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META-ANALYSES OF POST-ACQUISITION PERFORMANCE: INDICATIONS OF UNIDENTIFIED MODERATORS

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Empirical research has not consistently identified antecedents for predicting post-acquisition performance. We employ meta-analytic techniques to empirically assess the impact of the most commonly researched antecedent variables on post-acquisition performance. We find robust results indicating that, on average and across the most commonly studied variables, acquiring firms' performance does not positively change as a function of their acquisition activity, and is negatively affected to a modest extent. More importantly, our results indicate that unidentified variables may explain significant variance in post-acquisition performance, suggesting the need for additional theory development and changes to M&A research methods. Copyright © 2003 John Wiley & Sons, Ltd.

Since the last meta-analytic review of merger and acquisition[1] (M&A) performance (Datta, Narayanan, and Pinches, 1992), trillions of dollars have been spent in the acquisition of tens of thousands of firms (Gupta and Gerchak, 2002) and dozens of studies examining post-acquisition performance have been published. Unfortunately, research does not uniformly support managers' apparent enthusiasm for the practice, with the impact of acquisitions on acquiring firm performance remaining 'inconclusive' (e.g., Haspeslagh and Jemison, 1991; Roll, 1988; Sirower, 1997). Further, existing empirical research on post-acquisition performance has not consistently identified antecedents that can be used to predict post-acquisition performance (Hitt *et al.*, 1998; Hoskisson, Johnson, and Moesel, 1994; Sirower, 1997). The goal of the current study is to cumulate the findings of published research on post-acquisition performance and to identify promising directions for further M&A research.

Our study makes multiple contributions beyond Datta *et al.* (1992). First, our study more than doubles (93 vs. 41) the number of published studies analyzed. Our meta-analyses are based on a larger sample of studies, allowing better estimation of the population value for the relationships between commonly studied M&A antecedent variables. Second, the increase in the number of studies in our meta-analyses also allows examination of the impact of an additional variable, acquisition experience, on post-acquisition performance. Third, our study is the first to cumulate research findings for *both* stock and accounting measures of post-acquisition performance. The Datta *et al.* (1992) study does not include accounting measures of performance. Although the majority of existing post-acquisition performance research uses stock market-based measures of performance (Bild,

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[1] Empirical research has used the terms merger and acquisition interchangeably; we adopt this same convention.

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1998; Sirower, 1997), the use of multiple measures has consistently been encouraged (Hoskisson and Hitt, 1990; Lubatkin, 1983) to facilitate cumulating research across disciplines (Ramanujam and Varadarajan, 1989) and to improve the understanding of differences between accounting and stock market measures (Hoskisson *et al.*, 1993). Fourth, we use multiple event windows in our meta-analyses to detect whether the impact of acquiring another firm impacts post-acquisition performance differently, while Datta *et al.* (1992) do not differentiate between the event windows of studies included in their analysis. Fifth, our results based on a larger sample (1790 to 29,050 vs. 409 observations) conflict with the finding that method of payment impacts post-acquisition performance (Datta *et al.*, 1992) and contradicts theory from finance (e.g., Travlos, 1987) that method of payment helps predict post-acquisition performance. Finally, our use of up-to-date meta-analytic methods facilitates the identification of moderating effects, a significant contribution of our study.

Our results indicate that post-acquisition performance is moderated by variables unspecified in existing research. Meanwhile, the impact of four variables commonly examined in existing literature was not significant in explaining variance in post-acquisition performance. Thus, existing empirical M&A research has not clearly and repeatedly identified those variables that impact an acquiring firm's subsequent performance. An implication of the preceding major finding—i.e., that no post-acquisition performance effect exists for antecedent variables that have been repeatedly studied—is that changes to both M&A theory and research methods may be needed.

From a methodological standpoint, there is little overlap in the variables (approximately one-third) used by researchers to explain post-acquisition performance. 'New' effects are characteristically sought over replication of known effects, so knowledge accumulation has been slower than might be expected given the high level of research activity in the M&A area. Importantly, because research variables of demonstrated importance are regularly excluded from M&A studies, underspecification of research models that can bias conclusions (see Griffiths, Hill, and Judge, 1993) may be the norm in M&A research. Future M&A researchers would be well advised to use variables from existing M&A research as a foundation to build new models of post-acquisition performance.

An additional methodological consideration is that a potentially rich area for pursuing future M&A research is to examine the impact of interactions on post-acquisition performance (Hitt *et al.*, 1998; Hoskisson and Hitt, 1990). Several recent studies from strategy serve as exemplars of M&A research that examine interactions in post-acquisition performance (e.g., Banaszak-Holl *et al.*, 2002; Capron, 1999; Hitt *et al.*, 1996; Hoskisson *et al.*, 1993; Krishnan, Miller, and Judge, 1997). Unfortunately, the studies do not exist in large enough numbers to allow cumulating their results using meta-analysis, indicating that additional theory development and empirical research on M&A activity is needed.

