating profit after tax excluding extraordinary items; ROA is return on assets; and ROE is return on equity.