Article

Bringing It All Back Home: Corporate Venturing and Renewal Through Spin-ins

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Abstract

More often than not, corporate acquisitions are expensive and difficult, especially those transacted for the purpose of advancing the aims of corporate entrepreneurship (CE). Motivated by frequent, high-cost failures, firms are experimenting with novel organizational structures and fresh approaches to acquisition-driven CE. In this study, we examine the effectiveness of corporate spin-ins—acquisitions in which the acquired company is founded by former employees of the acquiring firm—in resolving key challenges of CE-motivated acquisitions Using a matched pairwise dataset of spin-in and non-spin-in acquisitions, we discover that spin-ins generate superior outcomes, positioning them as a high-potential facet of CE portfolios.

Keywords

corporate entrepreneurship, corporate venturing, spin-ins, acquisitions, M&A

While much of CE literature has focused on the antecedents and outcomes of internal efforts to mobilize resources toward the achievement of internal CE initiatives (Covin & Miles, 1999; Zahra, Nielsen, & Bogner, 1999), corporate acquisitions are a popular, high-profile attempt to jump-start CE aims through the mobilization of external resources and capabilities (Hudson, 1994; Schildt, Maula, & Keil, 2005). CE pursued through corporate acquisitions faces a well-documented set of challenges, known collectively as the "M&A Paradox" (Cording et al., 2002; Sirower, 1997), a notion underscoring the problems firms face in CE when attempting to buy and integrate novel technologies and organizations profitably and efficiently through corporate acquisitions (Agrawal & Jaffe, 2000). Existing research on Mergers and Acquisitions (M&A) suggests that, on average, acquisitions destroy acquiring firm value (King, Dalton, Daily, & Covin, 2004). The principal reason for this lies in the tendency of acquiring firms to pay acquisition premiums that are not justified by the revenue-side and expense-side synergies that are ultimately realized (Cartwright & Schoenberg, 2006).

Firms have been hard-pressed to solve the M&A Paradox, even while corporate acquisitions continue at a torrid pace (Deloitte, 2018). There are, however, signs of change (McCarthy & Dolfsma, 2012). Cognizant of the challenges posed by acquisition-driven CE, acquiring firms

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increasingly have experimented with new approaches to the efficient organization of acquired assets (Faulkner, Teerikangas, & Joseph, 2012; Michl, Gold, & Picot, 2012). Despite these emerging trends, scholarly research has lagged in identifying and assessing the effectiveness of these novel organizational forms. For example, Dess et al. (2003) notes the lack of research on alternative structures for CE pursuits. Phan, Wright, Ucbasaran, and Tan (2009) similarly emphasize tendencies to ignore important heterogeneities of CE organizational forms and processes.

Responding to the need for new perspectives on the organizational structures, processes, and governance of CE, the purpose of this study is to explore whether and how *spin-ins* enable acquiring firms to achieve stronger CE outcomes. Corporate spin-ins occur when a firm acquires a company that was founded by a former employee. Often, the innovations of ex-employees are permanently lost to the parent firms when frustrated or ambitious employees leave the parent to form their own companies (Klepper & Sleeper, 2005), a phenomenon called intra-industry entrepreneurial spinouts. Such spinouts typically fail to facilitate corporate renewal, since the parent company does not benefit from the innovations produced in the new organization (Agarwal, Echambadi, Franco, & Sarkar, 2004).

In some cases, however, these spinouts are later acquired by the parent firm, thus reintegrating the ex-employees, along with their knowledge-based assets, back into the parent organization. Acquiring innovation in this fashion is known as a *spin-in*. Though largely ignored in research to date, the phenomenon is becoming an important facet of CE external venturing portfolios in sectors characterized by rapid technological change and relatively limited barriers to entry. The question is as follows: Do these novel attempts to pursue external sources of CE reverse the tendency for corporate acquisitions to destroy shareholder value for the acquiring firm?

Using a matched pair design, consisting of spin-in and non-spin-in acquisitions completed between 1995 and 2012, we investigate the extent to which spin-ins enhance the efficient organizing aims of CE initiatives over traditional forms of M&A. Although many firms experiment with alternative strategic initiatives in the CE context, the long-term viability of such approaches hinges directly on whether these strategies achieve the aims of efficient organizing (Williamson, 1985). Inefficient organizational forms, regardless of how much innovation value is created through CE initiatives, will not survive long in competitive markets if resources are wasted (Cloodt, Hagedoorn, & Van Kranenburg, 2006).

Our study addresses these issues by providing the first comprehensive scholarly treatment of corporate spin-ins. Extending theoretical arguments grounded in the transaction cost logics of efficient organizing (Williamson, 1985) and the existing literature on acquisitions (Cartwright & Schonberg, 2006), we evaluate the key moderators that ultimately dictate the extent to which acquisitions create or destroy shareholder value (King et al., 2004): information asymmetries, executive hubris, and PAI. This approach enables us to examine the viability of spin-ins as a novel form of efficient organizing and the effectiveness of efforts to pursue CE efficiently and profitably through acquisitions (Sagner, 2012; Steger & Kummer, 2007). Insofar as spin-ins leverage preexisting ties between the acquirer and target, our study indicates that they have the potential to shed new light on the value-creating and value-destroying consequences of efforts to pursue CE through corporate acquisitions.

Theoretical Development

The Challenge of Corporate Entrepreneurship Through Acquisitions

Regardless of firm size or age, innovation is elusive, complex, and fluid (Fleming & Sorenson, 2012), requiring firms to develop or obtain highly specialized creative assets. Due to the challenges of innovating through the development of internal resources and capabilities, firms often

turn to external sources of renewal (Floyd & Wooldridge, 1999; Hitt, Hoskisson, & Ireland, 1990), through organizational structures ranging from joint ventures, alliances, R&D agreements, and product licensing, to outright acquisition. Each of these external development pathways creates a wide array of situation-dependent costs and benefits (Heeley, King, & Covin, 2006) and knowledge spillover effects (Covin & Miles, 1999) that will impact the long-term capabilities (Sirower, 1997) and profitability (Agrawal & Jaffe, 2000) of the transacting parties. The largest and the riskiest of these external approaches to CE are corporate acquisitions, which now exceed $5 trillion in aggregate annual deal values (SDC, 2017). Acquisitions are the quintessential attempt to use external markets to buy rather than build new capabilities (Heeley et al., 2006).