The theoretical implications of our findings are also important. The most common theoretical rationale for M&A activity is the search for synergy, or the concept that the sum of merging two firms is greater than their individual parts (i.e., $2 + 2 = 5$). Research has identified a need to identify factors leading to synergy creation in acquisitions (Capron, Dussauge, and Mitchell, 1998; Hitt *et al.*, 1998). Synergy, as suggested by Sirower (1997), however, may be too nebulous a concept to be the core element in models purporting to explain post-acquisition performance. Improvements in model validity may be possible if M&A theorists instead embrace such concepts as parenting advantage (Campbell, Goold, and Alexander, 1995), complementary resources (Harrison *et al.*, 2001), or absorptive capacity (Zahra and George, 2002) as core to their models. These latter concepts may better focus research attention toward those tangible effects and variables that must be operating or aligned in order for synergy to be realized. In short, the high level of conceptual abstraction introduced by building post-acquisition performance research models around the concept of synergy, rather than its more specific determinants, may have contributed to the difficulty researchers have experienced in creating models that garner empirical support.

CUMULATING POST-ACQUISITION PERFORMANCE RESEARCH

Post-acquisition performance research has commonly examined the impact of four variables: whether or not the acquisition was by a conglomerate firm (e.g., Agrawal, Jaffe,

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and Mandelker, 1992; Berger and Ofek, 1995; Lubatkin, 1987), whether or not the acquisition was of a related firm (e.g., Hayward and Hambrick, 1997; Lubatkin, Srinivasan, and Merchant, 1997; Walker, 2000; Wansley, Lane, and Yang, 1983), the method of payment (i.e., cash or equity) used for the acquisition (e.g., Franks, Harris, and Mayer, 1988; Travlos, 1987; Walker, 2000), and whether or not the acquiring firm had prior acquisition experience (e.g., Franks, Harris, and Titman, 1991; Haleblian and Finkelstein, 1999; Hayward, 2002; Kroll *et al*., 1997). Additional factors may impact post-acquisition performance; however, they have not been examined in sufficient numbers to be considered in the present meta-analyses.[2]

Conglomerate firms

Conglomerate firms are commonly defined in the strategic management literature as those exhibiting significant unrelated product-market diversification (Rumelt, 1974). A broader definition of conglomerates is adopted in the Federal Trade Commission (FTC) database (covering the years 1948 through 1979) on M&A activity that is employed in much of the extant research on the effects of conglomerate diversification on post-acquisition performance. Conglomerate mergers, as defined by the FTC, involve the acquisition of completely unrelated companies, companies in different geographic markets, or companies whose products do not directly compete with those of the acquiring firm. However, empirical evidence on the impact of diversification on post-acquisition performance is contradictory, with research suggesting that some firms benefit from the diversification but that, on average, most firms do not (Loughran and Vijh, 1997). The present research cumulates the following, conflicting findings on the impact of diversification.

On one hand, Ravenscraft and Scherer (1987) note that the 13 most acquisitive conglomerate firms, accounting for 16 percent of all FTC-recorded M&A activity, experienced returns 3.6 times greater than the S&P500 between 1965 and 1968, and 2.7 times greater than the S&P500 between 1965 and 1983. Additionally, Campa and Kedia (2002) conclude that, for firms that pursue it, diversification is a value-enhancing strategy. A positive impact on performance in conglomerate firms is suggested since they are more likely to possess a business integration competence that allows them to create rather than simply acquire value through M&A activity (Salter and Weinhold, 1978). The assumed presence of what might be termed a 'conglomerate effect' on post-acquisition performance has led to several studies in this area (e.g., Agrawal *et al*., 1992; Lubatkin, 1987).

On the other hand, several studies indicate that a 'diversification discount' exists (Agrawal *et al*., 1992; Anand and Singh 1997; Berger and Ofek, 1995; Lang and Stulz 1994). For example, Berger and Ofek (1995) compare the value of the entire diversified firm to the sum of its segments, and conclude that diversified firms have 13–15 percent less value than the sum of their segments would have independently. An example of the logic that suggests the stock performance of conglomerate firms is discounted is that, since they aggregate their financial performance from several divisions, there is more uncertainty in predicting their cash flows.

Related acquisitions

The relatedness of acquired firms to their acquirers (where relatedness is defined in terms of resource or product-market similarity) is often assumed to impact the post-acquisition performance of the acquiring firms. Specifically, the preponderance of M&A literature suggests that acquiring related firms leads to increased post-acquisition performance (e.g., Capon *et al*., 1988; Kusewitt, 1985; Palich, Cardinal, and Miller, 2000; Rumelt, 1974, 1982). Business relatedness is said to enable the acquiring firm's managers to effectively employ their 'dominant logic,' or common conceptualization of the success requirements in an acquired business (Prahalad and Bettis, 1986). Industry familiarity can eliminate or significantly diminish the need for acquiring firm managers to 'learn' the business of the acquired firm, and facilitate learning from the acquisition process *per se* (Hitt, Harrison, and Ireland, 2001).

