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The Interaction of Post-Acquisition Integration and Acquisition Focus in Relation to Long-Run Performance

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I. INTRODUCTION

Mergers and acquisitions (M&As) have long been an important part of corporate strategies that have motivated substantial finance and strategic management literatures. However, the arguments and empirical evidence concerning the economic benefits accruing to the acquirers in the years following acquisitions are mixed (Sharma and Ho 2002; Megginson et al. 2004; Powell and Stark 2005).

The finance research literature hypothesizes numerous pre-acquisition characteristics and conditions as potential explanations of cross-sectional variation in long-run post-acquisition financial performance.[1] A large body of this research emphasizes acquirer-target relatedness, or whether the acquisition is focus-increasing versus focus-decreasing/diversifying (Kruse et al. 2007), but yields conflicting and inconsistent results in various markets. We contend that this body of research is impaired in its examination of relatedness because it does not consider how the focus-increasing or focus-decreasing acquisitions are subsequently managed.

[1] Martynova and Renneboog (2008) provide an extensive review of pre-acquisition variables identified in the M&A literature. In addition to focus or relatedness, these include the size of the acquirer relative to the target, free cash flow, q-ratio, the role of merger waves, the acquirer's pre-acquisition ownership of the target and the method of payment.

In contrast to the emphasis on pre-acquisition characteristics in the earlier finance literature, the strategic management literature argues that consideration of the post-acquisition process is equally, if not more important, than the pre-deal characteristics of the target and acquirer (e.g., Zollo and Singh 2004). This view is gaining traction in the finance literature; for example, recent finance papers examine post-acquisition production efficiency gains (e.g., Li 2013), synergy gains in production (Devos et al. 2009) and other costs savings (in advertising: Fee et al. 2012), and post-acquisition restructuring (Maksimovic et al. 2011). Post-acquisition production efficiencies and other synergy gains from restructuring suggest that post-acquisition integration, which emphasizes how the acquired resources and capabilities are subsequently organized within the merged entity, should play a key role in determining the long-run performance of an acquisition (Shrivastava 1986; Alexandridis et al. 2013). Despite the wide acceptance of the benefits of integration from a theoretical perspective, there are surprisingly few papers that empirically examine this proposition. A major barrier in this regard has been the absence of a financially relevant measure of post-acquisition integration. The few empirical studies of post-acquisition integration, which are concentrated in the strategic management literature, rely on survey instruments rather than financial data (e.g., Datta and Grant 1990; Zollo and Singh 2004). The lack of a widely accepted quantifiable measure of post-acquisition integration severely limits the scope of statistical analysis and, thereby, the robustness of any conclusions reached. Therefore, we first develop a financially relevant measure of integration and test its association with long-run performance.

The theoretical literature on integration and performance (see Datta and Grant 1990; Zollo and Singh 2004) suggests that the direction of any integration-performance relation depends on whether acquisitions are focus-increasing (vertical or horizontal acquisitions) or focus-decreasing (diversifying acquisitions). This implies that post-acquisition integration and acquisition focus jointly affect post-acquisition performance. However, empirical studies in the finance literature typically consider only the relationship between acquisition focus and performance, without explicit consideration of post-acquisition integration, with mixed results. For example, Megginson et al. (2004) find evidence of negative performance for diversifying mergers, in contrast to the positive findings of Agrawal et al. (1992) or Hyland and Diltz (2002).[2] Similarly, Maksimovic and Phillips (2001) report evidence that the productivity of the acquirer's assets improves after a merger only when a firm adds capacity to its main divisions and increases the firm's focus. Also, in the context of related and diversifying acquisitions, the finance literature considers performance implications of post-acquisition divestitures at firm level (e.g., Kaplan and Weisbach 1992) and plant level (Maksimovic et al. 2011). More generally, John and Ofek (1995) find that asset sales that increase the focus of a firm improve its performance.

We argue that the failure to incorporate the interaction between acquisition focus and post-acquisition integration is a likely source of much of the inconsistency in this area of research. Therefore, our main objective is to examine whether interactions between acquisition focus and post-acquisition integration influence the long-run performance of

[2] Hyland and Diltz (2002) and Megginson et al. (2004) use US data but similar inconsistencies in the focus-performance and diversification-performance relations are evident in other markets, including Australia, the UK and Japan (see Martin and Sayrak (2003) for a summary of this literature).

acquiring firms. In this way, we seek to reconcile the conflicting evidence on the relation between acquisition focus and long-run post-acquisition performance.

We examine acquisitions in the Australian listed equities market, which functions through a single well-regulated mature exchange, the ASX. While the ASX is one of the world's top ten exchanges by market capitalization and trading volume, we suggest the scale and operating characteristics of the Australian market, including its continuous disclosure requirements might reduce the likelihood or extent of private information motivating opportunistic acquisitions. The ASX usually has around 2200 listed companies and its listing rules require an entity to notify the ASX of any information concerning it that is reasonably expected to have a material effect on the price or value of the entity's securities. We suggest that this increases the general observability of listed targets, compared to more populated multi-exchange markets, such as the US.

Using financial data from 1989 to 2008, we observe a strong positive un-moderated relation between post-acquisition integration and post-acquisition financial performance but, consistent with the lack of consensus in the literature, we find little evidence of an un-moderated relation between acquisition focus and post-acquisition performance. The results confirm our new integration measure is meaningful. Our main contribution is to show that, when we allow for interactions between focus and integration, the main effects for both focus and integration and their interaction effects are significant and in the direction predicted by theory. We find significant differences in the performance associated with post-acquisition integration for focus-increasing versus focus-decreasing acquisitions. The results are robust to the inclusion of variables traditionally used to model post-acquisition performance and to the use of either financial or operational

performance metrics. The relations are strongest in the most recent years, which encouragingly suggest that these results are of contemporary relevance.

The remainder of the paper is organized as follows. Section II discusses the relevant literature. Section III describes the sample selection process. Section IV outlines the methodology. Section V reports the results, and Section VI concludes with a summary of the main findings.

II. FOCUS AND INTEGRATION IN THE M&A LITERATURE

Many studies investigate long-run post-acquisition financial performance based on changes in equity prices (for a review, see Cartwright and Schoenberg 2006) and most identify post-acquisition underperformance, on average (e.g., Jensen and Ruback 1983; Jarrell et al. 1988; Agrawal and Jaffe 2000; da Silva Rosa et al. 2000; Andrade et al. 2001; Sudarsanam and Mahate 2003). Results based on operational performance, such as the return on equity or assets, generally vary between negative and mildly positive returns (e.g., Sharma and Ho 2002; Megginson et al. 2004; Powell and Stark 2005). However, some studies do not find significant post-acquisition operational underperformance (e.g., Franks et al. 1991), and there is even some evidence that post-acquisition operational performance improves on some dimensions (Healy et al. 1992). A contributor to these inconsistent results may be inadequate control for acquirer and target relatedness.[3]

[3] See Martynova and Renneboog (2008) for an extensive review of the factors associated with post-acquisition financial and operational performance.

The M&A literature indicates that the magnitude of post-acquisition returns is related to acquisition focus (Megginson et al. 2004), but again, the evidence is mixed and inconclusive. Agrawal et al. (1992) finds focus-decreasing acquisitions, such as those motivated by diversification or financial motives, exhibit superior long-run performance compared to focus-preserving or focus-increasing acquisitions. Consistent with the evidence that diversity in resources and investment opportunities across divisions may lead to inefficient decisions (Rajan et al. 2000; Lamont and Polk 2002), Megginson et al. (2004) finds that focus-preserving or focus-increasing acquisitions have superior long-run post-acquisition performance. Ghosh (2001) and Linn and Switzer (2001) do not find any significant relation between acquisition focus and long-run operational performance. Inconsistent results arise if acquisition focus indicates a potential for synergistic gains where, as we explore below, realization is dependent on post-acquisition management.

