

Entrepreneurial Acquisitions to Pursue New Opportunities

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Abstract

Strategy research has examined the problems that firms encounter during M&A deal-making and implementation due to the challenges posed by asymmetric information and post-merger integration, respectively. Our paper builds upon this literature by examining the performance consequences of these challenges and by investigating whether firms with distinct resources and capabilities are more or less subject to these problems. Specifically, we draw upon recent entrepreneurship research that has documented new ventures' activity in M&A markets, and we compare these organizations with established firms. The findings indicate that both sets of firms obtain similar performance penalties when acquiring relatively large targets that are structurally 'indigestible.' However, there is evidence that new ventures are more subject to the problems associated with asymmetric information, yet they perform better than established firms when acquiring targets with high growth opportunities.

INTRODUCTION

Strategy and economics research has long investigated the various challenges accompanying firms' mergers and acquisition (M&A) activities, ranging from deal-making to implementation processes. For instance, during M&A negotiations, information asymmetries make it difficult for acquirers to evaluate a target's resources and claims, so asymmetric information increases a buyer's risk of overpaying and winding up with a lemon (e.g., Akerlof, 1970; Balakrishnan & Koza, 1993). As a second example, during the subsequent implementation of acquisitions, acquirers can also bear costs due to structural integration, particularly when targets are large relative to the acquiring firm (Hennart & Reddy, 1997).

Although these theoretical arguments and findings shed light on the challenges posed by individual acquisitions and their associated costs, some firms might be more or less able to manage these acquisition challenges given their resource endowments. Delios and Henisz (2000), for instance, develop the argument that some companies possess so-called "hazard-mitigating capabilities" that allow them to reduce the costs associated with particular transactions, while firms lacking such capabilities will bear these inefficiencies to a much greater extent. Their arguments indicate, therefore, that firm resources potentially interact with the challenges associated with different phases of the acquisition process (e.g., asymmetric information during M&A deal-making, structural indigestibility during M&A implementation, etc.) to shape the performance outcomes particular firms obtain in individual deals. In other words, the performance penalties associated with the problems presented by asymmetric information and post-merger integration are likely to have a firm-specific component that has not been studied.

In this paper, we wish to investigate this proposition by joining the extensive literature on M&A (for a review, see Andrade, Mitchell, & Stafford, 2001) with the research in entrepreneurship that has emphasized the underlying differences between new ventures and established firms. By combining these literatures, we study how the distinctive features of these two classes of firms can affect the performance outcomes they obtain in the M&A domain as they evolve. The entrepreneurship literature has long emphasized that new ventures and established firms possess different resources and capabilities, and more recently this literature has noted that new ventures have become active in the M&A realm (Zahra, Ireland, & Hitt, 2000). This suggests that the differences that exist across these two types of firms may influence their abilities to manage specific aspects of the acquisition process, ranging from M&A deal-making to the implementation of acquisitions. In particular, we give attention to two important difficulties that can arise at different stages of the M&A process: (1) the risk of adverse selection stemming from information asymmetries, and (2) post-merger management problems finding their roots in structural and cultural integration challenges. The central proposition we wish to investigate is whether the performance effects of these challenges differ across new ventures and established firms in light of their different resources and capabilities.

The results provide support for the notion that new ventures experience unique challenges and opportunities as acquirers. For example, the findings suggest that both new and established firms encounter difficulties in dealing with the risk of adverse selection in M&A, yet new ventures experience greater performance penalties for conducting acquisitions subject to asymmetric information. By contrast, while structural integration challenges during M&A implementation also have a negative impact on M&A performance in general, this problem appears to be more persistent as it affects new ventures and established firms equally. Lastly, the

results indicate that new ventures appear to be better positioned than established firms to acquire targets with substantial growth prospects.

Given the large literature on experiential learning in the M&A context and the experience differentials that can exist across these classes of acquirers, one might conjecture that these findings are simply attributable to acquirers' experience levels. However, we find that the evidence we present cannot be accommodated by differences in new and established firms' M&A experience levels. Thus, the findings we report are likely due to other differences in resources and capabilities across new ventures and established firms, and future M&A research might explicitly examine how the age of acquirers affects their M&A decisions and outcomes, above and beyond experience effects.

Our paper contributes to research on entrepreneurship and acquisitions in two ways. First, there is significant work in entrepreneurship that highlights the key differences of new ventures and established firms, yet very little attention has been paid to how their distinctive characteristics matter in the M&A context. Our findings complement recent evidence on new ventures' growth through acquisitions (e.g., Zahra, Ireland, and Hitt, 2000) by showing how the particular challenges that arise during M&A deal-making and implementation affect the performance of new ventures and established firms differently. Second, prior research on the determinants of acquisition performance has investigated the direct effects of various M&A challenges (e.g., asymmetric information, structural integration, etc.) while simply pooling together new ventures and established firms. Our arguments and evidence suggest that these challenges affect new and established companies in distinct ways, and erroneous generalizations might be made when studies do not differentiate these two classes of firms from one another in analyses of M&A performance.