In the context of acquisitions that require significant managerial involvement, familiarity with

[2] Empirical research has explored the effects of literally dozens of independent variables on post-acquisition performance. We limit our review, however, to those variables revealed by our meta-analyses to be common to three or more studies in which the same 'performance' variable was examined (Dalton *et al*., 2003). As such, we only review variables that we know can be tested based on the known existence of a critical mass of relevant empirical studies.

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the acquired firm's market is often key to the successful post-acquisition integration of the acquired business (Roberts and Berry, 1985). Moreover, related acquisitions can enable the acquiring firm's pre-existing resources to be productively leveraged in new businesses where those resources are more likely to be valued and relevant. These arguments are not meant to suggest, of course, that related acquisitions are without risk. As observed by Bergh (1997), acquisition relatedness may simply reduce the financial risk inherent to acquisitions. The present research cumulates the findings of the acquired firm relatedness on acquiring firm performance.

Method of payment

There are two fundamental methods by which an acquiring firm can pay for an acquisition: cash and stock shares (equity). Research from finance suggests that an acquiring firm's managers will seek to finance an acquisition in the most profitable way (Travlos, 1987). Specifically, managers will finance an acquisition with cash if they believe their firm's stock is undervalued, and with equity (i.e., shares of stock) if they believe their firm's stock is overvalued. Therefore, the use of cash as the acquisition medium may signal manager expectations that post-acquisition performance will be particularly strong.

The method of payment also affects the method of accounting for an acquisition, which has implications for post-acquisition performance. Historically, there have been two methods of accounting for an acquisition: the pooling of interests method and the purchase method.[3] Pooling of interests is primarily used when an acquired firm is acquired using stock as payment (Ravenscraft and Scherer, 1987). Pooling of interest accounting is associated with higher acquisition premiums (Ravenscraft and Scherer, 1987), and premiums paid for acquired firms have been shown to negatively impact post-acquisition performance (Hayward and Hambrick, 1997; Sirower, 1997). Still, a direct relationship between method of payment and post-acquisition performance remains to be demonstrated (Hayward and Hambrick, 1997), and cumulating results from existing research may demonstrate whether such a relationship exists.

Acquisition experience

Acquisitions create complex organizational challenges, and both individual and organizational experience may be required to avoid integration problems (Haspeslagh and Jemison, 1991). For example, at the individual level, lack of acquisition experience may make a CEO particularly susceptible to escalation of commitment that can lead to the completion of deals at unreasonably high costs (Haspeslagh and Jemison, 1991). Additionally, experience from past acquisitions may build facilitating processes for the identification (Hitt *et al.*, 1998) and integration of acquired firm resources, which may be required to improve post-acquisition performance.

However, consistent findings on the relationship between acquisition experience and post-acquisition performance do not exist. Prior acquisition experience has been found to predict success in later acquisitions (Bruton, Oviatt, and White, 1994; Fowler and Schmidt, 1989), to predict a decline in performance as the number of acquisitions increase (Kusewitt, 1985), and to have no impact on acquisition performance (Lahey and Conn, 1990). Still, Hitt *et al.* (2001: 55) caution that 'the importance of the link between managerial experience and M&A success should not be underestimated' and we cumulate research findings on acquisition experience.

METHOD

Sample

We employed multiple search techniques to identify empirical research that included M&A activity and financial performance. Whether a given indicator of such activity or performance was an independent, dependent, or a control variable was unimportant. These variables need not have been the main focus of a given study to be included in the meta-analyses. It was only necessary that a simple correlation (r) between these variables be available in the article or derivable from it (see, for example, Lipsey and Wilson, 2001; Rosenberg, Adams, and Gurevitch, 2000 for conversion protocols).

[3] The Financial Accounting Standards Board eliminated pooling of interests accounting and modified recording of goodwill with purchase accounting for all acquisitions completed after July 1, 2001 (Weil, 2001). For an explanation of the different methods of accounting for a merger see Ravenscraft and Scherer (1987).

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By a combination of computer-aided, key word searches and manual searches of certain pertinent journals in accounting, finance, economics, and management (e.g., *Academy of Management Journal, Administrative Science Quarterly, Applied Financial Economics, Financial Management, Journal of Accounting Research, Journal of Business, Journal of Business Finance and Accounting, Journal of Finance, Journal of Financial Economics, Journal of Financial Research, Journal of Management, Organization Science*, and *Strategic Management Journal*), we obtained a subset of potentially applicable research reports. We followed the 'ancestry' approach of article identification (e.g., Cooper, 1998). By working carefully from the more contemporary references, tracking the references on which the articles relied, and iteratively continuing this process, it is possible to determine a set of common early references with no published predecessors. Relevant, published empirical studies were identified beginning in 1921 and continuing through September 2002.

The search process yielded 93 empirical studies with 852 effect sizes (i.e., germane bivariate correlations) with a combined n size of 206,910.[4] This n size is derived from adding the number of companies on which each of the 93 studies relied. For the meta-analyses and moderating analyses that follow, the n size is a necessary element by which significance distributions are calculated. The relatively large sample-to-study ratio results from research commonly relying on multiple operationalizations of financial performance (e.g., abnormal returns with multiple event windows, return on assets (ROA), return on equity (ROE), return on sales (ROS)). It is important to note that the variables on which we rely for our analyses *do not* reflect our preferences, but rather those variables appearing in extant empirical research.