There are substantive theoretical arguments that the long-run outcomes depend on the management of the post-acquisition process, rather than simply being a function of the deal and pre-acquisition characteristics of the firms involved – including acquisition focus (Jemison and Sitkin 1986; Cartwright and Schoenberg 2006). The extent to which the acquired resources contribute to long-run post-acquisition performance depends on whether post-acquisition deployment exploits potential synergies reflected in the acquisition focus (Megginson et al. 2004; Alexandridis et al. 2013). Consistent with this view, Maksimovic et al. (2011) report that acquirers are most likely to retain acquired plants that are similar to their largest divisions and those which provide a competitive

advantage, and that the retained plants tend to improve in performance with significant increases in productivity and operating margins. [4]

The process of post-acquisition integration can translate the potential synergies into realizable economic value (Jemison and Sitkin 1986; Zollo and Singh 2004), but differences in potential synergies determine different requirements with respect to post-acquisition integration. We suggest the inconsistent results regarding a focus-performance relation are due to the omission of post-acquisition integration from the analysis. Our expectation of the joint relevance of focus and integration is grounded in the strategic management literature. The focus-increasing or focus-decreasing nature of a particular acquisition directly determines the strategic and organizational fit of the target and acquirer, which in turn determines the appropriate level of integration required to translate potential synergy into increased economic value (Jemison and Sitkin 1986; Zollo and Singh 2004). Focus-increasing acquisitions offering synergistic gains from operating efficiencies and economies of scale necessarily require high levels of integration (Salter and Weinhold 1981), while focus-decreasing acquisitions, such as those motivated by financing or diversification gains, necessitate little or no integration or sharing of resources other than financial resources (Shrivastava 1986; Vestring et al. 2004) so that high levels of integration may be detrimental to performance.

[4] Post-acquisition performance improvements attributable to both focus and integration also extend to intangible assets. Fee et al. (2012) report that, when acquired intangible assets overlap with the acquirer's existing assets, expenditure on those types of assets usually decreases post-acquisition and the market reacts positively to the news of the combination.

III. SAMPLE SELECTION

Our sample is drawn from all completed acquisitions involving only Australian Securities Exchange listed firms reported in the *Thomson Financial SDC Global M&As* database with an effective transaction date between 1 January 1992 and 30 June 2005. Because we model post-acquisition performance for three years after an acquisition, we cut-off the acquisition cases in 2005 so that our cut-off for financial data is 2008, to avoid most of the potentially confounding effects following the global financial crisis.

We follow the orthodox M&A literature and only include deals in which the bidder acquired more than 50 per cent of its target's shares (Brown and da Silva Rosa 1998) and where the target firm is identified as a controlled entity in the acquirer's annual report after acquisition (a lack of legal control may inhibit acquirers from imposing integration choices). We exclude cross-border acquisitions to ensure acquirers and targets are subject to the same institutional environments, including accounting disclosure requirements. Because we require equity price data and financial statement data for both acquirers and targets, we also exclude cases where either the acquirer or target was not a listed entity. To avoid the confounding effects of multiple acquisitions in evaluating the performance of an acquisition, we include only those cases where there was no other acquisition by the same acquirer within three years (+/-) of the selected case. We identify an initial sample of 158 completed acquisitions. We lose 39 cases due to missing data, giving a final sample of 119 completed acquisitions.

The distribution of the final sample by the financial year of the acquisition is described in Table 1. Consistent with Australian merger wave research, the acquisitions

in the sample are not evenly distributed over time (Simmonds 2004 and Finn and Hodgson 2005).

Table 1 about here

IV. METHODOLOGY AND VARIABLES CONSTRUCTION

A. Measuring performance

We examine both long-run financial performance (stock price performance) and long-run operational performance (accounting return on assets). Financial performance metrics allow for risk-adjustment but are susceptible to market inefficiency and information asymmetry (Lang and Stulz 1994), whereas accounting-based operational performance measures avoid these issues but may be affected by management manipulation (Sharma and Ho 2002). Considering these two types of value-oriented performance enhances the contribution of this paper by increasing comparability with the relevant but diverse literature and ensuring robustness.

We define long-run as three years because shorter performance windows, such as those focused around acquisition announcements, fail to adequately capture the changes in wealth as a result of an acquisition (Loughran and Vijh 1997). Because we exclude acquirers who make multiple acquisitions within the performance period, windows longer than three years makes the sample too small for reliable analysis. A three-year performance window is consistent with earlier studies (Rau and Vermaelen 1998; Mitchell and Stafford 2000; Ikenberry et al. 2000).

We measure long-run post-acquisition financial performance using the buy and hold return over the three years following the effective date of the acquisition (Megginson et al. 2004).[5] The return for each acquirer is calculated relative to a control firm benchmark. We use a variant of the Barber and Lyon (1997) approach as suggested by Kruse et al. (2007), whereby each control firm is matched to the acquirer by industry and total assets (±30%) and must have not engaged in any acquisition activity over the performance measurement period.[6] In addition to controlling for industry and size-related factors in returns, the control firm approach removes the impact of mean reversion in returns.[7] The excess (abnormal) stock return for each acquirer (*XSRTN*) is calculated as:

$$XSRTN_i = R_i - R_{CF,i} \quad (1)$$

[5] Using the effective month of the acquisition is consistent with other research (see discussion in Mitchell and Stafford 2000). An alternative to the buy and hold approach is to use cumulative returns, which involves rebalancing at some arbitrary return frequency, such as daily or monthly. Unfortunately such measures have been shown to be biased as they assume zero intertemporal dependence between consecutive returns, a requirement which is unlikely to be met due to the above-average size and trading volume associated with acquiring firms.

[6] We use the *Industry Classification Benchmark* (*ICB*) of *Standard and Poors* and *FTSE* because GICS classifications were not available for the earlier years of our sample period. Similar to GICS, ICB has 10 industry sectors: oil and gas, basic materials, industrials, consumer goods, health care, consumer services, telecommunications, utilities, financials and technology. Asset values are measured as at the end of the financial year immediately preceding the effective date and following Sharma and Ho (2002), are based on book rather than market values.

[7] Fama and French (1988) find strong evidence of negative serial correlation in stocks, particularly at the 3-5 year horizon. The strength of the time dependency differs markedly between portfolios of stocks (such as broad market indices) and individual stocks, making the use of a market index as a benchmark inappropriate for removing the effects of mean reversion in acquiring firm returns. The control firm approach of Barber and Lyon (1997) avoids this problem.

where R_i and $R_{CF,i}$ are the three-year post-acquisition buy and hold returns for the acquirer and its matched control firm, respectively.[8]

We measure long-run operational performance as return of assets (ROA), due to its widespread use in the relevant literature (see Sharma and Ho 2002; Powell and Stark 2005) and because it avoids the confounding effects of differences in financial structures encountered with equity-based measures (Michel and Hambrick 1992). Healey et al. (1992) finds consistent results using ROAs calculated from either market or asset values. For consistency with the Australian study of Sharma and Ho (2002), we use the book value of assets when calculating ROA.[9] Using the same control firm approach described above, the excess (abnormal) return on assets for each acquirer (*XSROA*) is calculated as:

$$XSROA_i = ROA_i - ROA_{CF,i} \quad (2)$$

where ROA_i and $ROA_{CF,i}$ are the average annual ROAs for the three years post-acquisition for the acquirer and its matched control firm, respectively.