However, the scorecard on CE strategies pursued through the acquisition of external resources is generally bleak. As King et al. (2004, p. 196) concluded: "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." Moreover, the returns to acquiring firms have steadily deteriorated over the past 50 years. Even the best explanatory models for the heterogeneity of acquirer returns exhibit large unexplained variance (Cartwright & Schoenberg, 2006), exceeding 70% (Stahl & Voigt, 2005). This forms the basis of what has been dubbed the M&A Paradox (e.g., Agrawal & Jaffe, 2000). Simply put, the "M&A Paradox" holds that despite virtually all extant research demonstrating that corporate acquisitions, on average, fail to create shareholder value (Datta, Pinches, & Narayanan, 1992; King et al., 2004), tens of thousands of deals and trillions of dollars are annually transacted (SDC, 2017). With rare exception, acquiring firms pay a significant premium above the prevailing market price for a target firm (Cartwright & Schoenberg, 2006). Although there are many reasons for value destruction, one of the main reasons continues to be the high premiums firms pay for acquired assets (Agrawal & Jaffe, 2000; Cartwright & Schonberg, 2006). The classic justification for these premiums focuses on "synergies," representing the acquirer's beliefs that integrating the acquirer's and target's business operations will generate incremental value (Sirower, 1997). Yet, the persistent underperformance of acquisition-driven CE poses important challenges for the notion of efficient organizing in the theory of the firm (Williamson, 1985). In particular, the question of why it is that firms routinely fail to achieve synergies remains a matter of contention for existing acquisition frameworks (Capron, Dussauge, & Mitchell, 1998; Hitt et al., 1998).

If the principal rationale in paying hefty acquisition premiums is based on revenue growth and cost control greater than that which can be achieved independently, then explanatory models for the returns to acquiring firms must take into account the acquirer's ability to create post-acquisition synergies (Capron et al., 1998). Extant research has identified three primary culprits of this "synergy trap" (Sirower, 1997): (a) information asymmetries (e.g., Officer, Poulsen, & Stegemoller, 2009), which impair the *ex-ante* ability to accurately assess synergies; (b) executive hubris (e.g., Hayward & Hambrick, 1997), which drives excessive acquisition premiums; and (c) integration difficulties (e.g., Birkinshaw, Bresman, & Håkanson, 2000), which limit the *ex post* capacity to achieve synergies. Collectively, these dimensions undermine the long-term quest for efficient organizing in established companies by raising costs and undermining the CE renewal efforts through acquisitions (Birkinshaw et al., 2000; Datta, 1991; Yu, Engleman, & Van de Ven, 2005).

Value Creation and Efficient Organizing Through Spin-In Acquisitions

The inability of acquiring firms to extract value from M&A activity raises important questions regarding the nature of efficient organizing in the theory of the firm. Yet, novel approaches to exploring how the three impediments influence the post-acquisition performance of M&A deals have been in short supply in both the CE and general M&A literatures. In essence, acquirers

appear to repeat the same mistakes over and over (Agrawal & Jaffe, 2000). The use of corporate spin-ins may be a notable exception. Corporate spin-ins—involving the acquisition of companies created by former employees—offer an opportunity for acquirers to generate superior CE outcomes by leveraging prior employment ties. This is especially important given that a majority of acquisitions fail to achieve the expected synergies, thereby undermining the performance goals of efficient organization in reducing post-acquisition costs (Yu et al., 2005). As noted earlier, the failure of most acquisitions to generate positive returns for the acquiring firm is due in large part to three factors: ex ante information asymmetries, which obscure the true potential of synergistic relationships between acquirers and targets; executive hubris, which inflates acquisition premiums; and, post-integration obstacles, which limit the realization of synergies.

The central question in this study is whether spin-ins offer a useful "hybrid" approach, one capable of addressing these impediments to successful CE-motivated acquisitions. If so, then spin-ins may be a viable alternative and a useful facet of a firm's CE portfolio. Consistent with findings that apply transaction cost economics (Williamson, 1985) to research-driven exploration (Silverman, 1999), harnessing and profiting from innovation does not lend itself solely to rigid hierarchies (Benner & Tushman, 2002) or purely market-based solutions. As numerous studies demonstrate, firms that attempt to enact CE exclusively through markets or hierarchies are beset with numerous organizational inefficiencies, sometimes culminating in steep financial losses (Datta et al., 1992; Dess & Lumpkin, 2005). Instead, resolution of the classic efficiency concerns facing firms that pursue CE via acquisition may necessitate innovative new approaches. In this regard, spin-ins offer an alternative: the capacity to conduct CE successfully through its hybrid features. Spin-ins grow the acquiring firm's innovative capacity while resolving transactional impediments to efficient organizing. Rather than destroying value through acquisition-driven CE development, the internal–external hybrid features of spin-ins may endow them with a comparative advantage over acquisitions for which there are no prior ties.

The underlying cause of a spin-in's performance advantage stems from the ways in which its hybrid structure leverages preexisting ties, thereby minimizing the barriers to effective and efficient organizing for CE. In theory, prior employment ties should be instrumental in deriving incremental value through a more effective realization of relational exchange (Dyer & Singh, 1998), one that cannot be replicated by entities that do not share the kinds of prior ties that facilitate mutually beneficial exchange (Emerson, 1976). Thus, we hypothesize that overall:

Hypothesis (H1): *Spin-in acquisitions will, on average, outperform non-spin-ins.*

Next, we will deal in more granular fashion with the ways in which spin-ins may attenuate the impact of three well-documented impediments to successful acquisitions: information asymmetries, CEO hubris, and post-acquisition integration.