Meta-analytic procedure(s)

The meta-analyses were conducted consistent with guidelines provided by Hunter and Schmidt (1990; see also, Hunter and Schmidt, 1994). Meta-analysis is a statistical research synthesis technique that, while correcting for various statistical artifacts, allows for the aggregation of results across separate studies to obtain an estimate of the true relationship between two variables in the population. Observed zero-order correlations between the variables of interest are weighted by the sample size of the study in order to calculate the mean weighted correlation (r) across all of the studies involved in the analysis. The standard deviation of the observed correlations is then calculated to estimate their variability. Total variability across studies is comprised of the true population variation, variation due to sampling error, and variation due to other artifacts (i.e., reliability and range restriction). Control of these artifacts provides a more accurate estimate of the true variability.

To control for such artifacts, we relied on Comprehensive Meta-Analysis (Borenstein, 1997), a software package that employs Hunter and Schmidt's (1990) artifact distribution formulae. While other meta-analyses in strategic management (e.g., Boyd, 1991; Capon, Farley, and Hoenig, 1990; Rhoades, Rechner, and Sundaramurthy, 2000; Schwenk and Shrader, 1993) have treated observed (i.e., not latent) variables as if they were without error (i.e., reliability of 1.0), we have opted for a more conservative 0.80 reliability estimate (e.g., Dalton *et al.*, 1998, 1999).[5]

[4] The list of studies included in our meta-analyses is available from the authors upon request. Published research examining M&A activity over 74 years is included in our meta-analyses. A potential concern is whether results differ over time. The separation of M&A research by time period is difficult because a typical M&A study relies on many years of data (in our case, for example, among the longer periods were 1962–79, 1970–90, 1980–92). The challenge in performing subsample analysis, then, is to find studies with independent time periods, relying on the same dependent variable and the same event window. There was one opportunity where our data met those criteria: the abnormal returns for acquiring firms with the Days 1–5 event window. We separated these data into pre-1980 and post-1980 periods and the estimated r for the pre-1980 period was 0.073, while r for the post-1980 period was 0.069. The difference in R^2 for these two estimates is only 0.0005. As such, it appears that the difference in time frame is inconsequential. This result is consistent with prior research that has consistently shown, over time, that the average abnormal return of acquiring firms is around zero (e.g., Datta *et al.*, 1992; Ravenscraft and Scherer; 1987).

[5] We do not mean to appear critical about others' choice of reliability level (use of a reliability value less than one is merely more conservative). In the entire database (852 effect sizes) on which we relied for this meta-analysis, the independent and financial performance variables were treated as observed in every case. It is apparent that the empirical work in this area relies on independent and performance variables as observed, and error free. Lowering the reliability level, however, is conservative and helps address concerns about the potential existence and impact of subsamples on our analyses.

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RESULTS

Table 1 provides the results of separate meta-analyses on each row for specific variables reflected in the literature on M&A activity and financial performance.[6] To illustrate these results in a traditional meta-analytical data presentation, it would be necessary to create a multi-page inventory. Instead, we have constructed a meta-analytic corrected r matrix (Table 1) (Dalton *et al.*, 2003). The cell entries are meta-analytic corrected r population estimates. Consider the first row entry in Table 1: for acquired firms at the time their acquisition is announced (Day 0), the best estimate of the actual population correlation for abnormal (stock) returns is 0.70. The number of studies relied on for this calculation is 33, reflecting a total sample size of 5060. A subsequent section discusses a primary contribution of the present paper: evidence of potential moderating variable(s).

Notice that Table 1 includes only one event window entry for 'acquired firms,' sometimes referred to as 'target' firms, this at Day 0, or the day of the merger announcement. Additional event windows are not included for acquired firms, because at some point after a merger announcement acquired firms no longer exist independently. The balance of Table 1 illustrates the performance of the acquiring firm over several event windows. Only at Day 0 are the abnormal returns for acquiring firms positive ($r = 0.09$) and significant. Notably, the difference between Day 0 abnormal returns for acquired firms and acquiring firms is substantial, as reflected in the population r estimates of 0.70 vs. 0.09.

The remaining entries in Table 1 illustrate the performance estimates of acquiring firms over a series of event windows (Days 1–5, Days 6–21, Days 22–180, Days 181 to 3 years, and greater than 3 years). As shown, after the Days 1–5 event window, all of the 'abnormal returns' results for the acquiring firms are negative. Table 1 also includes results for an acquiring firm's ROA, ROE, and ROS performance; all of these results are either insignificant or negative. Collectively, these results imply that anticipated acquisition synergies are not realized by acquiring firms.[7] That is, M&A activity does not create superior post-acquisition performance for acquiring firms and is consistent with the non-value-maximizing arguments often

[6] The performance variables noted in Table 1 reflect those on which the germane studies rely. There are other indicators of financial performance on which M&A researchers have relied (e.g., cash flow/sales, income growth, profitability, Jensen's alpha, sales growth, Tobin's Q). None of these reach the minimum number of samples (3) to be included in the table (see Dalton *et al.*, 2003).