The distributional properties of our performance measures for acquirers and control firms are reported in Table 2. We observe mean excess post-acquisition financial performance of -4.04%, which is consistent with prior studies in Australia (da Silva Rosa et al. 2000), the US (Agrawal and Jaffe 2000) and UK (Sudarsanam and Mahate

[8] Both equity returns are calculated using logarithms and include dividends and capitalization changes.
[9] Sharma and Ho (2002, p. 173) explain that "*Australian consolidation rules suggest recording assets acquired at fair market value which is reflected in the book value*" and also that the use of book values avoids the issues of market expectations influencing the ROA measure. This point is particularly pertinent in our context, as market expectations are already incorporated in the financial return measure (*XSRTN*).

2003). We observe mean excess operational performance of +1.65%, similar to Powell and Stark (2005) for UK acquirers. We do not draw conclusions based on these small excess returns (equivalent to annualized returns of -1.365% and + 0.547%), which are not statistically significant.[10]

Table 2 about here

B. Developing an integration measure

Although integration is strongly argued as a key driver of post-acquisition performance (Zollo and Singh 2004), the empirical literature is constrained by difficulties in observing and quantifying integration. The more sophisticated approaches are largely limited to subjective and statistically weak Likert-type scale measures from questionnaires regarding the perceived post-acquisition autonomy of the target firm (Datta and Grant 1990) or the acquirer's perceived post-acquisition centralization of systems, procedures and products (Zollo and Singh 2004).

To develop a more objective measure of post-acquisition integration, we surveyed the recent literature concerned with integration. Although integration can be in the form of procedural, physical or managerial/cultural integration (Shrivastava 1986), the recent literature we surveyed emphasizes physical integration, including consolidation of product lines, production technologies, R&D projects, property plant and equipment (PPE) and other fixed assets. The innovative integration measure used in Kruse et al. (2007) compares changes in employment levels. This measure indirectly captures

[10] Paired t-tests yield p-values of 0.73 for financial returns and 0.43 for operational returns. Non-parametric Wilcoxon z-tests yield p-values of 0.83 and 0.69.

integration of physical resources but is affected by labor efficiencies that do not require physical integration. Pablo (1994) advocates, but does not develop, a direct measure of integration based on the degree to which the assets within the two firms are replaced after the completion of the acquisition. Based on this approach, we expect acquirers that seek to integrate the acquired assets to either: (i) incur additional physical asset expenditure to support the costly aspects of integrating (Zollo and Singh 2004); or (ii) have abnormal revenues from asset disposals as the integration generates redundant assets.

Comparison of the pre- and post-acquisition ratios of expenditures and revenues from changes in physical asset holdings can reveal disproportionate changes expected to arise from post-acquisition integration. Accordingly, we propose such a measure whereby the level of post-acquisition integration (*PAI*) is measured as the change in the ratio of expenditure from property, plant and equipment (PPE) acquisitions (*EXP*) to revenue from PPE disposals (*REV*), from pre- to post-acquisition, thus*:*

$$PAI_i = \left[\frac{\ln(1+EXP_{post,i})+1}{\ln(1+REV_{post,i})+1}\right] - \left[\frac{\ln(1+EXP_{pre,i})+1}{\ln(1+REV_{pre,i})+1}\right] \quad (3)$$

where $EXP_{post,i}$ and $REV_{post,i}$ are the levels of PPE expenditure (ie. acquisitions) and PPE revenue (ie. disposals), respectively, for the acquirer post-acquisition, and $EXP_{pre,i}$ and $REV_{pre,i}$ are the respective sums of the acquirer's and target's pre-acquisition levels of

PPE expenditure (acquisitions) and PPE revenue (disposals).[11] Post-acquisition PPE expenditures and revenues disclosed in annual cash flow statements of the acquirer are summed over three years from the financial year of the effective acquisition date, including the year of the acquisition. Similarly, pre-acquisition PPE expenditures and revenues disclosed in the annual cash flow statements of the target and acquirer are summed over the three years prior to financial year of the effective acquisition date.

This integration measure is the simple difference between the ratio of logged PPE acquisitions-to-disposals for the combined entity after the acquisition ($ACQDISPR_{post,i}$) and the ratio of logged PPE acquisitions-to-disposals for the acquirer and the target combined entities before the acquisition ($ACQDISPR_{pre,i}$). The extent to which the ratio of logged PPE acquisitions-to-disposals is influenced by industry practices or endogenous management strategies is captured in the pre-acquisition measure, which thus benchmarks post-acquisition behavior. Thus, high values for *PAI* indicate high (or otherwise costly) integration and negative values are consistent with low (or otherwise less costly) integration.[12]

We assume that the pre-acquisition three-year average behavior is the best predictor of the next three-year average for each firm. Thus, in the absence of integration, the combined post-acquisition asset change behavior is similar to the combined pre-acquisition asset change behavior. Consequently, the magnitude of *PAI* should indicate

[11] The aggregation of acquirer and target asset transactions is necessary because post-acquisition data is only available only for the consolidated entities. Because it is not possible to distinguish the acquired assets from other consolidated assets post-acquisition, we also aggregate the pre-acquisition asset transactions to obtain a coherent measure of change. The use of logarithms expresses the integration measure as a rate of change. The addition of 1 in the numerator and denominator is merely to avoid the confounding effects of zero revenue or expenditure levels.

[12] For convenience, we refer only to high and low integration in our remaining discussion.

the extent of physical integration. This will not be true if: (1) the acquirer and target have such high levels of complementarity and no redundancy such that they can integrate operations without any change to either of their pre-acquisition asset transaction behaviors, which we claim is unlikely; and (2) where there is a measurable change in asset transaction behavior that is unrelated to integration, which will generate noise in our analysis and thus bias against our results.

We report the sample distribution of *PAI* and its component variables ($ACQDISP_{pre}$ and $ACQDISP_{post}$) in Table 3. The properties of *PAI* appear consistent with our expectations. Most acquirers in our sample exhibit low-cost or no integration (*PAI median* = -0.0064). We observe considerable differences in the pattern of *PAI* scores across industries. The Basic Materials sector, which accounts for 31% of our sample, has both the sample maximum and minimum *PAI* (2.2460 and -0.5683). In contrast, we observe little variation within the Consumer Goods and Industrials sectors, with *PAI* standard deviations (not tabulated) of 0.0674 and 0.0847 respectively. Referring to $ACQDISP_{pre}$ and $ACQDISP_{post}$ in Table 3, we find high growth industries (such as Utilities, Health Care and Technology) have higher levels of capital expenditure turnover compared to firms in relatively low growth industries (such as Industrials and Consumer Goods); these are comparable to US statistics in Hoberg and Phillips (2010). Spearman rank correlation tests do not indicate that *PAI* is significantly related to PPE purchase and disposal behavior either pre-acquisition ($ACQDISP_{pre}$) or post-acquisition ($ACQDISP_{post}$), with p-values of 0.55 and 0.23 respectively. That is, there is no tendency

for acquirers in industries with high fixed asset turnover to engage disproportionately in more or less post-acquisition integration.[13]

Table 3 about here

C. Focus proxies

Our measure of focus follows the two-digit industry code approach of Megginson et al. (2004), except that we use the *Industry Classification Benchmark (ICB) of Standard and Poors and FTSE* to define industry sectors, consistent with our firm-matching for performance measurement. Acquisitions are focus-preserving or increasing (*FPI*) if the acquirer and target are in the same industry sector, and focus-decreasing (*FD*) otherwise.[14] For convenience, we label cases as integrated (non-integrated) if *PAI* is greater than (less than) zero. Table 4 presents the details on post-acquisition performance, categorizing our sample of acquirers according to focus (FPI versus FD) and integration (integrated versus non-integrated), as well as according to the grouped intersections of 'integrated×*FPI* and non-integrated×*FD*' and 'non-integrated×*FPI* and integrated×*FD*' in Panel B. Our reasons for these combinations are discussed below.