Spin-Ins and Information Asymmetries

Even under the best circumstances, acquisition-related due diligence is performed under a multitude of constraints, primarily stemming from incomplete information (Officer et al., 2009). Information asymmetries have been shown to undermine firm efficiency objectives since acquisitions, by their very nature, constitute a terminal sale for which the buyer bears the risk of overpayment (Reuer, 2005). This is particularly true when acquiring small and new firms, which may not possess the resources or inclination to maintain reliable accounting systems (Shen & Reuer, 2005). Even when financial and operational performance disclosures are exemplary, the tacit knowledge and underlying capabilities of an organization are rarely available for unbiased review (Singh & Zollo, 1998). As a consequence, intentional and unintentional information asymmetries arise

that may have a marked impact on the valuation of a target entity. This may, in turn, lead to a miscalculation of the opportunities to achieve revenue and cost control synergies. To the extent that the quantity and quality of information can be improved during the due diligence process, acquirers may avoid paying excessive acquisition premiums.

Theories of relational contracting in the theory of firms suggest that "Informal agreements sustained by the value of future relationships"—including those between employer and employee—generate reciprocity and promote trust among the actors involved in the exchange (Baker, Gibbons, & Murphy, 2002, p. 39). Since trust can substitute for costly contracts and expensive monitoring requirements, such ties are economically efficient (Milgrom, 1988). IA involving uncertainty about a start-up's quality and trustworthiness usually leads acquiring firms to spend excess resources performing due diligence (Perry & Herd, 2004) and may even constrain the efficacy of due diligence. Conversely, embedded ties allow access to more reliable, less expensive information, which minimizes the adverse effects of expensive uncertainties (Carson, Madhok, & Wu, 2006). Strong relations provide notable benefits in the pursuit of resources, information, and status (Ketchen, Ireland, & Snow, 2007).

Building upon this notion of relational contracting, spin-ins should hold an advantage over non-spin-in acquisitions, which lack the impact of mutual social norms and prior social ties. By virtue of the ability to leverage existing relationships, acquirers of a spin-in should be in a better position to access critical information regarding the financial and operational prospects of the target firm. We would expect these improved optics to result in comparatively better acquisition outcomes for the acquiring firm. Accordingly, we predict that spin-ins will favorably moderate the adverse effects of information asymmetries:

Hypothesis (H2): *The use of spin-ins as a mode of acquisition will attenuate the negative relationship between asymmetric information and acquisition performance.*

Spin-Ins and Executive Hubris

As already noted, even the best M&A models account for only one third of the heterogeneity in acquisition outcomes; and yet, durable predictors have been identified, one of which is the role of the CEO in setting and implementing an acquisition strategy. Researchers have shown that overconfidence in the CEO of the acquiring firm accounts for a portion of the excess premiums paid in value-destroying acquisitions (Ferris, Jayaraman, & Sabherwal, 2013; Hayward & Hambrick, 1997). This occurs because hubristic managers have a tendency to overestimate their ability to identify and create post-acquisition synergies. Malmendier and Tate (2005) showed that CEOs meeting the definition of "arrogant" were 2.5 times more likely to consummate a value-destroying acquisition.

Overconfidence also leads to a number of acquisition-related maladies, including wasteful expenditure of resources, overinvestment in unsuccessful firms (Zacharakis & Shepherd, 2001), competitive blind spots (Ng, Westgren, & Sonka, 2009), and overvaluation of businesses (Hayward & Hambrick, 1997). CEO overconfidence, which is rooted in self-attribution bias (Doukas & Petmezas, 2007) to a "better-than-average" effect (Malmendier & Tate, 2005) encourages CEOs to trust their own judgments, even in complex, high-risk decision-making contexts, even when that may be ill-advised (Ferris et al., 2013).

In the case of spin-ins, many of the elements that drive judgment and valuation errors stemming from overconfidence may be substantively attenuated. For example, CEOs at firms such as Cisco have made spin-ins a core facet of their CE portfolio. This stems from recognition at the very top of the company that the acquisition of firms launched by former employees involves "spinning in" innovation that previously "walked out the door" (Klepper & Thompson, 2010).

So, even while CEO hubris and narcissism (Chatterjee & Hambrick, 2007) may also inflate premiums paid for spin-ins, these effects are likely to be at least partially mitigated by the attenuation of judgmental errors that otherwise arise through acquisition-driven CE. By recognizing the value created by former employees outside the domain of the parent firm, CEOs who are receptive to spin-ins can leverage the familiarity acquirers enjoy with the target firm. CEOs who view ex-employees with receptivity rather than enmity have the potential to reduce deal-specific uncertainty and complexity, which in turn enables these CEOs to calibrate their decisions more effectively to the decision environment (Li & Tang, 2010), generating more realistic valuations. In these cases, hubristic CEOs may be less likely to overpay for spin-ins (Narayanan, Yang, & Zahra, 2009), which would favorably influence acquisition outcomes.

Hypothesis (H3): *The use of spin-ins as a mode of acquisition will attenuate the negative relationship between CEO hubris and acquisition performance.*

Spin-Ins and Post-Acquisition Integration

Once an acquisition is consummated, the process of integrating the acquired firm begins. Extant research across industries suggests that this process is often time-consuming, challenging, and expensive (Datta,1991; Vaara, 2003; Yu et al., 2005) due to the tendency of organizational systems to resist change (Cyert & March, 1963). Evolutionary economics holds that firms have durable capabilities and routines that persist over time (Dosi, Nelson, & Winter, 2000; Nelson & Winter, 2009). Routines make up the most important form of an organization's specific operational capabilities and are a crucial facet of efficient organizing (Cyert & March, 1963; Nelson and Winter, 2009). For instance, in this vein, Wezel, Cattani, and Pennings (2006) emphasize the negative consequences of parent firms confronting the loss of firm-specific skills, routines, and resources, such as the social capital and creative capacity of departing employees.