[7] The data on which we rely for the results illustrated in Table 1 are largely comprised of U.S. firms. There are, however, some exceptions. Accordingly, we analyzed these data in two ways. The results reported in Table 1 are the results for our entire sample. We also separately tested these data while excluding the international data. With one exception, the differences are not consequential. For acquired firms' abnormal returns at day 0, the estimated population r increased from 0.70 to 0.76. For acquiring firms across all event windows, the differences are of no practical significance (day 0, no change; days 1–5, no change; days 6–21, no change; days 22–180, no change; greater than 180 days to 3 years, changed from −0.10 to −0.11; greater than 3 years, changed from −0.07 to −0.08).

Table 1. Meta-analyses of financial performance for acquired and acquiring firms[a]

Acquired/acquiring firms	Financial performance variable	Event window	Estimated population r	Number of studies	Sample size	Moderation indicated
Acquired firms	Abnormal returns	Day 0	0.70***	33	5,060	Yes
Acquiring firms	Abnormal returns	Day 0	0.09***	127	28,016	Yes
Acquiring firms	Abnormal returns	Days 1–5	0.01	114	19,269	Yes
Acquiring firms	Abnormal returns	Days 6–21	−0.02	54	8,548	Yes
Acquiring firms	Abnormal returns	Days 22–180	−0.06***	64	5,698	Yes
Acquiring firms	Abnormal returns	>180 days–3 years	−0.10***	103	25,205	Yes
Acquiring firms	Abnormal returns	>3 years	−0.07***	26	5,966	Yes
Acquiring firms	ROA	1 year	−0.09***	9	1,960	Yes
Acquiring firms	ROA	3 years	0.02	20	29,050	No
Acquiring firms	ROE	1 year or longer	−0.02	14	1,790	No
Acquiring firms	ROS	1 year of longer	−0.03	9	14,660	Yes

[a] Each row represents the results of separate meta-analysis.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

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advanced to explain M&A activity (e.g., Hayward and Hambrick, 1997; Kroll *et al.*, 1997).

Moderation

When used in a regression analysis format, moderation tests involve the use of multiplicative terms to determine whether the marginal variances provide information beyond the individual elements. The analog for this in meta-analysis is accomplished through establishing and comparing subgroups. Separate meta-analyses are conducted for these subgroups and the population r estimated for each subgroup. A critical ratio test then is used to determine if the population rs are statistically different. Thus, the term 'moderator' is used interchangeably with 'subgroup' in meta-analysis literature.

There is evidence of potential moderation for many of the event windows. Potential moderation of an estimated r is indicated when the variability in an effect size is larger than would be anticipated from sampling error alone, suggesting that observed correlations do not estimate a common population (e.g., Cooper, 1998; Lipsey and Wilson, 2001). Consider, for example, two meta-analytical results. One has an estimated r near zero and very little variance; the other also has an estimated r of near zero, but with much larger variance. In the first case, one would conclude that there is no evidence of a relationship between the variables of interest and there is no evidence of moderation. In the second, we also conclude that there is no relationship, but there may be a moderating influence on the relationship.[8]

One approach to determining the likely presence of moderators is provided by Hunter and Schmidt (1990), who suggest that the potential presence of subgroups,[9] or heterogeneity, is likely if the sampling error accounts for less than 75 percent of the observed variability. It has also been suggested that 90 percent credibility intervals larger than 0.11 imply the presence of subgroups (Kowlowsky and Sagie, 1993). To warrant a 'Yes' indication in Table 1 for the 'Moderation indicated' column, *both* of these guidelines must have been met. It should be noted that sample variance does not impact population value estimates, but has the conservative impact of making significant results *less* likely to be found (Griffiths *et al.*, 1993).

Table 1 illustrates that the observed variance for most of the estimated rs is greater than would be anticipated from error alone. The M&A literature provides a host of variables that have been suggested to moderate post-acquisition financial performance. Among those variables are whether the acquisition was hostile, pre-merger performance for both acquired and acquiring firms, acquisition premium paid, horizontal/vertical merger, regulated/unregulated, acquisition experience, method of payment (cash/equity), related/unrelated, relative size of firms, complementary firm resources, and whether the acquiring firm is a conglomerate. As with the performance variables, we have not selected a subset of these variables for testing based on our preferences. Instead, we report those variables on which extant studies have routinely relied.[10] Table 2 provides separate meta-analytical results for abnormal returns for the four variables—conglomerate acquisitions, related acquisitions, method of payment (cash vs. equity) for acquisitions, and whether acquiring firms had prior acquisition experience—examined in a sufficient number of studies to allow cumulating results using meta-analysis.[11]

With a single exception, the estimated population correlations (rs) between the variables and post-acquisition financial performance (abnormal returns, as indicated) are not statistically significant. The one statistically significant result is the

[8] Consider a simple case with four effect sizes: 0.02, 0.02, 0.00, and −0.01. In this case the estimated r is very near zero and there is very little variance. Another case has effect sizes of 0.4, 0.4, −0.4, and −0.4. Here again, the estimated r would be zero (we will assume that the sample sizes for the effect sizes are the same) and the variance is very high. In this case, one could reasonably ask what is moderating this relationship. Why would we observe high positive effect sizes in some studies and high negative for others?