The excess financial and operational performance measures (*XSRTN* and *XSROA)* are described for the full sample and compared for each sub-sample obtained based on focus

[13] There is an area of the literature that views acquisition behavior as a learning experience (see Zollo and Singh, 2004). It follows from the assertions in this literature that firms engaged in high fixed asset turnover activity on a regular basis may have an advantage in this regard when it comes with fixed asset acquisitions or disposals following an acquisition, and hence have a greater propensity to undertake either low integration activities (such as asset stripping) or high integration activities (involving additional fixed asset purchases). Despite the intuitive appeal of this argument, we find no evidence of this behavior in our sample.

[14] While our approach is typical of the M&A literature, if the industrial organization and strategic management literature distinction between vertical and horizontal relatedness and performance (see Lubatkin 1983) is correct, our measure will be biased against revealing a relation.

or integration scores in Panel A of Table 4. We find no evidence of differences in financial or operational performance between FPI and FD subsamples. We find significant performance differences between the integrating and non-integrating subsamples, particularly for financial performance (*XSRTN*), for which the mean difference is 46.42% (p-value = 0.05) and the median difference is 29.48% (p-value = 0.03). Using *XSROA*, the mean difference is only 7.33% (p-value = 0.08), while the median difference is 2.15% (p-value = 0.06).

Table 4 about here

Having established that the relative performance differences between FD and FPI acquisitions and between integration and non-integration appear as expected, we now focus on the interaction between focus and integration. As discussed, we expect the potential synergies from FPI acquisitions to be realized from integration, while extensive integration following FD acquisitions may be value destructive. Therefore, we hypothesize that post-acquisition performance will be: (a) superior for both FPI acquisitions that integrate and FD acquisitions that do not integrate; and (b) inferior for FPI acquisitions that do not integrate and FD acquisitions that integrate. Tests of this hypothesis are reported in Panel B of Table 4.

Less than half (47%) of our sample exhibits notionally optimal combinations of *PAI* with FPI and FD acquisitions (39 integrated FPI acquisitions and 17 non-integrated FD acquisitions). However, consistent with our expectations, we find that post-acquisition performance is greater for integrated FPI acquisitions and non-integrated FD acquisitions compared to non-integrated FPI acquisitions and integrated FD acquisitions. All of the differences are in the predicted direction for both financial and operational

performance using either means or medians, but not significant; the largest mean difference is for *XSRTN* (14.37%). We attribute the lack of significance to factors contributing to the noisiness of our performance measures; most standard errors exceed 20%. We next discuss these factors, for which we control in our subsequent regression analysis.

D. Control variables

In all subsequent analysis, we include five control variables widely identified in the literature as impacting on the cross-sectional variability in financial and operational performance following acquisitions. These variables represent the systemic propensity for acquisitions, or merger waves, (*WAVE*), and firm or transaction-level characteristics: the acquirer's free cash flows (*FCF*); the relative size of the acquirer to the target (*SIZE*); the acquirer's method of payment for the acquisition (*CASH*); and the acquirer's prior ownership in acquisition targets (*TOEHOLD*).

Merger waves are heavily documented (Shleifer and Vishny 2003). In Australia, acquisition activity has been related to macroeconomic conditions such as industrial production, long-dated bond yields and capital expenditure (Finn and Hodgson 2005), consistent with the proposition that expected industrial production drives managers to seek opportunistic takeovers (Schwert 2000). Accordingly, we define *WAVE* as a function of expected changes in industrial production.[15] To decompose industrial

[15] Our industrial production variable is obtained from the International Monetary Fund (IMF)'s *International Financial Statistics*, sourced from *Thomson-Reuters DataStream*. Using annual production data avoids short-term seasonality and matches our forecast horizon. We estimate the model using data over the period for which we have acquisition data (1990-2005), and in the interest of robustness,

production into expected and unexpected realizations, we use the Kalman filter approach described in Harvey (1991). This is suited to generating forecasts (Ghysels and Wright 2009) and avoids the serial correlation and systematic forecast biases inherent in simple rate of change and autoregressive (AR) models (Priestley 1996). Our Kalman filter measurement equation uses a parsimonious first-order representation: $IP_t = \beta_t IP_{t-1} + \varepsilon_t$, where *IP* is the national annual industrial production and ε_t is a zero mean i.i.d normal process; with process equation $\beta_t = \beta_{t-1} + \upsilon_t$, where υ_t is a zero mean i.i.d normal process. ε_t and υ_t are assumed to be contemporaneously uncorrelated and we allow for time-variation in both the mean and variance of our state variable (β_t).[16] We estimate the following year's expected industrial production as $E_t(IP_{t+1}) = \beta_{t+1} IP_t$. Our merger wave variable is the relative change in expectations, calculated as $WAVE = ln[E_t(IP_{t+1}) / E_{t-1}(IP_t)]$. Intuitively, *WAVE* proxies potential acquirers' expectations of future changes in business conditions. If managers can time acquisitions accordingly, there should be a positive relation between *WAVE* and post-acquisition performance.

We use *FCF* to control for the competing influences of agency issues (Jensen 1986) and underinvestment/adverse selection (Myers and Majluf 1984). We follow Lang et al. (1991) and define *FCF* as operational income before depreciation minus interest expense, taxes, preferred dividends and common dividends. Free cash flows may be influenced by macroeconomic conditions and thus correlated with any measure of

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reconfirm these results using the entire available sample for the industrial production variable (1957-2005). The obtained estimates were not statistically different.

[16] Our estimated coefficient β_t has a mean (median) over the sample period of 1.0691 (1.0733), suggesting that *IP* follows an I(1) process as found by Finn and Hodgson (2005) with positive drift. Model diagnostics support our decision to permit time-variation in the model parameters. We test for joint stability in the coefficients and standard errors (as per Hansen, 1992) and reject the null hypothesis of stability (p-value = 0.04).

merger wave activity (Shleifer and Vishny 1992). To avoid is problem, we normalize *FCF* by subtracting the median free cash flow level of ASX All Ordinaries constituent firms in the financial year of the acquisition.[17] The resultant *FCF* measure is greater (less) than zero if an acquirer's free cash flows were in the top (bottom) 50% of all listed firms in the acquisition year.

We control for relative size because prior studies (e.g., Barry and Brown 1984; Bhagat et al. 2005) show that post-acquisition performance increases with the size of the acquirer relative to the target. This effect might reflect information asymmetry (Barry and Brown 1984) or relative size may affect the integration decision if smaller firms are less complex and less expensive to integrate (Pablo 1994). Following Sharma and Ho (2002), we measure relative size as $SIZE = ln(TA_{TGT}/TA_{ACQ})$, where TA_{TGT} and TA_{ACQ} are the total assets of the target and acquirer, respectively, at the end of the financial year prior to the year of the acquisition.

The method of payment may be associated with long-run post-acquisition performance (Bi and Gregory 2011). We control for the method of payment using the variable *CASH,* which is defined as the proportion of cash used as consideration for the target.

As acquirer's prior stockholding in the target firm increases, information asymmetry between the acquirer and target should decline (Barney 1988), improving prospects for post-acquisition performance. Following Betton and Eckbo (2000), we control for this using *TOEHOLD*, which is defined as the percentage of the target's issued ordinary

[17] The All Ordinaries comprises the top 500 companies on the Australian Securities Exchange (ASX) according to market capitalization.

equity held by the acquirer at the end of the financial year prior to the year of the acquisition.

Data for *FCF, SIZE, CASH* and *TOEHOLD* were obtained from the *Thomson Financial SDC Global M&As* database. Descriptive statistics are reported in Panel A of Table 5. For our sample, acquisitions generally occur when there is an expected improvement in future economic conditions (*WAVE* mean = 0.0218). Acquirers' free cash flows are above the median for ASX All Ordinaries constituent firms (*FCF* mean = 0.0206). Target firms tend to be one-third the size of acquirers in terms of total assets (*SIZE* mean = -1.3355), and, on average, cash payments represent around 45% of the consideration paid in acquisitions, which is similar to that reported in da Silva Rosa et al. (2000). On average, acquirers own approximately 7% of their targets' equity prior to the acquisition.