THEORY AND HYPOTHESES

A substantial body of literature in entrepreneurship and economics has investigated the unique attributes of new ventures versus established firms. For instance, research has highlighted new ventures' comparative lack of administrative capabilities and solidified organizational routines (e.g., Leiblein & Reuer, 2004). Other work has also tied the liability of newness to new ventures' limited access to markets and external relationships (e.g., Carter, Stearns, Reynolds, & Miller, 1994). However, until recently little attention has been paid to the implications of these differences for new ventures' corporate strategies and their performance outcomes (c.f., McDougall, Shane, & Oviatt, 1994; McDougall & Oviatt, 1996).

Our intent is to compare new ventures and established firms in order to consider how the effects of several key theoretical drivers of M&A performance during acquisition deal-making and implementation vary across these two classes of firms. It is also worth noting at the outset that many other firm-level indicators of entrepreneurship have been used in large-scale empirical studies, and no consensus exists as to what constitutes an entrepreneurial firm. For instance, many studies on entrepreneurship and public policy classify entrepreneurial firms as those having less than 500 employees (e.g., Acs & Audretsch, 1988). Other indicators of entrepreneurial status found in the literature include founder presence, growth rates, innovativeness, ownership structure, and so forth (e.g., Begley, 1995; Autio, Sapienza, & Almeida, 2000). Our objective is neither to resolve this on-going debate nor to generalize the arguments and findings to entrepreneurial phenomena more broadly. Rather, we selected a firm status indicator that is tied to organizations' resources and that follows recent precedent in the entrepreneurship literature on M&A (Zahra, Ireland, & Hitt, 2000).

In the subsections that follow, we develop three research hypotheses that compare the performance implications of M&A for new ventures and established firms. In developing our first hypothesis, we use information economics to consider the inefficiencies that can arise during target selection and M&A negotiations due to information asymmetries across buyers and sellers. As we discuss this problem arising in M&A deal-making processes, we consider how this challenge is likely to have a more pronounced negative effect on the performance of new ventures conducting M&A compared to established firms. In the remaining hypotheses, we turn our attention to the implementation challenges associated with acquisitions, and our specific focus is on two main classes of problems arising after a deal closes -- structural integration and cultural integration. As before, the hypotheses related to M&A implementation focus on how new venture status interacts with well-known M&A challenges to determine the performance implications of acquisitions.

M&A Deal-Making: The Role of Information Asymmetry

Acquisitions can be attractive to acquiring firms because of two properties of a target firm's knowledge that a firm seeks to obtain (e.g., Kogut & Zander, 1992; Nonaka, 1994). First, knowledge is often difficult to unbundle from other complementary resources, which can necessitate the extensive coordination and control of resources provided by acquisitions compared to contracts. Second, knowledge can be inefficient to replicate through in-house development given its public goods nature. That said, the differences in acquirers' and targets' knowledge bases can also generate serious problems and inefficiencies arising from information asymmetries (Coff, 1999), and these difficulties can at least partially explain the poor performance for many acquirers, as we discuss below.

The core prediction of information economics derives from an extension of the concepts of information asymmetry and adverse selection in product markets (Akerlof, 1970) to the M&A domain. This theory suggests that when an acquirer finds it difficult to discern the value of a target firm's resources and when the seller faces challenges conveying the quality of its resources in a credible fashion due to its natural incentive to justify a higher sales price, the due diligence process will be inefficient. The consequences of adverse selection are many, and include negative surprises after the deal is consummated as well as worse *ex post* performance for the acquisition.

Such problems tend to become more severe the more disparate are the buyer's and seller's knowledge bases. For instance, at one extreme, in intra-industry transactions, acquirers will tend to be familiar with target firms' resources, buyers and suppliers, and management capabilities (e.g., Montgomery & Hariharan, 1991). By contrast, as the parties' knowledge bases diverge in inter-industry deals, information asymmetries will tend to increase and the target firm will find it harder to convey credibly the value of its resources, even if it is inclined to do so (e.g., Ravenscraft & Scherer, 1987). Thus, while an acquirer might be able to recognize the degree to which the target is related to it, the buyer will be in a poor position to judge other factors such as the target's resources, products, business relationships, and management capabilities. For these reasons, asymmetric information has been most often studied using proxies for the dissimilarity in buyers' and sellers' knowledge bases (e.g., Balakrishnan & Koza, 1993; Coff, 1999; Kohers & Ang, 2000; Datar, Frankel, & Wolfson, 2001).

While the theory just summarized suggests a negative relationship between information asymmetry and M&A performance in general, an interesting question is whether new ventures are any more or less exposed to the risk of adverse selection than are established companies.

Based on the differences in the breadth and depth of resources across these two classes of companies, as highlighted by the entrepreneurship literature, we expect that new ventures indeed will suffer greater performance penalties from asymmetric information in their M&A deals. To begin with, new ventures are likely to have less acquisition experience than established firms. Although the evidence on the effects of M&A experience is quite mixed (e.g., Kitching, 1967; Newbould, Stray, & Wilson, 1976; Paine & Power, 1984; Fowler & Schmidt, 1989; Bruton, Oviatt, & White, 1994; Haleblan & Finkelstein, 1999; Hayward, 2002), some theoretical arguments and findings would suggest that experiences obtained either directly or via a firm's network of exchange partners may help improve acquisition performance (e.g., Vermeulen & Barkema, 2001; Beckman & Haunschild, 2002).