[9] The interchangeable use of 'subgroup' and 'moderator' in meta-analysis literature can lead to some confusion. A moderator is often operationalized as a multiplicative variable. In a regression format, one determines if the multiplicative term provides marginal explanatory power above that provided by its elements. The analog for this in meta-analysis is accomplished through establishing subgroups. Separate meta-analyses are conducted for the subgroups. An estimate of the population r is calculated for each. Then, a critical ratio test is used to determine if the population rs are statistically different.

[10] To be included in the analyses, a given variable would have to be included in a minimum of three samples (see Dalton *et al.*, 2003). In addition, the minimum of three effect sizes must be derived from three independent studies. Information about the same study population should contribute only once to the summary estimate of an effect (e.g., Petitti, 2000).

[11] All the studies included in the meta-analyses of the moderating variables (Table 2) rely on studies relying entirely on samples of U.S. firms.

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Table 2. Meta-analyses of potential moderating variables[a]

Acquired/acquiring firms	Financial dependent variable	Moderating variable	Event window	Estimated population r	Number of studies	Sample size	Moderation indicated
Acquiring firms	Abnormal returns	Conglomerates	Day 0	0.07	8	713	No
Acquiring firms	Abnormal returns	Conglomerates	1–60 months	−0.10***	14	3222	No
Acquiring firms	Abnormal returns	Related acquisitions	Day 0	0.00	13	2191	No
Acquiring firms	Abnormal returns	Related acquisitions	1–60 months	0.05	6	455	No
Acquiring firms	Abnormal returns	Method of payment (cash/equity)	Day 0	0.01	22	3118	No
Acquiring firms	Abnormal returns	Method of payment (cash/equity)	1–16 days	−0.01	24	4207	No
Acquiring firms	Abnormal returns	Prior acquisition experience	Day 0	0.02	7	1399	No

[a] Each row represents the results of separate meta-analysis.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

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population r of -0.10 ($p < 0.001$) for conglomerate mergers with a 1- to 60-month event window. This suggests that conglomerate acquisitions demonstrate negative abnormal returns over that period. This result, however, does not demonstrate that acquisitions by a conglomerate firm moderate the level of abnormal returns. Notice that results in Table 1 for event windows Days 22–180, >180 days to 3 years, and >3 years are similar to the conglomerate 1- to 60-month event window in terms of their estimated r values ($r = -0.08$, -0.10, and -0.07, respectfully). This suggests that conglomerate firms pursuing acquisitions perform no differently than all firms pursuing acquisitions under similar event windows.[12] Thus, while moderation is present in studies that have explored the post-acquisition performance of conglomerates, the variable 'conglomerate firms' does not capture this moderating effect. Rather, unobserved variables within the pertinent study samples account for the indicated moderating effect. Our finding that method of payment does not impact post-acquisition performance conflicts with Datta *et al.* (1992). Our results, however, come from a larger sample (1790 to 29,050 vs. 409 observations) and more than one post-acquisition event window.

DISCUSSION

Meta-analysis is an effective means of establishing the best estimate for a true population relationship based on multiple studies. For our analyses, the results are clear. Both acquired and acquiring firms realize positive abnormal returns on the day of an announcement (Day = 0). This suggests the presence of an initial expectation that M&A activity will create longer-term synergy. The Day 0 returns for acquired firms are extremely high ($r = 0.70$), while the returns over the same period for acquiring firms are much lower ($r = 0.09$). The returns for acquiring firms in subsequent event windows (Day 1 and later) are either insignificant or negative. This is true for separate meta-analyses of *both* market returns (abnormal returns) and accounting returns (ROA, ROE, and ROS) and indicates that expected synergies from the day of a merger announcement are not subsequently realized by acquiring firms. A clear implication of this set of findings for acquired firm shareholders is that they should take the windfalls typically afforded by M&A announcements. That is, if given a choice, investors with an equity stake in an acquired firm should take cash for their investment. If equity is received in lieu of cash, then investors in acquired firms should cash out their holdings, because, on average, continuing to hold equity in an acquiring firm will lead to significantly negative abnormal returns beginning 22 days after an acquisition is announced.

Our results lead to a strong conclusion that the true population relationship between the presence of M&A activity and the performance of acquiring firms is very near zero or negative beyond the day a merger or acquisition is announced. Quite simply, we find no evidence that acquisitions, on average, improve the financial performance (e.g., abnormal returns or accounting performance) of acquiring firms after the day completed acquisitions are announced. Instead, we find that acquisitions either have no significant effect or a modest negative effect on an acquiring firm's financial performance in the post-announcement period. The large number of studies, effect sizes, and total sample on which our analyses are based underscore these conclusions.