Correlations between the control variables, *PAI*, and *FPI* are reported in Panel B of Table 5 (*FPI* = 1 for FPI acquisitions and 0 for FD acquisitions). None of the correlations (*r*) are significant at conventional levels. The highest correlations are associated with the method of payment (*CASH*). This is positively associated with free cash flows ($r_{CASH,FCF}$ = *0.2383)*, relatively larger targets ($r_{CASH,SIZE}$ = *-0.2347)* and when economic conditions are expected to improve ($r_{CASH,WAVE}$ = *0.1769*). The conjecture in Pablo (1994) that integration levels are related to the size of the target is not supported ($r_{PAI,SIZE}$ = *0.0950)*. Overall, the statistics and correlations do not raise any concerns regarding the appropriateness of the control variables for our regression purposes.

Table 5 about here

V. REGRESSION RESULTS

In this section we use least squares regression to investigate the combined relevance of focus and integration to long-run post-acquisition performance. As outlined in Table 2, we use two dependent variables in the regressions, specifically financial performance *XSRTN* (the excess buy and hold return to the acquirer) and operational performance *XSROA* (the excess average acquirer return on assets). Both performance measures are adjusted for control firm performance and are calculated for the three years post-acquisition.

We first ascertain whether the control variables adequately control for cross-sectional variation in our performance measures by estimating the following models:

$$XSRTN = \alpha_0 + \alpha_1 WAVE + \alpha_2 FCF + \alpha_3 SIZE + \alpha_4 CASH + \alpha_5 TOEHOLD + e \quad (4a)$$

$$XSROA = \beta_0 + \beta_1 WAVE + \beta_2 FCF + \beta_3 SIZE + \beta_4 CASH + \beta_5 TOEHOLD + u \quad (4b)$$

The results are reported in columns (1) and (5) of Table 6. Both XSRTN and XSROA are significantly (and similarly) associated with *FCF, WAVE* and *SIZE*. While the coefficients for *CASH* and *TOEHOLD* are not significant, a likelihood ratio test of the hypothesis that the coefficients on the control variables are jointly zero is rejected for both financial ($\chi^2_5 = 18.40$, p-value = 0.00) and operational returns ($\chi^2_5 = 23.81$, p-value = 0.00). Based on these results, we are confident that our control variables are adequate for their purpose.

Table 6 about here

We consider the individual impact of focus and integration on performance before considering interaction effects, essentially repeating the analysis of these issues undertaken in prior research. We do this to validate our general design. The models are:

$$XSRTN = \alpha_0 + \Sigma\alpha CV + \alpha_6 FPI + e \quad (5a)$$

$$XSROA = \beta_0 + \Sigma\beta CV + \beta_6 FPI + u \quad (5b)$$

$$XSRTN = \alpha_0 + \Sigma\alpha CV + \alpha_7 PAI + e \quad (6a)$$

$$XSROA = \beta_0 + \Sigma\alpha CV + \beta_7 PAI + u \quad (6b)$$

where *FPI* is the focus indicator variable, which = 1 for FPI acquisitions and 0 for FD acquisitions, *PAI* is the continuous integration measure defined in equation (3), and CV is the vector of control variables.

The results for *FPI* and *PAI*, reported in columns 2, 3, 6 and 7 in Table 6, mirror the corresponding univariate tests reported in Table 4. The coefficient for *FPI* is not significant (consistent with Ghosh 2001), but the coefficient for *PAI* indicates a significant positive integration-performance relation, particularly in relation to financial performance ($t = 2.08$).

Columns 4 and 8 in Table 6 report our test for interaction effects, which is our main focus. We use two mutually exclusive interactions terms: *FPI*×*PAI* and *FD*×*PAI*, where *FPI* = 1 for FPI acquisitions and 0 otherwise, and *FD* = 1 for FD acquisitions and 0 otherwise. The relations between performance and these interactions are compared with acquisitions that are not integrated (the base case) in the following models:

$$XSRTN = \alpha_0 + \Sigma\alpha CV + \alpha_8(FPI \times PAI) + \alpha_9(FD \times PAI) + e \quad (7a)$$

$$XSROA = \beta_0 + \Sigma\beta CV + \beta_8(FPI \times PAI) + \beta_9(FD \times PAI) + u \quad (7b)$$

Consistent with expectations, we find that acquirers that integrated focus-increasing acquisitions (*FPI×PAI)* experience better post-acquisition performance than those that integrated focus-decreasing acquisitions (*FD×PAI)*. Integrating a focus-increasing acquisition results in significantly positive excess financial performance (0.8078) and excess operational performance (0.1063). Integrating a focus-decreasing acquisition does not significantly affect excess performance, relative to non-integrated acquisitions.

A. Robustness tests

An issue associated with acquisition studies in general is that the strength of any relations may vary over time with changes in capital market participation, regulations and general financial conditions while, to obtain a sufficiently large sample of deals, sample periods are necessarily long (nearly 15 years here). To investigate the stability of our regression coefficients over the sample period, in the absence of a natural breakpoint, we divide the sample period into 2 roughly balanced periods, with 62 acquisitions in the 1992 - 1999 sub-period and 57 in the 2000 - 2005 sub-period.

The sub-period results for the interaction regressions (models 7a and 7b) are reported in Table 7. In both periods, integrated FPI acquisitions yield significantly superior financial performance (*XSRTN*). There is no evidence of superior operational performance (*XSROA*) in relation to integration in the pre-2000 period, but the latter period accords with the financial performance results. In the latter period, *XSROA* is

increased by integrating FPI acquisitions and decreased by integrating FD acquisitions, relative to non-integrated acquisitions; while this is consistent with the proposition that costly integration of focus-decreasing acquisitions can erode value, this is not reflected in the market performance measure (*XSRTN)*. Comparing the coefficients for the interaction terms in each model, we find the difference in performance between FD and FPI acquisitions is strongly significant in the later period for both financial (χ^2_1 = 9.18, p-value = 0.00) and operational (χ^2_1 = 2.80, p-value = 0.09) performance and only significant in the earlier period for financial performance (χ^2_1 = 3.69, p-value = 0.05).

Table 7 about here

We also examine whether distinguishing between changes in asset purchases or sales provides additional explanatory power in relation to performance.[18] To do so, we use a nested test with *PAI* as our theoretical base-case, model 6a is the restricted form and the unrestricted version is:

$$XSRTN = \alpha_0 + \Sigma\alpha CV + \alpha_7 PAI + \alpha_8 REV\_RATIO + \alpha_9 EXP\_RATIO + e \quad (8)$$

where *REV_RATIO* is ratio of post-acquisition sales to pre-acquisition sales, calculated as $(REV_{post}+1)/(REV_{pre}+1)$ and *EXP_RATIO* is the ratio of post-acquisition purchases to pre-acquisition purchases, calculated as $(EXP_{post}+1)/(EXP_{pre}+1)$. For efficiency, we do not tabulate the results. The coefficient of *PAI* when *REV_RATIO* and *EXP_RATIO* are included is smaller but similar to that for model 6a (0.48 compared to 0.57) and has the

[18] We thank an anonymous reviewer for this suggestion.

same level of significance, and neither *REV_RATIO* nor *EXP_RATIO* is significant. The log likelihood ratios are 180.07 and -181.71 for models 8 and 6a respectively, which yields the test statistic LR = -2 (-181.71 + 180.07) = 3.28, with p-value = 0.194; therefore, we do not reject the null hypothesis that the coefficients α_8 and α_9 are jointly zero. We have also estimated individual regressions using *REV_RATIO* and *EXP_RATIO* without *PAI* and each yielded results that are weaker than that obtained using *PAI*. Thus, we do not find any evidence that the sub-components of the *PAI* ratio better explain differences in post-acquisition performance.