M&A experience is only one dimension along which new ventures and established firms differ, however, and we suspect that performance differences will exist across these classes of firms, even after accounting for their experience differences. For example, new ventures' external corporate development activities can be impeded by their limited slack resources as well as inferior administrative skills in general (e.g., Leiblein & Reuer, 2004), which can be important during the identification and screening of targets as well as subsequent activities such as negotiating the acquisition and ultimately executing the deal. New ventures also tend to have inferior access to markets and external relationships (e.g., Carter, Stearns, Reynolds, & Miller, 1994), and these resources can help acquirers gather information on potential targets more efficiently. These constraints indicate that new ventures might not be as capable as established firms of identifying the most attractive targets and judging the value of their resources. All of these arguments suggest that established firms, rather than new ventures, are more likely to possess the hazard mitigating capabilities (Delios & Henisz, 2000) that enable them to cope

better with the challenges presented by asymmetric information in M&A. If this is the case, the challenges that are presented by asymmetric information when firms acquire targets with different knowledge bases will have a more pronounced, negative effect on firm performance for new ventures compared to established firms:

Hypothesis 1: The greater the dissimilarity in acquirers' and targets' knowledge bases, the worse new ventures will perform relative to established firms.

M&A Implementation: Post-Merger Integration Challenges

The arguments above consider how new ventures and established firms potentially obtain different M&A performance outcomes due to the challenges presented by information asymmetry during M&A deal-making. While this theory is concerned primarily with difficulties firms encounter prior to a deal's closing (e.g., target selection, valuation, negotiation, etc.), the performance of an acquisition will also reflect the challenges firms encounter during the implementation of acquisitions when they engage in post-merger integration. As above, research has associated these problems with the intrinsic attributes of acquirers and targets. For example, prior work has suggested that post-merger integration costs tend to be larger when the targets are large relative to acquirers and are therefore 'indigestible' (e.g., Hennart & Reddy, 1997) and when the administrative practices and cultures of the acquiring and target firms diverge (e.g., Datta, 1991; Chatterjee *et al.*, 1992). Our second hypothesis therefore examines the adverse performance implications of structural indigestibility and considers whether these difficulties are more problematic for new ventures versus established firms engaged in M&A. Our final hypothesis will take up the issue of the cultural compatibility of acquirers and targets.

For reasons similar to those above, we expect that new ventures will experience greater difficulties managing structural integration challenges than established firms. The tendency of new ventures to lack experience in corporate development activities may impede their structural

integration efforts, compared to established firms implementing acquisitions (e.g., Zollo & Singh, 2004). Moreover, paralleling the discussion of our previous hypothesis, prior comparisons of new ventures and established firms have noted that the former generally have less well-developed administrative and supporting resources. The fact that established firms typically possess greater financial slack and breadth of administrative skills and resources can also enable established firms to implement post-acquisition management activities more effectively. All of these arguments suggest that established firms are more likely to possess capabilities that enable them to cope more effectively with the challenges presented by structural integration. Given that prior research has tied post-merger integration costs to the structural indigestibility of the target firm (Hennart & Reddy, 1997), our specific prediction is that new ventures will obtain worse performance outcomes than established firms when acquiring relatively large targets:

Hypothesis 2: The greater the indigestibility of the target firm, the worse new ventures will perform relative to established firms.

Post-merger integration problems have not only been attributed to the difficulties of structural indigestibility surrounding the integration of relatively large targets, but also to the challenges arising from the combination of firms with different resources and other organizational characteristics linked to their administrative practices and cultures. Prior research suggests that organizational conflicts and post-acquisition costs are likely to crop up when acquirers purchase targets with which they do not have a strong organizational fit. Jemison and Sitkin (1986: 728), for instance, observe that “appropriate levels of cooperation depend on the compatibility between the two firms as reflected in the similarity of their organizational cultures, top management styles, administrative systems, and decision-making practices.” A sizable stream of empirical literature has also supported the view that negative

acquisition performance may stem from incompatibilities in management styles and reward systems across acquirers and targets (e.g., Buono & Bowditch, 1989; Haspeslagh & Jemison, 1991; Chatterjee, *et al.*, 1992), and related research has examined the important roles that cultural differences play in the acquisition process (e.g., Lubatkin, Calori, Very, & Veiga, 1998; Morosini, Shane, & Singh, 1998).

New ventures and established firms tend to differ in their administrative practices and cultures in several important respects that can have implications for the outcomes they obtain in the acquisition process. Research in the M&A literature has identified innovativeness, performance and reward orientations, risk-taking propensities, and decision making styles as relevant dimensions of corporate culture (Chatterjee, *et al.*, 1992), and many of these features have also been used to describe entrepreneurial firms and differentiate them from established companies. For example, Covin and Slevin (1991) develop a conceptual model of entrepreneurial behavior at the organizational level that distinguishes entrepreneurial firms along many cultural dimensions. Firms with entrepreneurial ‘postures’ are ones that “are risk taking, innovative, and proactive. They are willing to take on high-risk projects with chances of very high returns, and are bold and aggressive in pursuing opportunities” (pp. 7-8). They suggest that these characteristics of entrepreneurial organizations are connected with their organizational practices and priorities, including their support for novel ideas at all levels of the organization and their long-term focus on innovation and change.