Another methodological perspective that further underscores the robustness of the current results, consistent with Lykken's (1968) classic formulation, is that the included studies amount to an extensive series of constructive replications. The studies on which we relied for these meta-analyses are essentially a series of samples drawn from a discrete population, with replacement. Given the range of sample sizes for our individual meta-analyses (i.e., 1790 to 29,050 (see Table 1)), it is certain that most of these firms have been repeatedly used to test propositions about M&A activity. It is true, of course, that not all of the studies repeatedly using these firms were identical in their designs or in the specific variables of interest. Still, the inferential logic that can be brought to bear in an aggregation of these studies is extremely robust.[13]

[12] This can be formally demonstrated with a critical ratio test that determines whether two estimated rs are, in fact, statistically different. The critical ratio is a significance distribution with essentially the same character as a z-score. In this case, the critical ratio is 0.78. Accordingly, the abnormal returns for conglomerate firms are not different from all firms over the same event window.

[13] Our results are analogous to a non-parametric, chi-square test based on a count showing that a preponderance of studies finds

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Thus, after decades of research the overwhelming conclusion must be that M&A activity, on average, does not positively contribute to an acquiring firm's performance. This may lead one to conclude, for example, that acquisition is not the best means by which to access and profit from valuable resources existing in other, external businesses. Research suggests, however, that alternate modes of appropriating others' valuable resources, such as licensing and alliances, are also problematic (e.g., Inkpen and Beamish, 1997; Olson, 1990; Pisano, 1990; Singh, 1997; Stringer, 2000; Teece, 1986). Moreover, improving firm performance through internal, organic growth has historically proven to be a difficult challenge (see Block and MacMillan, 1993). Thus, while acquisitions may not have a strong and positive main effect on firm financial performance, they may be no more difficult to successfully execute than other alternative strategies for business growth and development. What is clearly needed is a better understanding of the conditions under which acquisitions make sense as a path to superior performance. It is generally conceded, for example, that acquisitions offer faster access to resources than either internal development (Capron, 1999) or alliances (Das and Teng, 1998), and greater control than either licensing or alliances. The identification of the factors in the acquisition context that result in superior post-acquisition performance—i.e., the moderators—is, however, another matter.

Ideally, the conditions under which acquisitions will be associated with superior performance would have been revealed in our meta-analyses. Our results indicated that post-acquisition performance is moderated, but by unspecified variables. Unfortunately, when the impact of the four variables whose frequency in the literature allowed for a closer examination was assessed, no significant effects on post-acquisition performance were found. Thus, existing empirical research has not clearly and repeatedly identified those variables that impact an acquiring firm's performance. An implication of the preceding major findings—i.e., that M&A activity does not improve firm performance, and that no post-acquisition performance effect exists for moderator variables that have been repeatedly studied—is that changes to both M&A research methods and theory may be needed. Managerial implications are also suggested.

an insignificant or negative impact of a merger on an acquiring firm's performance.

Methodological implications

From the standpoint of research methods, three areas of improvement are suggested based on our study findings. First, most post-acquisition performance research has only employed stock market event studies, thus ignoring M&A effects on other potentially relevant dimensions of firm performance. The short-term nature of most event studies may not fully capture anticipated benefits from an acquisition due to information asymmetries (Barney, 1988; Hitt *et al.*, 1998). The current study, however, revealed that post-acquisition performance effects are absent even under longer event windows. Additionally, M&A effects on firm financial performance were shown to be either insignificant or negative when accounting measures of an acquiring firm's financial performance were examined. This may be a reflection of limitations with accounting measures (see Chakravarthy, 1986) or the simple fact that not enough studies have used accounting measures. For example, there were not enough studies in the extant research pool that included accounting measures to test the impact of moderating variables on the performance of acquiring firms. In short, multiple measures of firm performance should be employed in post-acquisition performance research in order to better document the complete performance implications of M&A activity.

Second, there is very little overlap across studies in the variables used to explain post-acquisition performance. 'New' effects are characteristically sought over replication of known effects, so knowledge accumulation has been slower than might be expected given the high level of research activity in the M&A area. Importantly, because research variables of demonstrated importance are regularly excluded from M&A studies, underspecification of research models (see Griffiths *et al.*, 1993) may represent the norm in M&A studies. Future M&A researchers would be well advised to build on past research models and not simply create new models.

Third, secondary data have been used to construct the vast majority of variables examined in M&A research as possible predictors of post-acquisition performance. This leads one to wonder whether data relevance has been sacrificed in favor

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of data availability in the creation of research models. The current meta-analysis failed to uncover even a single moderator of post-acquisition performance whose significant effect has been replicated across the established minimum of three studies. Nonetheless, statistical tests of post-acquisition performance variability strongly suggest that moderating effects are present. Researchers simply may not be looking at the 'right' set of variables as predictors of post-acquisition performance.