The reintegration of former employees might also be a more complex issue than other culprits of synergy trap. While our theory predicts that spin-ins will generate benefits to acquirers with respect to information asymmetries and CEO overconfidence, it less clear whether acquisition integration—the third component of the "synergy trap" articulated by Sirower (1997)—will create similar benefits. Improvements in the reliability of information should reduce the risk that an acquirer will perform inadequate or inaccurate due diligence. Familiarity emanating from prior ties and embedded relations should at least partially mitigate the risk of excess premiums due to CEO hubris. However, the organizational and cultural impacts of spin-ins are complicated by their tendency to create massive compensation disparities (Alles & Alles, 2002) as a consequence of purchasing spin-in assets and thereby enriching former employees of the acquiring firm. Even under the best circumstances, incumbent employees can be mistrustful of the organizational developments surrounding acquisitions (Sears & Hoetker, 2014) out of fear that the net effect will negatively impact their respective careers (Greenwood, Hinings, & Brown, 1994). Such sentiments have been closely associated with the failure to properly integrate after acquisition (Hambrick & Cannella, 1993; Larsson & Finkelstein, 1999).

Conversely, the reintegration of employees through spin-ins may generate positive benefits by reacquiring the knowledge of ex-employees and leveraging the interpersonal ties that create barriers for effective post-acquisition integration (Birkinshaw et al., 2000; Blake & Mouton, 1985). A firm's tacit knowledge can be team based and socially embedded (Nelson & Winter, 2009), but also it exists in individual human capital (Berman, Down, & Hill, 2002; Hitt et al., 1998). As employees internalize an organization's culture and social norms (Meek, 1988; Pablo, 1994), they absorb procedural and declarative knowledge related to functional capabilities, such as R&D and marketing, while also generating a key relational mechanism that can reduce firm

organizing costs (Baker et al., 2002). Consequently, spin-ins may hold certain advantages in their capacity to foster the reintegration of tacit knowledge to the parent firm due to the relational ties between the parent firm and the acquisition target. Through this, we expect that reintegrating former employees through spin-ins will improve acquisition-related outcomes by attenuating the challenges of melding disparate organizations after acquisition:

Hypothesis (H4): *The use of spin-ins as a mode of acquisition will attenuate the negative relationship between post-acquisition integration problems and acquisition performance.*

Data and Methods

Since there is no central repository of data on spin-ins, a major undertaking of our study involved the compilation of spin-in acquisitions. In order to insure an ample population of deals both with and without extensive prior ties, we focused on sectors with high M&A volume: software, cloud services, high-tech manufacturing, and electronic gaming. Using Thomson-Reuters' Securities Data Company (SDC) Platinum, we focused on transactions between $10MM and $150MM, consummated by publicly traded firms, from 1995 to 2012. The cutoff date was set at 2012 to allow for an extended post-transaction observation window. Deals smaller than $10MM are often deemed to be nonmaterial from an accounting perspective, which means that there is little or no public information through Securities and Exchange Commission (SEC) mandated reporting. Meanwhile, deals greater than $150 millions (MM) typically involve multiproduct or even multidivisional firms for which the specific impact of ex-employees is difficult to identify and parse. Robustness tests performed on wider ranges did not materially affect the results. Only acquisitions by publicly traded firms were included, since private firms are not generally subject to SEC reporting requirements, which is necessary for deal-level analysis. These parameters resulted in an initial pool of 7,136 transactions. After screening for errant data due to duplicates, missing data, erroneous data, and acquisitions by private companies, the sample was reduced to 6,780 transactions.

Using Lexis-Nexis, PRNewswire, Reuters M&A, MarketWatch.com, and DowJones News, we searched for prior employment ties through a four-step process. First, we searched news sources for mention of the acquisition, yielding 6,453 transactions. Second, we searched these texts for any mention of the acquired firm's executives, yielding 5,881 transactions. Third, we screened for mention of prior association with the acquiring company, which produced a pool of 527 transactions. Fourth, we validated 464 deals with prior ties, through a combination of additional news sources (104 validations), SEC filings (57 validations), and LinkedIn.com (303 validations). Although LinkedIn was founded in 2003, it now has more than 500 million members, representing the single largest repository of individual-level professional information available. Fourteen of the validations were later excluded because the prior ties appeared to involve previous work as a consultant or contractor to the acquiring firm rather than a full-time employee. This final adjustment resulted in 450 acquisitions of firms founded by ex-employees of 203 parent firms, 1995 to 2012. For the purpose of constructing a pairwise set, we matched 450 non-spin-in acquisitions consummated by 206 acquiring firms, drawn from the pool of 5,354 non-spin-in transactions. The final set of 450 matched pairs of spin-in and non-spin-in substantively reflected all key characteristics of the larger transaction pool, as discussed in the following text.

Dependent Variable

For decades, the elusiveness of an appropriate dependent variable has hindered efforts to assess M&A value creation and destruction accurately. The tools that are most often used to calculate

shareholder value created or destroyed, such as cumulative abnormal returns (CAR) and Tobin's Q, are challenging to employ outside the immediate window surrounding the public announcement of transactions (Agrawal & Jaffe, 2000). Very short time frames, consisting of days, weeks, or even months, after transaction, may fail to account for the realization of synergies occurring over several years of organizational integration. Conversely, the use of CAR for longer time frames is inherently "noisy" as numerous non-systematic forces substantially impact the market returns over the course of years. For example, Cisco Systems completed 58 acquisitions from 1995 to 2000, including 19 in 1999 alone. It is untenable to consider the CAR of each acquisition independent of the others, let alone to do so for 5 or more years. This is likely to be one of the key reasons that existing models exhibit a persistently high unexplained variance. Either the time frame is too short to capture long-term synergies or the time frame is too long to be able to isolate acquisition-specific effects.