These characteristics of new ventures are not likely to be beneficial in general when they conduct M&A, but they suggest that certain types of targets will represent better organizational fit with them. Specifically, new ventures will be more compatible with targets possessing significant growth opportunities and intangibles, while such targets are less likely to fit well with

more established firms engaging in acquisitions. Because firms' administrative and cultural practices will reflect their growth priorities, as noted above, organizational fit will likely to be better when new ventures acquire targets with significant growth prospects and worse when targets are growing slowly or not at all. Moreover, established firms' tend to have more rigid administrative structures and systems (Hitt, Hoskisson, & Ireland, 1989; Hitt, Ireland, & Harrison, 1991), while new ventures' systems and routines are still developing and more malleable, which can be useful in combinations with targets with substantial intangibles and growth prospects (e.g., Haspeslagh & Jemison, 1991). Furthermore, given that the retention of human capital is particularly important in deals involving such targets, and that the departure of key managers can adversely affect M&A performance in general (e.g., Schweiger & DeNisi, 1991; Cannella & Hambrick, 1993), these attributes of new ventures may also ease the assimilation of the target firm into the acquirer. Based on these arguments concerning the organizational fit between acquirers and targets, we posit the following:

Hypothesis 3: The greater the target firm's growth prospects and intangibles, the better new ventures will perform relative to established firms.

METHODS

Sample

The sample was drawn from the Security Data Corporation (SDC) database, and it includes all acquisitions of domestic firms by US bidders, and performance data for the acquirers were obtained for the 1992-2000 timeframe. Since our dependent variable spans from one year prior to a deal to three years after, our final sample includes acquisitions occurring in the 1993-1997 timeframe. The number of deals consistently increased during this time interval, with 1997 providing about 33 percent of the observations in our sample, and 1993 a mere 7.5 percent. In order to assess the representativeness of our sample, we compared our data to the overall merger

activity in the United States. We found that the incidence of deals in our sample followed a pattern that was comparable to the domestic M&A activity in the US ($\chi^2 = 0.14$, n.s.). The manufacturing (i.e., SIC 20-39) and finance, insurance and real estate (i.e., SIC 60-67) sectors accounted for almost 60 percent of the total number of deals – 30.8 and 27.9 percent, respectively – followed by services (i.e., SIC 70-89), with 18.8 percent of the total. An analysis of the asset size of the target relative to the acquirer revealed that in 80 percent of the deals the former was half the size of the latter or smaller, while in less than 13 percent of the transactions the target's size was larger than the acquirer's. While a two-sample t-test indicated that new ventures were smaller in size than established bidders ($p < 0.01$), as would be expected, we also found that the two classes of firms pursued targets of equivalent relative size (i.e., $t = 0.13$, n.s.). After accounting for missing accounting data from Compustat as well as missing data from other sources with which our data was merged, the final sample consisted of 409 deals. The sample was comprised of 324 unique acquirers, 278 of which engaged in a single transaction, 33 of which completed two acquisitions, and the remaining 13 entered into more than two deals. As a result, two steps were taken to address the potential non-independence of observations. First, in the tables that appear below, we used clustered residuals by employing Huber/White/Sandwich robust standard errors (e.g., Froot, 1989). As a separate robustness check, we also randomly chose a single acquisition for each of the acquirers completing more than one deal.

Measures and Data

Acquisition Performance. To compute the performance implications of an acquisition, we followed prior literature (e.g., Rhoades, 1994) and calculated an industry-adjusted measure of a firm's change in return on assets (ROA), using the year preceding the deal and the third year following the acquisition. Specifically, the dependent variable was computed as follows:

$$(2) \text{ Acquisition Performance} = (\text{ROA}_{i,t+3} - \text{ROA}_{i,t-1}) - (\text{ROA}_{\text{Ind},t+3} - \text{ROA}_{\text{Ind},t-1}),$$

where $\text{ROA}_{i,t}$ represents the ratio of net income to total assets of firm i in year t , and $\text{ROA}_{\text{Ind},t}$ is the industry average return on assets in year t at the 2-digit SIC level. We selected a profitability measure for the purpose of comparing our results with prior work that followed a similar approach (e.g., Fowler & Schmidt, 1989; Haleblian & Finkelstein, 1999; Zollo & Singh, 2004). Furthermore, given the cross-sectional sample we are using, as well as the number of years the data span, we used a performance measure that controls for industry-year factors. We also examined an alternative performance measure, as the above measure does not account for the fact that a one-unit increase in performance by a firm experiencing low ROA before an acquisition can represent a greater performance improvement than an one-unit increase by a firm experiencing high ROA prior to a deal. However, using the percentage increase in ROA from one year prior to three years after a deal as the dependent variable yielded qualitatively similar results, though this alternative performance measure does not address industry differences and cannot be used for firms with negative ROA values in the year prior to M&A transactions.