VI. DISCUSSION AND CONCLUSION

Our study shows that the interaction between acquisition focus and post-acquisition asset management is a significant determinant of long-run post-acquisition performance. Our findings contribute to the literature in three ways.

First, we show that focus plays an important role in how post-acquisition asset management affects post-acquisition performance. Our approach integrates the evidence from the finance literature showing asset management strategies that increase firm focus generally improve performance (e.g., Kaplan and Weisbach 1992; John and Ofek 1995; Maksimovic and Phillips 2001, 2002, 2008; Maksimovic et al. 2011). Our results complement Maksimovic and Phillips (2001; 2008), which show that changes in focus within firms' divisions, through plant sales and purchases, may be efficiency enhancing, with choices regarding focus-increasing or focus-decreasing transactions seemingly dependent on internal capabilities. While our study is concerned with firm-level acquisitions rather than division-level plant transactions, our integration variable takes

account of changes in purchasing and selling behavior in relation to all of a firm's physical assets, thus including plant and sub-plant level transactions; future research is needed to determine the extent to which the acquisition and disposal behavior in relation to all of a firm's assets supports a similar mechanism in increasing efficiency to that achieved through plant level and sub-plant transactions.

Our second contribution pertains to the importance of post-acquisition integration of the purchased assets. The role of integration as part of the acquisition process has received little attention in the finance literature, with almost no reliable evidence of its impact on performance. Prior research suggests that much of the value erosion in acquisitions is believed to be associated with inadequate post-acquisition integration (Alexandridis et al. 2013). We develop an integration-related measure based on changes in asset turnover, and reveal a robust empirical relation that is consistent with acquisition integration strategies canvassed in the strategic management literature. Our results provide a more nuanced understanding of the post-acquisition integration, compared to the view that integration complexity or cost is largely a function of target size (e.g., Aktas et al. 2013).

Our third contribution pertains to the interaction between focus and integration in relation to performance. The conceptual importance of acquisition focus is widely recognized, even if the empirical evidence regarding its influence on post-acquisition performance is not consistent. We argue the inconsistent empirical evidence in the focus-diversification literature is a consequence of failing to incorporate post-acquisition management choices that are relevant to the realization of potential gains from focus-increasing acquisitions. Our results are consistent with our argument that the extent of

post-acquisition integration affects the realization of synergistic gains offered by most focus-increasing acquisitions. This is evident in two respects. First, we reveal that superior long-run post-acquisition performance accrues to firms that undertake extensive post-acquisition integration following focus-increasing acquisitions, relative to low cost integrating acquirers. Second, we show that integration following focus-decreasing acquisitions is, relatively, value neutral or value destroying. These results hold for the use of financial and operational performance measures. We believe our results provide some reconciliation of the competing arguments relating to the relation between focus (and diversification) and acquisition performance.

Based on our evidence that acquisition focus and post-acquisition integration jointly affect performance, any empirical investigation of these variables in isolation is mis-specified. Consequently, the historically heterogeneous results regarding focus are likely to reflect differences in sample bias with respect to integration outcomes. Thus, our findings may explain some of the puzzling inconsistencies in the focus-diversification and post-acquisition performance literature.

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Table 1
Sample Description

ACQUISITION YEAR	DEALS IDENTIFIED	FINAL SAMPLE	PERCENTAGE	CUMULATIVE PERCENTAGE
1992	4	2	1.7	1.7
1993	4	3	2.5	4.2
1994	6	4	3.4	7.6
1995	9	6	5.0	12.6
1996	15	9	7.6	20.2
1997	15	10	8.4	28.6
1998	21	16	13.4	42.0
1999	24	12	10.1	52.1
2000	28	17	14.3	66.4
2001	20	9	7.6	73.9
2002	13	8	6.7	80.8
2003	17	6	5.0	85.7
2004	27	12	10.1	95.8
2005	9	5	4.2	100.0
Total	213	119	100.0	

Notes:
This table reports the identified and final samples of domestic acquisitions by Australian Securities Exchange (ASX) listed firms over the 1992 to 2005 period. *Acquisition year* denotes the first financial year in which the target is listed as a controlled entity in the acquirer's annual report. *Deals identified* reports the initial available sample according to the *Thomson Financial SDC Global M&As* database. *Final sample* reports the acquisitions remaining after data screening. The final two columns report annual and cumulative percentages across the sample, respectively.

Table 2

Descriptive Statistics for the Performance Measures and PAI

VARIABLE	MEAN	SD	MIN	25%	MED	75%	MAX	S	K
R	-0.1416	1.0884	-4.1669	-0.3396	0.1620	0.4964	1.5778	-1.6958	3.3146
R_{CF}	-0.1013	0.9708	-4.6285	-0.5168	0.1149	0.4528	2.0169	-1.8581	5.8990
XSRTN	-0.0404	1.2648	-4.0204	-0.5531	-0.0167	0.6641	3.4552	-0.4394	1.7266
	(p=0.73)[a]				(p=0.83)[b]				
ROA	0.0086	0.1650	-0.9916	0.0123	0.0537	0.0759	0.4519	-2.8450	12.7269
ROA_{CF}	-0.0079	0.2052	-1.0114	0.0021	0.0505	0.0739	0.2495	-3.3303	12.0629
XSROA	0.0165	0.2244	-0.5898	-0.0381	0.0010	0.0450	1.2865	2.2063	12.3016
	(p=0.43)[a]				(p=0.69)[b]				
REV_{pre}	14.6561	4.1757	0.0000	12.7457	15.7531	17.0956	21.0169	-1.7960	7.0521
REV_{post}	14.5784	4.7805	0.0000	13.4254	15.4907	17.4646	20.9802	-1.8073	6.2649
EXP_{pre}	17.2928	3.3587	0.0000	16.3462	17.6192	19.2361	23.4316	-2.3800	13.1899
EXP_{post}	17.1385	3.9726	0.0000	16.0940	17.7903	19.1806	23.8255	-2.5872	12.2654
PAI	0.0308	0.3567	-0.5683	-0.0866	-0.0064	0.0853	2.2460	3.8292	24.2081

Notes:

This table reports descriptive statistics relating to performance measures for 119 domestic acquisitions of Australian Securities Exchange (ASX) listed firms and control firms over the 1992 to 2005 period. Performance measures are calculated for the three years post-acquisition; *R* and *ROA* denote post-acquisition buy and hold stock return and return on assets, respectively for the *acquirer*; R_{CF} and ROA_{CF} denote the post-acquisition buy and hold stock return and return on assets, respectively for the industry and size-matched *control firm;* and *XSRTN* and *XSROA* denote post-acquisition *excess* buy and hold stock return and return on assets, respectively for the *acquirer.* REV_{pre} is the average proceeds from asset sales for the acquirer and target for three years preceding the acquisition. REV_{post} is the average proceeds from asset sales for the combined entity for three years following the acquisition (including the year of acquisition). EXP_{pre} is the average cost of asset purchases for the acquirer and target for three years preceding the acquisition. EXP_{post} is the average cost of asset purchases for the combined entity for three years following the acquisition (including the year of acquisition). $PAI = [\ln(1+ EXP_{post})+1]/[\ln(1+REV_{post})+1] - [\ln(1+ EXP_{pret})+1]/[\ln(1+REV_{pret})+1]$.