Acquirer asset impairment (AAI). As an alternative to address these shortcomings, our research design involved the development of a transaction-specific measure with far greater exactitude for our study's end point: acquirer asset impairment (Alciatore, Dee, Easton, & Spear, 1998; Boennen & Glaum, 2014; Hayn & Hughes, 2006; Zucca & Campbell, 1992), which stems from reporting requirements consequent to the Statement of Financial Accounting Standards No. 142 (SFAS 142), concerning "Goodwill and Other Intangible Assets" (Bens, Heltzer, & Segal, 2011). AAI is significantly more precise than either CAR or even Tobin's Q in pinpointing acquisition-specific underperformance (Alciatore et al., 1998; Boennen & Glaum, 2014). Functionally, an asset write-down is required when the actual cash flows generated from acquired assets fail to achieve the levels used to justify the purchase price of the assets. In the accounting literature, write-off disclosures have been shown to be particularly useful in providing information about decreases in an asset's economic value (Francis, Hanna, & Vincent, 1996) and information relating to changes in management strategies (Brush & Artz, 1999).

Our study operationalizes AAI as a categorical indicator for the occurrence of any material diminution in the value of acquired assets (identified through SEC disclosures in edgar.com) in the first 5 years after transaction. More than 90% of all acquisition-related intangible asset write-downs occur within the first 3 years, and more than 99% occur within the first 4 years (Barth & Clinch, 1998; Riedl, 2004), giving us a high degree of confidence that our observation window conservatively accounted for virtually all write-downs. A value of "1" was assigned for conditions in which the Financial Accounting Standards Board (FASB) standard for "material impairment" triggered an asset write-down in recognition of acquisition-related underperformance within 5 years of the acquisition. If no asset impairment occurred within the first 5 years after acquisition, then the transaction was coded "0." For example, HP's $11 billion acquisition of the cloud computing firm, Autonomy Corp. in 2011, consisted almost exclusively of goodwill and other intangibles in anticipation of significant revenue synergies between the combined corporations. By 2013, it was clear that virtually none of these synergies would materialize and HP was forced to write off $9B of goodwill related to the Autonomy purchase. Such an acquisition, when fitting within the aforementioned sampling parameters, would be coded as "1**."**

Independent Variables

Acquisition type (AT). The focal predictor of our analysis is AT, which is a discrete dichotomous variable, coded as "1" to indicate that an acquisition was classified as a spin-in, meaning that one or more of the target's founders were prior employees of the acquirer. As detailed earlier, information on founders' employment histories was drawn from and vetted with a combination of sources, including acquirer press releases, target websites, and LinkedIn.

Information asymmetry (IA). Reuer and Ragozzino (2008) demonstrated that dyadic relationships between acquirers and targets reduce information asymmetries. Similarly, Dyer and Singh

(1998) posited circumstances under which preexisting relations reduced transaction costs and substantively enhanced trust and exchange value between parties. Specifically, in the context of acquirer–target social ties and merger outcomes, Ishii and Xuan (2014) used prior associations to proxy information asymmetries. Our study uses the Ishii-Xuan approach in the comparative analysis of spin-ins and non-spin-ins, by measuring IA as the frequency and duration of prior ties calculated as the years of shared association between the target's founders and executives of the acquiring firm. Since we collected more exhaustive data than Ishii and Yuan, we were able to add professional and industrial ties rather than the educational ties they used in their approach.

CEO hubris. This is an indexed measure of CEO overconfidence. As discussed earlier, existing literature on M&A has identified the CEO's central role in the decision-making processes that culminate in corporate transactions, with special attention given to the potent influence of CEO hubris (Ferris et al., 2013; Hayward & Hambrick, 1997; Malmendier & Tate, 2005) We employ the methodology developed by Hayward and Hambrick (1997) in the context of M&A decision-making. The index, which has been used widely in management research (e.g., Chatterjee & Hambrick, 2007; Li & Tang, 2010), consists of three components: the acquiring company's recent financial performance, drawn from Edgar; recent media praise for the CEO, determined through a compilation of positive LexisNexis articles; and a measure of the CEO's self-importance, calculated through a combination of each CEO's relative pay, drawn from company's proxy statement, and the CEO's portrait size as published in the firm's annual report. Hayward and Hambrick (1997) provide further operationalization details.

Post-acquisition integration (PAI). This is a discrete dichotomous variable (Pablo, 1994), based on Datta's (1991) technique of assigning the degree of operational integration as a function of the acquired firm's consolidation into existing operations. However, while Datta used employee surveys, we examined the integration decisions directly through information on each firm, using SEC Filings (i.e., 10K through Edgar), PR Newswire, and LexisNexis. An assignment of "1" indicates that the acquired entity was fully integrated into the existing divisional structure of the acquirer. "0" indicates an autonomous division with a direct line of reporting to the corporate executive committee. "1" indicates a largely integrated entity, wherein the acquired products and services are integrated into the service and product offerings of the acquirer. Using this schema, each of the 450 spin-in acquisitions and 450 non-spin-in acquisitions were assigned a value of either "1" or "0," indicating, respectively, if the acquired entity was substantively absorbed into the acquirer's existing structure or was allowed to operate as a division unto itself.

Control Variables

To ensure our results were not simply an artifact of known M&A effects, our logit model includes widely recognized covariates pertaining to acquisition outcomes, consistent with well-cited empirical approaches (Agrawal & Jaffe, 2000; Sirower, 1997) and meta-analyses (Bruner, 2002; King et al., 2004). These controls consist of conglomeration effects, business relatedness, method of payment, and prior acquisition experience.

Conglomeration. Conglomeration, which is generally associated with poor acquisition outcomes (Bruner, 2002; Sirower, 1997), is a discrete dichotomous variable, coded as "1" for firms maintaining a diversified portfolio approach to business holdings, such as General Electric. Conglomerates typically fail to achieve anticipated acquisition-related revenue and expense synergies (King et al., 2004). As Bruner (2002, p. 56) notes, "Diversification destroys value. Focus conserves it."

Relatedness. Existing literature holds that greater relatedness between the acquirer's and target's main business lines is favorable to acquisition outcomes (Hayward & Hambrick, 1997). Conversely, unrelatedness is often value destroying. Berger and Ofek (1995) found that acquirers

routinely incur acquisition-related losses exceeding 15% when the target firm is not in the same industry. Following Wang and Zajac (2007), we captured this determining factor for each acquisition through a business distance calculation, based on the difference between the five-digit North American Industry Classification System (NAICS) codes for the acquirer and target.