Explanatory Variables. The proxy used to distinguish new ventures and established firms at the time of the acquisition was constructed as a function of the acquirer's age since its year of incorporation (i.e., *New venture*). Specifically, following prior work, we considered a firm to be a new venture if it was incorporated up to six years prior to the focal deal, and we considered it to be an established firm if it was older (Brush & Vanderwerf, 1992; Brush, 1995; Shrader, 1996; Zahra, Ireland & Hitt, 2000). However, as discussed below, we also examined the robustness of results by employing alternative cutoff values (Covin, Slevin, & Covin, 1990; Zahra, 1996) as well as by using a continuous measure of firm age. Data for this variable were

obtained from the Business & Company Resource Center, which is an integrated business resource administered by the Thomson Corporation and provides company profiles and histories.

The next theoretical variable in the model is *Knowledge distance*. The measure we adopted was first introduced by Farjoun (1994) and has subsequently been utilized by other scholars in the M&A literature (e.g. Chang, 1996). This measure proxies the knowledge requirements of industries based on the distribution of employment across occupational categories. Specifically,

$$(2) \text{ Knowledge Distance} = \left[\sum_{k=1}^{224} |EA_k - ET_k| \right]^{0.5}$$

where EA_k and ET_k are the proportions of the workers in occupation k in the acquirer's and the target's industries, respectively. Data for the computation of this variable were derived from the Occupation Employment Survey, which provides the occupational distribution of US firms across over two hundred occupational categories within industries at the 3-digit SIC level. This survey is conducted annually by the Bureau of Labor Statistics. Coff (1999) shows that this measure is associated with specific steps firms take to respond to asymmetric information in M&A, such as seeking more information from the target, avoiding lump sum cash payments, and discounting offer prices. Other studies using dyadic, industry-level proxies of asymmetric information in M&A to measure the relatedness of buyers and sellers include Balakrishnan and Koza (1993), Kohers and Ang (2000), and Datar, Frankel and Wolfson (2001).

Indigestibility is the third theoretical variable in our model. This variable serves as a proxy for structural integration problems (Kuehn, 1975) since low values imply easier integration due to the relatively small size of targets, while higher values indicate the need to integrate targets of more comparable or larger sizes, with the corresponding challenges of

accessing desired resources in the target (e.g., Hennart & Reddy, 1997). The measure was calculated as the ratio of the target's total assets to the acquirer's total assets. Data for this measure were obtained from Compustat.

The last theoretical variable in our model is *Target Q*, which serves as a proxy for the target's intangibles and growth opportunities (Lang, Stulz, & Walkling, 1989; McGahan, 1999; Villalonga, 2004). Relying on this precedent is therefore useful to us in order to draw comparisons with prior M&A studies. Following Chung and Pruitt (1994), we approximated Tobin's Q as follows: The market value numerator is the year-end market value of common stock plus the book value of preferred stock and debt. The book value denominator is year-end total assets. This measure explains over 96 percent of the variance of a more sophisticated Tobin's Q ratio that would require arbitrary assumptions about depreciation and inflation rates for the replacement values of the target's assets. Data for this measure were obtained from the Compustat data files.

Control Variables. While our focus centers on the relationship between the firm's post-acquisition performance and the variables reflecting the level of information asymmetry and post-merger integration problems for new ventures and established firms, we implemented a number of controls to account for other potential firm- and industry-level factors influencing acquisition performance. To address performance effects that may arise merely due to the size of the acquirer (Moeller, Schlingemann, & Stulz, 2004), we implemented a control for the firm's asset size. Firm size has been found to have positive effects on performance, due to its relation to a firm's market share, competitive position, and resources (e.g., Hansen, 1992; Van Dijk, Den Hertog, Menkveld & Thurik, 1997). However, other literature has brought evidence of some negative consequences associated with size, indicating that larger firms may exhibit higher

degrees of institutional insulation and bureaucratization, which may in turn reduce their responsiveness to changing industry conditions (e.g., Haveman, 1993). *Acquirer size* was operationalized as the log of the acquirer's total assets at the end of the year prior to the acquisition. The logarithmic transformation was used to remedy significant skewness for this variable. We also controlled for the firm's capital structure as it may influence its slack resources and acquisition motives (Jensen, 1986). *Acquirer leverage* was calculated as the ratio of the firm's total liabilities to total assets, again at the end of the year before the transaction. The data to compute these two variables were obtained from the Compustat database. We also included the bidder's *Acquisition experience*, defined as the logarithm of one plus the number of transactions the firm carried out up to ten years preceding the focal transaction. We used the SDC database to assemble the acquiring firms' deal histories to calculate this variable. At the target level, we controlled for the performance of the acquired firm since prior work emphasizes that bidders implement their own strategies and systems more effectively than they learn from those of higher-performing targets (e.g., Haspeslagh & Jemison, 1991; Capron, 1999). The performance of the acquired firm was calculated as its return on assets (ROA) at the end of the year prior to the acquisition, and data for this variable were collected from Compustat (i.e., *Target performance*). As a further control for target influences on the focal firm's performance, we introduced fixed effects for target firms' industries.