Statistics reported in the table are: sample average (*MEAN)* and standard deviation (*SD)*; fractiles representing the Minimum (*MIN*), Median (*MED*), Maximum (*MAX*) and the 25th and 75th percentiles, labeled 25% and 75%, respectively. The final two columns report skewness (*S*) and excess kurtosis (*K*). The parentheses contain p-values of both parametric statistics (Student t-test) of the difference in means, and non-parametric (Wilcoxon z-test) statistics of the difference in medians between the *R* and R_{CF} variables, and the *ROA* and ROA_{CF} variables. Specifically, the *a* superscript denotes a test of identical means (t-test), while the *b* superscript denotes a test of identical medians (z-test).

Table 3

Descriptive Statistics for the Integration Measure

VARIABLE	PAI				$ACQDISPR_{post}$	$ACQDISPR_{pre}$
INDUSTRY	OBS	MED	MIN	MAX	MED	MED
COLUMN	(1)	(2)	(3)	(4)	(5)	(6)
Oil and Gas	4	-0.0103	-0.3909	0.2167	1.1603	1.1121
Basic Materials	37	0.0345	-0.5683	2.2460	1.1705	1.1705
Industrials	15	-0.0424	-0.1839	0.1125	1.0383	1.0949
Consumer Goods	17	-0.0064	-0.1437	0.0701	1.0585	1.0983
Health Care	4	0.0862	-0.0047	2.1495	1.2178	1.1703
Consumer Services	12	-0.0841	-0.5258	0.1757	1.1634	1.2684
Telecommunication	1	0.1285	0.1285	0.1285	1.2259	1.0974
Utilities	1	-0.0917	-0.0917	-0.0917	1.2314	1.3231
Financials	23	0.0141	-0.4907	0.9454	1.0554	1.0424
Technology	5	0.1507	-0.4760	0.3410	1.3422	1.2648
Full Sample	119	-0.0064	-0.5683	2.2460	1.1175	1.1328

Notes:

This table reports descriptive statistics relating to the post-acquisition integration measure (*PAI*) for 119 domestic acquisitions by Australian Securities Exchange (ASX) listed firms over the 1992 to 2005 period. *PAI* is calculated as:

$$PAI_i = \left[\frac{\ln(1+EXP_{post,i})+1}{\ln(1+REV_{post,i})+1}\right] - \left[\frac{\ln(1+EXP_{pre,i})+1}{\ln(1+REV_{pre,i})+1}\right] \quad (3)$$

where $EXP_{post,i}$ and $REV_{post,i}$ are the levels of PPE expenditure (ie. acquisitions) and PPE revenue (ie. disposals), respectively for the acquirer post-acquisition, and $EXP_{post,i}$ and $REV_{post,i}$ are the combined levels of PPE expenditure (ie. acquisitions) and PPE revenue (ie. disposals), respectively for the acquirer and target pre-acquisition. Post-acquisition expense and revenue measures are obtained by summing the relevant items from the annual cash flow statements of the acquirer over three years from the financial year of the effective acquisition date, including the acquisition year. Similarly, pre-acquisition expense and revenue measures are obtained by summing the relevant items from the annual cash flow statements of the target and acquirer over the years t-3 through to t-1 relative to the financial year of the effective acquisition date. The sample is broken down by acquirer's industry, with industries being defined according to the *Industry Classification Benchmark (ICB)* of *Standard and Poors* and *FTSE*. Statistics reported in the table are: sample average (*MEAN)*, Median (*MED*), Minimum (*MIN*) and Maximum (*MAX*).

Table 4

Post-Acquisition Performance by Focus and Integration Classifications

DEP. VAR.		XSRTN		XSROA	
VARIABLE	OBS	MEAN	MED	MEAN	MED
COLUMN	(1)	(2)	(3)	(4)	(5)
Panel A. Univariate tests					
Full Sample	119	-0.0404	-0.0168	0.0165	0.0010
FPI	83	-0.0078	-0.0165	0.0113	0.0057
FD	36	-0.1155	-0.0367	0.0285	-0.0086
Difference		0.1077	0.0202	-0.0172	0.0143
p-value of difference statistic		(0.67)	(0.80)	(0.70)	(0.51)
PAI>0	56	0.2054	0.0896	0.0553	0.0159
PAI≤0	63	-0.2588	-0.2052	-0.0180	-0.0056
Difference		0.4642	0.2948	0.0733	0.0215
p-value of difference statistic		(0.05)	(0.03)	(0.08)	(0.06)
Panel B. PAI and focus interaction tests					
PAI>0 × FPI and PAI≤0 × FD	56	0.0357	0.0190	0.0269	0.0104
PAI≤0 × FPI and PAI>0 × FD	63	-0.1080	-0.0383	0.0073	-0.0109
Difference		0.1437	0.0573	0.0196	0.0213
p-value of difference statistic		(0.54)	(0.46)	(0.64)	(0.17)
PAI>0 × FPI	38	0.2323	0.0896	0.0471	0.0209
PAI≤0 × FPI	45	-0.2105	-0.0828	-0.0189	-0.0056
PAI>0 × FD	18	0.1484	0.2065	0.0728	-0.0141
PAI≤0 × FD	18	-0.3794	-0.3809	-0.0158	-0.0036

Notes:

This table reports mean and median performance measures for 119 domestic acquisitions by Australian Securities Exchange (ASX) listed firms over the 1992 to 2005 period. Panel A reports descriptive statistics for the full sample and for sub-samples stratified according to acquisition integration and focus. Specifically, deals where the target and acquirer are in the same industry sector are defined as focus-preserving or increasing (*FPI*) and focus-decreasing otherwise (*FD*). Panel B displays the results of tests of interactions between the focus and integration sub-samples. Column (1) contains the number of observations (*OBS*) in each sample; columns (2) and (3) report the mean (MEAN) and median (MED) of the financial performance measure (*XSRTN*), and columns (4) and (5) report the mean and median of the operating performance measure (*XSROA*).

Table 5

Descriptive Statistics of Control Variables and Correlations of Control and Test Variables

Panel A. Descriptive statistics of control variables

VARIABLE	MEAN	SD	MIN	25%	MED	75%	MAX	S	K
WAVE	0.0218	0.0546	-0.1014	-0.0173	0.0236	0.0481	0.1154	-0.2785	-0.0118
FCF	0.0206	0.0772	-0.2173	-0.0233	0.0183	0.0616	0.3099	0.3722	1.9208
SIZE	-1.3355	1.6756	-7.8560	-2.2084	-1.0907	-0.0867	1.7725	-8.4817	-1.1074
CASH	0.4514	0.4685	0.0000	0.0000	0.1632	1.0000	1.000	0.2424	-1.8784
TOEHOLD	0.0709	0.1225	0.0000	0.0000	0.0000	0.1351	0.4982	1.8644	2.9540

Panel B. Correlation matrix of control and test variables

VARIABLE	WAVE	FCF	SIZE	CASH	TOEHOLD	FPI
FCF	-0.1850					
SIZE	0.0550	-0.1112				
CASH	0.1769	0.2383	-0.2347			
TOEHOLD	-0.0968	0.0953	-0.0400	0.1496		
FPI	-0.0462	0.0712	-0.1096	-0.0067	-0.1372	
PAI	0.0448	-0.0329	0.0950	-0.0679	-0.0530	-0.1147

Notes:

This table reports descriptive statistics (Panel A) and correlations (Panel B) for the control and test variables relating to 119 domestic acquisitions of Australian Securities Exchange (ASX) listed firms over the 1992 to 2005 period. *WAVE* proxies for systemic propensity for acquisitions; *FCF* is the acquirer free-cash flow in excess of the median level of ASX All Ordinaries constituent firms' free-cash flow; *SIZE* is the relative size of the acquirer to the target; *CASH* is the proportion of cash (relative to shares) used as consideration in the acquisition; *TOEHOLD* measures the acquirer's prior stockholding in the target firm.