M&A experience. Existing studies of M&A success rates also have taken note of the benefits acquirers accrue through prior acquisition experience (Bruner, 2002), especially when that experience is gained through the consummation of similar acquisitions in similar businesses, such that learnings are likely to be improved (Trichterborn, Knyphausen-Aufseß, & Schweizer, 2016). Experience was captured as a dummy coded variable, with "1" indicating prior acquisition experience of similar size and in the same three-digit NAICS code.

Payment method. Research has demonstrated that acquisition outcomes are also highly correlated with the payment method, such that greater amounts of cash tend to result in value creation more frequently than non-cash acquisitions. We identified method of payment through SDC, using the approaches developed by Chang (1998) and Martin (1996). Both studies found that stock-based deals are associated with significantly negative acquirer returns.

Goodwill. From an accounting perspective, goodwill consists of the acquisition price in excess of identifiable assets, in essence, the cost of an acquired firm's prospects. Existing research has shown that the farther acquirers stray from focusing on identifiable value by "betting on the come," the greater the likelihood of money-losing acquisitions (e.g., Rau & Vermaelen, 1998). Bruner's meta-analysis (2002) revealed that acquisitions with a high percent of intangible assets suffer losses averaging 17% of the acquisition cost. Consistent with Boennen and Glaum (2014), Bruner (2002), and others, we control for goodwill by measuring intangibles as a percentage of the total acquisition cost, using data from SDC.

Acquirer ownership of target. Over and above the prior ties captured in the variable for IA, we control for parent company sponsorship by coding "1" when target firms received prior equity investment from the acquiring firm. An existing equity stake allows for enhanced knowledge regarding the financial and operational state of the acquired firm (Kumar, 2009).

Model Specification

Given the dichotomous nature of the dependent variable and the desire to preserve interpretability of the model coefficients as an odds ratio, our model estimated maximum likelihood, using binomial logistic regression, structured as follows:

$$\textit{Acquirer Asset Impairment} = \beta 0 + \beta 1\ \textit{AT} + \beta 2\ \textit{IA} + \beta 3\ \textit{CEO hubris} + \beta 4\ \textit{PAI} + \beta 5\ \textit{AT} \times \textit{IA} + \beta 6\ \textit{AT} \times \textit{CEO hubris} + \beta 7\ \textit{AT} \times \textit{PAI} + \gamma\ \textit{Controls} + \varepsilon.$$

The model estimates the likelihood of an acquirer experiencing a failed acquisition (i.e., recognizing an asset impairment within the first 5 years after acquisition) as a function of AT (spin-in or non-spin-in) and our three hypothesized interaction terms, derived from well-established impediments to successful acquisitions (King et al., 2004).

As a binary logit that employs dichotomous predictors, our model analysis took careful note of potential confounds related to limited dependent variable (LDV) methods, as elaborated by Wiersema and Bowen (2009). Methods research in management has shown that this is particularly important for the interpretation of moderating effects in LDV models, which require analysis of the marginal impact on the dependent variable (Bowen & Wiersema, 2004; Hoetker, 2007; Wiersema & Bowen, 2009). Since the size of the interaction variable coefficient (i.e., the coefficients for H2, H3, and H4, captured through the product terms AT × IA, AT × CEO hubris, and AT × PAI) does not itself indicate the size effect of the interaction on the probability that asset

impairment will occur, it is necessary to analyze each interaction's marginal effects, which we compute as the discrete change in the probability of impairment, while holding all other variables fixed (Bowen & Wiersema, 2004).

Matched Pair Design

As noted in the preceding text, our research design involved a matched pairwise analysis of 900 transactions drawn from spin-ins and non-spin-ins. Pairwise matching insured equivalent means and variance for each focal covariate, so that the paired transactions resembled one another in all respects other than prior employment ties. The purpose of employing pairwise analysis with data drawn from matched sets is to remove bias in the comparison of groups by ensuring equality of distributions of the matching covariates we employed (Casella, 2008; Stuart, 2010). The matched set comparison was constructed while controlling for nine separate dimensions (Table 1). With pairwise matching, the null hypothesis is that there are no significant differences between the paired subjects, confirmed through t-tests (Cooper, Schindler, & Sun, 2006). T-test scores for each of the nine dimensions across the two matched set pools ranged between 0.11 and 0.92, confirming that the pools were statistically indistinguishable aside from the existence of prior employment ties for the spin-in pool.

The basic idea of matching is to select from the reservoir of non-spin-ins those acquisitions in which the distribution of the variables affecting the outcome variable is as similar as possible to the distribution of the spin-in acquisition. To do so, we employed the propensity score matching method of Rosenbaum and Rubin (1983). The matching technique generates results that are more reliable than those derived from a simple comparison in an unmatched sample (Hosmer, Lemeshow, & Sturdivant, 2013). By pairing spin-in acquisitions with non-spin-ins that replicated one another in all important respects, save the AT, we employ a version of the "nearest neighbor" technique (Pinker, 2011; Rosenbaum & Rubin, 1983), in which each known spin-in is assigned a match in accordance with the difference minimizing criteria detailed in Table 1, through the t-test matched pairing process performed in SPSS.

The use of matched samples has extensive precedence in management when scholars have sought to make targeted comparisons of phenomena that are not conducive to experimental conditions, such as environmental performance and profitability (Russo & Fouts, 1997), TQM-related stock market returns (Hendricks & Singhal, 2001), venture capital firm impacts on portfolio firms (Lerner, 1996), comparisons of exporting and non-exporting small firms (Westhead, 1995), and even studies directly related to tracking M&A performance (e.g., Grote & Umber, 2006; Ragozzino, 2016). These and other studies have employed matching techniques designed

Table 1. Pairwise Matching.