RESULTS

Table 1 presents sample statistics and a correlation matrix. The average acquisition performance was close to zero during the 1993-1997 time frame, and about 5 percent of our sample was comprised of new ventures. The average age of acquirers was 35 years, while the median was 18 years. When we split the sample between new ventures and established firms, we

found that the mean age for the former was four years (median=5 years), while for the latter it was 37 (median=23). The average firm had less than two acquisitions in the ten years prior to entering our sample, and this measure ranged from zero (i.e., 13% of the sample) to 40 transactions. The mean debt-to-assets ratio was 0.62, while firm size averaged roughly \$1.4 billion in assets.

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Insert Table 1 about here
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The table reveals several noteworthy bivariate relationships among the variables. There is modest evidence that larger acquirers experienced better acquisition performance ($p < 0.10$), a finding that might be partially attributable to the fact that larger firms tend to have more M&A experience and select better performing targets (both $p < 0.001$). Experienced acquirers tend to pursue targets that are relatively smaller ($p < 0.001$) and have fewer intangibles and growth prospects ($p < 0.05$), and such acquirers tend to be highly leveraged ($p < 0.001$).

In order to understand the effects of new venture status on the other explanatory variables in our model, we compared the covariates across new ventures and established firms. Two-sample t-tests revealed that there were no significant differences between the two classes of firms with respect to indigestibility (i.e., $t = 0.60$, n.s.), knowledge distance (i.e., $t = 0.28$, n.s.), target Q (i.e., $t = 1.23$, n.s.), target prior-year performance (i.e., $t = 1.19$, n.s.), and acquirer leverage (i.e., $t = 1.49$, $p < 0.13$). However, there was modest evidence that acquisition experience differed between new and established firms ($p < 0.10$), with the former having less acquisition experience than the latter. Eighteen percent of new ventures had acquisition experience, whereas approximately double the number of established firms (i.e., 36%) had conducted prior acquisitions (i.e., $\chi^2 = 4.50$, $p < 0.05$). In a supplemental analysis presented below, we examine

whether the differences across the theoretical mechanisms explaining M&A performance can be accounted for in full or part by new ventures' more limited M&A experience.

The significant correlations among the explanatory variables indicate the importance of using multiple regression models to isolate the partial effects of the variables of interest on firms' post acquisition performance, and they also raise the possibility of multicollinearity problems. To examine whether or not multicollinearity posed a problem for model estimation, we calculated variance inflation factors (VIFs), yet in no case did the VIFs exceed four, far short of the typical cutoff value of ten (Neter, Wasserman, & Kutner, 1985).

Table 2 presents the results of the regression analyses for acquisition performance, with the new venture status indicator interacted with the other explanatory variables. As noted above, we estimated our models using clustered, robust standard errors, where clusters were defined as unique acquirers and the standard errors were adjusted for heteroskedasticity using the Huber/White/sandwich method (e.g., Froot, 1989). As a separate, less formal step to address the potential non-independence of observations, we re-estimated the models by randomly choosing a single acquisition for those acquirers who engaged in more than one transaction (results available from the authors upon request). Column I provides estimates for the control variables in the model, Column II shows estimates for the direct effects, and Column III offers the results for the full model including interaction terms, respectively. All three models in Table 2 are highly significant on an overall basis ($p < 0.001$), and the improvements in model fit indicated by the hierarchical F-tests underscore the relevance of the theoretical variables and their different functioning across new ventures and established firms. We also conducted a Chow predictive test to examine if the effects of the other variables in the model differ across new and established

firms. The resulting significant F-value indicated that the other variables had differential performance effects across the new venture and established firm subsamples ($F = 2.5, p < 0.001$).

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Insert Table 2 about here
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Because prior literature has addressed how various *ex-ante* valuation and *ex-post* integration processes affect M&A performance, we sought to test whether the new venture status measure interacts with these theoretical variables in explaining M&A performance outcomes. The interaction of new venture status and knowledge distance in Column III provides evidence that young firms in particular experience worse performance outcomes ($p < 0.10$). The alternative model estimation using only unique acquirers corroborates this result and lends support to our first hypothesis ($p < 0.001$). The negative direct effect for knowledge distance ($p < 0.05$) indicates that the problems posed by asymmetric information apply to established firms, yet the negative interaction term suggests that these hazards are even greater for new ventures conducting acquisitions.

Hypothesis 2 suggested that the interaction effect between new venture status and indigestibility will be negative, but the negative parameter estimate in Table 2 did not reach statistical significance. Thus, no support was found for H2. The strong negative direct effect of indigestibility on acquirer performance indicates, therefore, that new ventures and established firms alike experience performance penalties from acquiring relatively large targets that presenting greater structural integration difficulties.