Statistics reported in the panel A of the table are: sample average (*MEAN)* and standard deviation (*SD)*; fractiles representing the Minimum (*MIN*), Median (*MED*), Maximum (*MAX*) and the 25th and 75th percentiles, labeled 25% and 75%, respectively. The final two columns report skewness (*S*) and excess kurtosis (*K*). Statistics reported in the panel B of the table are the correlation coefficients between the variables, including the control variables, the acquisition focus indicator variable *FPI* (that takes a value of 1 if the acquirer and target firms are in the same industry sector) and the integration variable, *PAI*.

Table 6

Regression Results

DEP. VAR.	XSRTN				XSROA			
MODEL	(4a)	(5a)	(6a)	(7a)	(4b)	(5b)	(6b)	(7b)
COLUMN	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
WAVE	4.6941**	4.7534**	4.2907*	4.3845**	0.4789	0.4372	0.4288	0.4428
	(2.20)	(2.20)	(1.97)	(2.01)	(1.63)	(1.42)	(1.47)	(1.51)
FCF	4.7046**	4.6370**	4.7007**	4.7305**	1.0605**	1.1080**	1.0600***	1.0645***
	(2.34)	(2.27)	(2.38)	(2.42)	(2.56)	(2.57)	(2.58)	(2.61)
SIZE	0.1372**	0.1386**	0.1317**	0.1325**	0.0394***	0.0384***	0.0387***	0.0389***
	(2.32)	(2.36)	(2.22)	(2.23)	(3.07)	(3.06)	(3.01)	(2.98)
CASH	0.1730	0.1676	0.2082	0.2046	0.0187	0.0225	0.0231	0.0225
	(0.70)	(0.67)	(0.84)	(0.83)	(0.44)	(0.52)	(0.55)	(0.53)
TOEHOLD	1.0961	1.1420	1.1690	1.2497	-0.0797	-0.1119	-0.0706	-0.0585
	(1.14)	(1.17)	(1.27)	(1.37)	(-0.53)	(-0.72)	(-0.48)	(-0.41)
FPI		0.0786				-0.0552		
		(0.29)				(-1.05)		
PAI			0.5718**				0.0710*	
			(2.08)				(1.68)	
FPI × PAI				0.8078**				0.1063**
				(2.41)				(2.07)
FD × PAI				0.1457				0.0072
				(0.42)				(0.15)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
R-BAR^2	0.087	0.079	0.103	0.103	0.110	0.113	0.114	0.111

Notes:

This table reports regression results for a sample of 119 domestic acquisitions of Australian Securities Exchange (ASX) listed firms over the 1992 to 2005 period. The results in the table are reported according to dependent variable and by model. Regressions using *XSRTN* as the dependent variable are reported in columns (1) to (4) and regressions where *XSROA* is the dependent variable are reported in columns (5) to (8). The regressors are as follows: *WAVE* proxies for systemic propensity for acquisitions*; FCF* is the acquirer's free-cash flow in excess of the median level of ASX All Ordinaries constituent firms' free-cash flow; *SIZE* is the relative size of the acquirer to the target measured as the natural logarithm of target's total assets to acquirer's total assets; *CASH* is the proportion of cash (relative to shares) used as consideration in the acquisition and *TOEHOLD* measures the acquirer's prior stockholding in the target firm. Model (4a) contains the control variables, as per:

$$XSRTN = \alpha_0+\alpha_1 WAVE+\alpha_2 FCF+\alpha_3 SIZE+\alpha_4 CASH+\alpha_5 TOEHOLD +e \quad (4a)$$

The remaining models contain the control variables (hereafter CV), augmented with the following variables: *FPI* is an indicator variable that takes a value of 1 if the deal is focus-preserving or increasing and 0 otherwise; *FD* is an indicator variable that takes a value of 1 if the deal is focus-decreasing and 0 otherwise; *PAI* measures post-merger integration. Models (5a) through (7a) are specified as:

$$XSRTN = \alpha_0+\Sigma\alpha CV +\alpha_6 FPI+ e \quad (5a)$$

$$XSRTN = \alpha_0+\Sigma\alpha CV +\alpha_7 PAI + e \quad (6a)$$

$$XSRTN = \alpha_0+\Sigma\alpha CV +\alpha_8(FPI \times PAI) + \alpha_9(FD \times PAI) + e \quad (7a)$$

Models (4b) through (7b) are as described above, except that *XSROA* is the dependent variable. *R-BAR^2* is the coefficient of determination, adjusted for degrees of freedom, of each regression.

***,** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7

Temporal Analysis of Long Term Performance

DEP. VAR.	XSRTN		XSROA	
SUB-SAMPLE	1992-1999	2000-2005	1992-1999	2000-2005
COLUMN	(1)	(2)	(3)	(4)
OBS	62	57	62	57
WAVE	4.0316	6.2033	0.3620	0.5635
	(1.55)	(1.43)	(1.30)	(0.75)
FCF	2.6505	4.6242*	0.7860**	1.1449*
	(0.83)	(1.95)	(2.56)	(1.65)
SIZE	0.0673	0.0967	0.0275	0.0345*
	(0.70)	(0.92)	(1.53)	(1.84)
CASH	0.3181	-0.0573	0.0662	-0.0473
	(1.00)	(-0.17)	(1.50)	(-0.53)
TOEHOLD	1.8969*	1.1365	0.0076	-0.0662
	(1.65)	(0.84)	(0.07)	(-0.22)
FPI × PAI	0.5450*	3.2971***	0.0765*	0.4545
	(1.79)	(3.13)	(1.90)	(1.63)
FD × PAI	-1.3040	0.3233	0.1119	-0.0296
	(-1.27)	(0.89)	(0.77)	(-0.64)
Industry fixed effects	YES	YES	YES	YES
Test statistic (χ^2_1)	3.69*	9.18***	0.062	2.80*
p-value	0.05	0.00	0.80	0.09
R-BAR^2	0.02	0.16	0.08	0.06

Notes:

This table reports sub-sample regression results using data on 119 domestic acquisitions of Australian Securities Exchange (ASX) listed firms over the 1992 to 2005 period. The results in the table are reported according to dependent variable and sub-sample. Regressions using *XSRTN* as the dependent variable are reported in columns (1) and (2) and regressions where *XSROA* is the dependent variable are reported in columns (3) and (4). The first sub-sample consists of those deals that occurred over the period from 1992 to 1999. The second sub-sample consists of those deals that occurred over the period from 2000 to 2005. The model for *XSRTN* is:

$$XSRTN = \alpha_0 + \Sigma\alpha CV + \alpha_8(FPI \times PAI) + \alpha_9(FD \times PAI) + e \quad (7a)$$

Similarly, the model for *XSROA* is:

$$XSROA = \beta_0 + \Sigma\beta CV + \beta_8(FPI \times PAI) + \beta_9(FD \times PAI) + u \quad (7b)$$

The regressors in the models are as follows: *WAVE* proxies for systemic propensity for acquisitions; *FCF* is the acquirer's free-cash flow in excess of the median level of ASX All Ordinaries constituent firms' free-cash flow; *SIZE* is the relative size of the acquirer to the target and is measured as the natural logarithm of target's total assets to acquirer's total assets; *CASH* is the proportion of cash (relative to shares) used as consideration in the acquisition and *TOEHOLD* measures the acquirer's prior stockholding in the target firm. Test statistic *(χ^2_1)* reports the test-statistic for the null hypothesis that the coefficients on *(FPI × PAI)* and *(FD × PAI)* are equal (the *p-value* is also reported). This statistic is χ^2_1 distributed under the null. *R-BAR^2* is the coefficient of determination, adjusted for degrees of freedom, of each regression.

***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.