	Spin-ins	Non-spin-ins	T-test	*p* value
Acquirer size ($ bln)	15.6	15.9	0.40	.69
Acquirer age (years)	23.2	23	0.60	.55
Target age (years)	3.5	3.7	0.53	.59
Transaction amount ($)	28.4	28.2	0.33	.74
Acquirer prior acquisition experience (# deals)	3.56	3.62	0.60	.55
Business industry distance (NAICS codes)	312	308	0.92	.36
Acquirer business focus (% conglomerate)	0.119	0.121	0.54	.59
Payment method (% equity)	0.672	0.669	0.11	.91
Intangible assets as % of acquisition	0.713	0.726	0.39	.70

Note. NAICS = North American Industry Classification System.

to achieve the greatest possible similarity for the most relevant dimensions of the focal phenomenon. For example, a study of "best company" rankings by Fulmer, Gerhart, and Scott (2003, p. 991) started with the top 100 listings and then sought to assign to each "a comparison firm that was the closest suitable match given a set of constraining criteria," using age, size, and industry. Our approach also starts with a known set—ours consisting of 450 spin-ins—to which we apply specific matching criteria (Table 1). We employ the methods developed by Barber and Lyon (1997) and used by Loughran and Ritter (2004), each of which also sought to assess operating performance between pairs that were matched using financial criteria.

Robustness

As with all retrospective analyses, this study involves design elements that require careful assessment with respect to robustness. The use of matched sets and pairwise analysis helped to mitigate the risk of biased predictors by providing controlled comparisons. As noted earlier, the pairwise design fulfills several important methodological aims that improve the robustness of the results. Most importantly, the pairwise assignments were used to insure that the matched sets are indistinguishable from one another. Second, we sought to create a dataset that could provide statistically validated assurances that the results were not simply an artifact of the differentiation between spin-ins and non-spin-ins. Finally, the pairwise structure of the matched sets provided necessary support for the claims suggested by our theory concerning the pursuit of CE aims through external, acquisition-driven initiatives. Ultimately, by using pairwise matching, we control for group differences that might otherwise render comparisons spurious.

As an additional safeguard, robustness tests were performed to insure that the results were not subject to the potentially confounding effects of endogeneity and right side truncation. As with most studies in which both the business strategies and the outcomes of those strategies are included in the analysis, our research design is susceptible to endogeneity on three fronts: omitted variables, reverse causality, and errors-in-variables bias. To assess the possible presence of omitted variables, we used the Heckman two-step procedure (Heckman, 1979). Applying Heckman, we generated an inverse Mills ratio that indicated no biasing effects due to omitted variables. As for reverse causality, we used lagged time series variables to confirm the directionality of focal effects (Davidson & MacKinnon, 1992). We also performed a Hausman test (1978), which confirmed that the model predictors are not subject to errors-in-variables bias.

Results

The primary purpose of our investigation was to ascertain whether or not the pursuit of CE through corporate acquisitions is favorably or unfavorably impacted by the development and use of hybrid organizational forms and novel deal structures, specifically, spin-ins. Our research design centered on a matched, pairwise analysis of 900 acquisitions, split evenly between spin-ins and non-spin-ins. The descriptive statistics for acquirers and target firms in Table 1 reveal a number of important facets of the sample and the characteristics of spin-in transactions. On average, spin-ins are still young firms, with an average age of 3.5 years. Conversely, acquiring firms are, on average, large ($15.6 billion), fairly well-established (mean age of 23.2 years) firms, with some prior experience undertaking acquisitions (mean of 3.56 deals). The acquisitions were financed primarily through the issuance of equity, with goodwill representing more than 70% of purchase price, meaning that the overwhelming preponderance of each purchase involved intangible assets, which is typical of innovation-driven, knowledge-based high-tech sectors (Contractor, 2000; Trautwein, 2013). In sum, acquiring firms generally purchase spin-ins

Table 2. Bivariate Correlations.

		Mean	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Asset impairment	0.47	0.36										
2	Acquisition type (Spin-In = 1)	0.50	0.16	*–0.24*									
3	Acquiring firm size (Assets $ Bln)	15.83	11.42	0.03	0.08								
4	Busi focus (Conglomeration = 1)	0.12	0.07	–0.02	0.10	0.13							
5	Prior acquis experience (Acquirer)	0.37	0.14	0.11	0.11	*0.17*	*0.13*						
6	NAICS code distance	0.22	0.08	–0.06	–0.05	–0.02	0.10	0.4					
7	Acquis payment method (Equity = 1)	0.67	0.24	*–0.17*	–0.07	0.01	0.06	0.09	0.02				
8	Intangible assets as a % of total deal	0.72	0.21	*–0.17*	–0.03	0.00	0.04	–0.10	0.01	*0.22*			
9	Information symmetry	3.40	0.87	*0.15*	*0.24*	0.09	0.06	0.03	–0.03	–0.10	–0.04		
10	CEO hubris	0.55	0.19	*–0.19*	*–0.15*	0.08	0.12	0.11	0.12	*0.14*	*0.22*	–0.09	
11	Integration (fully integrated = 1)	0.68	0.18	0.11	0.08	0.04	–0.07	0.08	*–0.16*	0.02	0.07	*0.17*	0.05

Note. Italics indicate correlation with $p < .01$. $N = 900$. Acquis = acquisition; Busi = business; NAICS = North American Industry Classification System.

Table 3. Asset Write-Offs (AAI) at 5 Years After Acquisition.

Acquisition type	Cohort firms (*N*)	Average acquisition size	% of acquisitions with AAI at 5 years	Mean write-off as % of total acquisition
Spin-in	450	$28MM	43%	21%
Non-spin-in	450	$30MM	73%	45%

Note. AAI = acquirer asset impairment; MM = million.

with stock while the target firms are still in the start-up phase. The primary source of value is knowledge-based assets, indicated by the high level of goodwill.

Table 2 presents a correlation matrix for the variables comprising the analytical models used in the study. The directionality and magnitude of the correlations is consistent with our central assertions about the relationships between CE, corporate acquisitions, and the role of spin-ins. In particular, our measure of acquisition outcomes, AAI, is significantly correlated with AT. Consistent with our central thesis, spin-in transactions are associated with a decrease in the likelihood that an acquirer will experience acquisition-related impairment.