Theoretical implications

Our research shows a clear need for further model development to identify antecedents that can help predict post-acquisition performance. Scholars have recognized that no theoretical framework currently explains the relationship between acquisition antecedents and subsequent performance (Hitt *et al*., 1998; Hoskisson *et al*., 1993; Sirower, 1997). Still, the wide variance surrounding the association between M&A activity and subsequent performance suggests that subgroups of firms do experience significant, positive returns from such activity. Existing models have failed to clearly identify these subgroups.

Of the available options, complementary resources may be a promising theoretical foundation for continued M&A research, and is recognized as an under-researched topic (Harrison *et al*., 2001; King, Covin, and Hegarty, 2003). Complementary resources imply that a positive interaction effect exists (Milgrom and Roberts, 1995) between acquired and acquiring firm resources. If increased post-acquisition performance requires combining complementary acquired and acquiring firm resources in new ways, then a multiplicative, or interaction, effect between acquired and acquiring firm resources is implied. A multiplicative relationship between acquired and acquiring firm resources could provide the framework to explain synergy, or the concept that the sum of merging two firms is greater than their individual parts. Examining interactions also meets an expressed need in M&A research (Hitt *et al*., 1998; Hoskisson and Hitt, 1990) and would allow examination of post-acquisition performance relationships beyond current theories, founded largely in finance, that typically focus on direct effects. Although research on complementary resources did not exist in quantities sufficient for the present meta-analyses, both theory and initial empirical results suggest that complementary resources may help explain observed acquisition activity and predict post-acquisition performance (Barney, 1988; Capron *et al*., 1998; Capron and Pistre, 2002; King *et al*., 2003).

The failure of the current meta-analyses to reveal any sustained positive effect of M&A activity on post-acquisition performance also suggests that nonfinancial motives may be under-represented in theory and research that seek to explain M&A activity. If M&A activity is motivated by factors other than financial performance, it should not be surprising that acquisitions on average do not lead to higher financial performance. This is not to suggest that we believe the evidence of acquisitions not improving financial performance necessarily results from managerial opportunism. If that were the case, then increased reliance on corporate governance mechanisms over the past decades should have led to a decrease in M&A activity, not an increase. We suggest that alternate and less menacing motivations, such as the use of acquisitions to manage environmental or technological uncertainties, or the pursuit of growth to decrease organizational vulnerabilities, offer alternate, nonfinancial motives for M&A activity. Additional theorizing on nonfinancial motives for M&A activity is encouraged.

Managerial implications

Two primary managerial implications are suggested by our findings. First, as a means to reap the financial benefits often associated with large firm size (e.g., economies of scale, economies of scope), external growth through M&A activity may be a highly speculative undertaking with much less predictable results than might be assumed. Given the difficulties managers have traditionally faced in the pursuit of internal, organic growth (e.g., inadequate innovation management processes, 'newstream-to-mainstream' business integration difficulties), external growth through M&A activity may seem like an easy and obvious solution. After all, with the acquisition of established companies, acquirers effectively circumvent much of the challenge and uncertainty surrounding the internal, organic growth process. Not surprisingly, anecdotal evidence suggests that external growth may be operating as a substitute for internal growth (see, for example, Hitt *et al*., 1991; Stringer, 2000).

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Appropriating value from M&A activity, however, presents its own set of challenges that may be no less significant than those associated with internal growth. Until researchers can provide managers better guidance on how value can be created through M&A activity, the apparent bias for external growth over internal growth likely will continue to result in disappointing performance outcomes.

Second, and related to the preceding point, managers are advised to be as explicit as possible about how, why, and where acquisitions can be reasonably expected to strengthen their firms. Vague rationalizations that go no farther than the common 'synergy' argument should be viewed with skepticism. If managers cannot explain, in clear and compelling terms, how acquisitions positively serve the interests of their firms, those acquisitions will not be consciously managed to best effect.

CONCLUSION

The typical effect of M&A activity on firm performance has been well documented, and, on average, M&A activity does not lead to superior financial performance. In fact, a stronger argument can be made that M&A activity has a modest negative effect on the long-term financial performance of acquiring firms. Although M&A activity has a demonstrated conditional effect on post-acquisition financial performance, we find, after cumulating results of extant research, the 'conditions' most commonly studied in prior M&A research (conglomerate acquisitions, related acquisitions, method of payment [cash vs. equity], and prior acquisition experience) do not impact post-acquisition performance. Thus, despite decades of research, what impacts the financial performance of firms engaging in M&A activity remains largely unexplained. This observation comes with the caveat that the present examination is limited to a subset of variables upon which extant studies have routinely relied.[14] Our findings could have two distinct effects on the prospects for future M&A research: they could be interpreted as evidence of the difficulty of research in this area, or they could be interpreted as evidence of the significant opportunities remaining for knowledge creation. Given the high levels of observed M&A activity and present indications of unidentified moderator variables, we hope researchers embrace the latter interpretation.

[14] We would like to thank an anonymous reviewer for identifying the necessary caveat that interpretation of our results is limited to studies and variables examined. However, the variables on which we rely for our analyses do not reflect our preferences, but rather those variables that consistently appear in extant empirical research.

DISCLAIMER

The views expressed in this article are those of the authors and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the U.S. government.

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