The last theoretical variable in our model is Target Q. Column II in Table 2 shows that acquisitions of firms with high growth opportunities generally lead to higher performance for acquirers ($p < 0.10$; $p < 0.01$ for the alternative estimation). However, as Column III reveals, this

positive relationship is magnified for new venture acquirers ($p < 0.01$; $p < 0.05$ for the alternative estimation). Therefore, there is support for the hypothesis that younger firms may be better able to acquire high-growth targets than are established firms.

As discussed previously, in defining the new venture status variable we were consistent with recent work that has employed a cutoff of 6 years to separate new and established firms (e.g., Brush & Vanderwerf, 1992; Shrader, 1996; Zahra, Ireland & Hitt, 2000). However, in order to test the robustness of our results, we also took two additional steps. First, we re-estimated the models using shorter and longer time horizons (i.e., 4 and 8 years). These supplemental analyses offered results yielding the same interpretations as those presented above. Second, in order to assess whether the dichotomous treatment of firm age can explain these findings, we also used a continuous measure of firm age (in years). The binary approach used in entrepreneurship suggests that younger firms are qualitatively different from older ones and that the effects of age are unlikely to be linear, yet dichotomizing the firm age variable also implies a loss of information. This analysis, like the ones using alternative age cutoff values, yielded similar results and interpretations, however.

As noted above, one of the key differences between new ventures and established firms is that the former may have less acquisition experience. In an effort to explore whether new ventures' comparative lack of experience can account for some of our findings, we re-estimated the multiple regression models using interaction terms with M&A experience rather than new venture status. The direct effects of M&A experience were insignificant in all specifications, as were the estimated interaction terms between this variable and knowledge distance, indigestibility, and the target's Q. As a result, the findings we present for the interactions with

the new venture status variable cannot be attributed simply to differences in experience across new and established firms.

Turning to the controls, neither acquirer size nor acquirer M&A experience appear to drive M&A performance, and the latter finding is consistent with recent work noting the mixed evidence for experiential learning in the M&A setting. Acquirer leverage positively affects M&A performance ($p < 0.01$), perhaps because highly-levered acquirers are less likely to carry out acquisitions for reasons tied to agency problems and are more likely to pursue synergy-yielding deals (e.g., Jensen, 1986; Lang, Stulz, & Walkling, 1991). Lastly, acquisition performance was not significantly related to the performance of the target firm, and target industry fixed effects were jointly significant ($p < 0.001$).

DISCUSSION

Taken together, the empirical findings presented in this paper provide strong evidence that the drivers of M&A performance vary in impact across new ventures and established firms. While there is little evidence that these two classes of firms obtain different performance outcomes on average, the problems in M&A deal-making and implementation do play out differently for new ventures and established firms. In particular, we present evidence that the information asymmetries that arise when firms acquire targets with dissimilar knowledge bases are more problematic for new ventures compared to established firms, although the two types of firms similarly experience worse performance owing to the challenges associated with structural indigestibility. By contrast, new ventures seem to be better-positioned to acquire targets with significant growth prospects and intangibles based on their organizational fit. Supplementary models provide evidence that acquisition experience differentials across new ventures and targets

do not account for the different acquisition performance outcomes obtained by these firms in the presence of various problems surrounding M&A deal-making and implementation.

The results of our study have important implications for research on organizational governance, mergers and acquisitions, and strategy and entrepreneurship. Our analyses extend work on organizational governance in the corporate development setting by examining the performance outcomes of M&A and by considering whether certain types of firms are more likely to possess hazard mitigating resources and capabilities (Delios & Henisz, 2000). Future studies could examine the particular ways in which hazard mitigating capabilities might be manifest, for instance whether established firms are able to select better targets, conduct a more effective due diligence process, or engage in better negotiations. Extensions might also consider alternative governance arrangements such as various types of contracts, joint ventures, and so forth or consider alternative exchange hazards (e.g., asset specificity, uncertainty, etc.) while examining new ventures and established firms in a comparative manner as we have done.

For research on mergers and acquisitions, our findings indicate that M&A performance drivers operate differently for new ventures and established firms. Prior M&A research has aggregated these two classes of firms and has failed to account for potential differences in their resource bases and other characteristics. More recently, entrepreneurship research has highlighted the characteristics of new ventures and has noted their activity as acquirers (Zahra, Ireland, & Hitt, 2000). By bringing together the research on mergers and acquisitions and the entrepreneurship literature, our findings confirm the importance of these differences across these two classes of firms and also raise the broader question of to what extent the large body of evidence in the M&A literature generalizes to new ventures that are engaged in acquisitions.

In the same way that entrepreneurship research can inform the M&A literature, research on mergers and acquisitions can also provide an important domain for testing theories of entrepreneurship. Our findings validate some of the theoretical arguments on entrepreneurial firms' characteristics in a new application domain, and the results highlight several challenges as well as opportunities faced by entrepreneurial firms conducting M&A. On a more practical level, this pattern of results might be useful for entrepreneurial firms selecting targets, and might also be useful in flagging particular problems that deserve their attention. For instance, entrepreneurial firms might consider ways in which they could respond to their apparently higher risk of adverse selection (e.g., hiring experienced top managers or advisers, relying on their network of partners, etc.). As noted earlier, our theory has focused on the firm-level resource differences across new ventures and established firms, so future research might also consider behavioral issues or attributes of individual entrepreneurs (e.g., overconfidence, aggressive postures, generalization biases, etc.) (e.g., Cooper, Dunkelberg, & Woo, 1988; Busenitz & Barney, 1997; Baron, 1998). These characteristics of individual entrepreneurs could well have an influence on the ways in which their firms engage in M&A activity and thus on the performance outcomes they obtain.

Although we have already noted some important avenues for future research, extensions might also address several limitations of the present study. On a conceptual level, we see several opportunities to expand upon the theoretical perspectives used in this study to examine M&A performance and compare new and established ventures. For instance, while our study has given attention to both *ex ante* and *ex post* transaction costs in M&A markets, it is also possible to examine other forms of transaction costs than we have considered. As one example, we have investigated *ex ante* costs arising from information asymmetry, yet such costs also arise from the

search processes in which firms engage prior to the deliberative aspects of deal-making that are the focus of our analysis. To the extent that established firms have more elaborate networks due to their age as well as their geographic or product-market diversification, such costs may be lower for larger firms.

Extensions might also explore several limitations that are evident in the empirical analysis. Our research design relies upon publicly-traded targets, and this focus has the effect of reducing the information asymmetry problems across acquirers and targets. Just as this focus makes it harder to detect adverse selection problems since considerably less information is available on private targets, our reliance on available secondary data for acquiring firms may similarly reduce the differences between new ventures and established firms and therefore makes for conservative tests of our predictions. Future studies might collect primary data in order to examine private targets as well as explicitly measure firms' integration decisions and processes. In a similar fashion, studies with access to primary data could explicitly examine all of the underlying dimensions that distinguish new ventures from established firms rather than relying on an indicator variable to capture these differences. This sort of research design would allow one to pin down the particular differences across these firms that matter in the M&A context.

Lastly, in this study we have focused on differences between new ventures and established firms solely on the buy side. Future research could build upon our findings and draw out important differences across these two classes of firms on the sell side, which has also received little attention. Given the scope for research in directions such as these, the relevance of new ventures in M&A markets, and the currently limited understanding of these phenomena, many interesting and fruitful avenues of research are present on acquisitions by and of new ventures.

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TABLE 1
Descriptive Statistics and Correlation Matrix^a

Variable	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Acquisition performance	0.00	0.09	---							
2. New venture	0.05	0.23	-0.04	---						
3. Acquirer size	3.17	0.93	0.09 [†]	-0.08	---					
4. Acquirer leverage	0.62	0.23	0.08	-0.07	0.60 ^{***}	---				
5. Acquisition experience	1.61	0.92	0.03	-0.09 [†]	0.42 ^{***}	0.23 ^{***}	---			
6. Target performance	0.00	0.15	-0.08	-0.09 [†]	0.21 ^{***}	0.16 ^{**}	0.16 ^{**}	---		
7. Knowledge distance	20.83	27.22	-0.11 [*]	-0.01	-0.01	-0.08 [†]	0.03	0.05	---	
8. Indigestibility	0.41	0.55	-0.26 ^{***}	-0.02	-0.45 ^{***}	-0.25 ^{***}	-0.22 ^{***}	-0.13 ^{**}	-0.03	---
9. Target Q	0.82	0.81	0.14 ^{**}	0.08	-0.08	-0.16 ^{**}	-0.10 [*]	0.07	0.08 [†]	-0.08 [†]

^aN=409. [†] p<0.10, * p<0.05, ** p<0.01, *** p<0.001.

TABLE 2
Multiple Regression Results for Acquisition Performance^b

Variable	I	II	III
Intercept	-0.09 ^{**} (0.03)	-0.05 (0.03)	-0.04 (0.03)
New venture	-0.02 (0.03)	-0.03 [*] (0.03)	-0.05 (0.04)
Acquirer size	0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Acquirer leverage	0.08 [†] (0.04)	0.08 [*] (0.04)	0.08 [*] (0.04)
Acquisition experience	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
Target performance	-0.07 (0.05)	-0.08 (0.05)	-0.08 (0.05)
Target industry fixed effects ^c	2.60 ^{***}	2.39 ^{***}	2.34 ^{***}
Knowledge distance (x10 ⁻²)	---	-0.05 ^{**} (0.02)	-0.04 [*] (0.02)
Indigestibility	---	-0.04 ^{**} (0.01)	-0.04 ^{**} (0.01)
Target Q	---	0.01 [†] (0.01)	0.01 (0.01)
New venture • Knowledge distance (x10 ⁻²)	---	---	-0.18 [†] (0.10)
New venture • Indigestibility	---	---	-0.01 (0.06)
New venture • Target Q	---	---	0.05 ^{**} (0.02)
Model F	2.44 ^{***}	2.24 ^{***}	2.56 ^{***}
Δ F	---	4.98 ^{**}	3.72 [*]

^b N=409. Huber/White/Sandwich robust standard errors appear in parentheses.

[†] p<0.10, * p<0.05, ** p<0.01, *** p<0.001.

^c Cell values represent the F-values of the test for joint significance of the fixed effects.