Spin-In Performance

Our analysis proceeded in two stages, starting with the main effect of spin-ins on acquisition performance, followed by an examination of spin-ins' marginal effect on three prominent impediments to successful acquisition-driven CE: information asymmetries (Ravenscraft & Scherer, 1987), executive hubris (Hayward & Hambrick, 1997), and organizational integration (Vaara, 2003).

Hypothesis 1 (H1) predicted that spin-ins will, on average, outperform non-spins. We tested this by identifying and quantifying all AAIs occurring within the first 5 years after acquisition. As indicated by the matched set comparison (Table 3), this main effect hypothesis finds support. Spin-ins outperformed non-spins by a considerable margin, resulting in far fewer AAIs and far smaller AAIs when they did occur. For the 450 spin-in acquisitions, 43% resulted in asset write-offs, which averaged 21% of the purchase price. By comparison, 73% of the non-spin-in

Table 4. Logistic Regression Results: Acquisition-Related Asset Impairment.

Independent variables	**Likelihood of acquirer recognizing acquisition-related impaired assets**							
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
Macroeconomic effects	0.10	0.11	0.10	0.09	0.09	0.07	0.10	0.06
	(0.02)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.01)*	*(0.02)*	*(0.01)*
Industry effects	0.14*	0.13*	0.14*	–0.11	–0.09	–0.09	–0.08	–0.08
	(0.04)	*(0.04)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.02)*	*(0.02)*
Firm effects	0.24*	0.18*	0.20*	0.17*	0.13*	0.11	0.12*	0.09
	(0.07)	*(0.06)*	*(0.05)*	*(0.05)*	*(0.04)*	*(0.05)*	*(0.04)*	*(0.02)*
Acquiring firm size—assets	0.14*	0.12*	0.12*	0.12*	0.11	0.10	0.11	0.09
	(0.04)	*(0.03)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.03)*
Busi focus (conglomeration = 1)	0.18*	0.15*	0.15*	0.15*	0.15*	0.15*	0.15*	0.12
	(0.08)	*(0.06)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.04)*

(*continued*)

Table 4. Continued.

Independent variables	Likelihood of acquirer recognizing acquisition-related impaired assets							
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
Prior acquis experience (acquirer)	–0.52***	–0.38***	–0.41***	–0.34**	–0.18*	–0.13*	–0.17*	–0.14
	(0.20)	*(0.15)*	*(0.16)*	*(0.13)*	*(0.11)*	*(0.11)*	*(0.13)*	*(0.11)*
Acquiring firm age	0.07	0.03	0.04	0.01	0.02	–0.01	–0.01	–0.02
	(0.02)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
NAICS code distance	0.24*	0.27*	0.19*	0.14*	0.08	0.08	0.08	0.05
	(0.14)	*(0.14)*	*(0.10)*	*(0.08)*	*(0.04)*	*(0.04)*	*(0.04)*	*(0.03)*
Acquisition payment method	0.83***	0.65***	0.70***	0.53***	0.31**	0.38**	0.29**	0.23*
	(0.32)	*(0.23)*	*(0.25)*	*(0.18)*	*(0.12)*	*(0.18)*	*(0.12)*	*(0.08)*
Intangible assets as a % of total deal	1.17***	0.94***	1.03***	0.88***	0.52***	0.43**	0.61***	0.38**
	(0.56)	*(0.40)*	*(0.44)*	*(0.37)*	*(0.21)*	*(0.21)*	*(0.30)*	*(0.18)*
Target firm age	–0.13*	–0.07	–0.09	–0.07	–0.06	–0.05	–0.06	–0.05
	(0.03)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*
Acquisition type (spin-in = 1)		–0.87***		–0.92***	–0.62***	–0.79***	–0.88***	–0.55***
		(0.43)		*(0.48)*	*(0.34.)*	*(0.40)*	*(0.41)*	*(0.23)*
Information asymmetry			1.09***	0.84***	0.71***	0.80***	0.66***	0.58***
			(0.37)	*(0.28)*	*(0.27)*	*(0.43)*	*(0.29)*	*(0.31)*
CEO hubris			1.14***	0.93***	0.86***	0.89***	0.78***	0.62***
			(0.60)	*(0.56)*	*(0.49)*	*(0.33)*	*(0.36)*	*(0.25)*
Post-acquisition integration			1.27***	0.90***	0.74***	0.88***	0.65***	0.54***
			(0.72)	*(0.52)*	*(0.41)*	*(0.39)*	*(0.22)*	*(0.20)*
Acquis type*Info symmetry					–0.78***			–0.58***
					(0.34)			*(0.27)*
Acquis type*CEO hubris						–0.82***		–0.49***
						(0.29)		*(0.28)*
Acquis type* integration processes							–0.30**	–0.18*
							(0.21)	*(0.13)*
Constant	1.78***	1.55***	0.96***	1.29***	1.17***	1.38***	1.15***	1.36***
	(0.74)	*(0.62)*	*(0.41)*	*(0.58)*	*(0.49)*	*(0.73)*	*(0.61)*	*(0.85)*
Log likelihood	419.2	484.0	498.2	594.9	603.8	585.9	638.1	617.4
c^2	207.7	315.2	304.1	418.5	512.3	447.6	402.7	562.3
Generalized R^2 (McFadden)	0.264	0.369	0.291	0.474	0.502	0.493	0.548	0.560
Predictive accuracy	56.8%	78.2%	63.4%	82.0%	85.1%	81.7%	85.3%	89.2%

Note. N = 900. Italicized values are standard errors. Acquis = acquisition; Busi = business; NAICS = North American Industry Classification System. ***p < .001; **p < .01; *p < .05.

acquisitions resulted in an AAI, which averaged 45% of the purchase price. Put differently, the non-spin-in pool had 40% more failed acquisitions than the spin-in pool, and the average size of the asset write-offs was more than double the average for spin-ins. Overall, with an average deal size of $30MM, non-spin-in AAIs resulted in a $4.5B negative impact on acquiring firms, compared to a $1.1B negative impact associated with spin-in AAIs.

This marked effect is reinforced by the logistic regression analysis (Table 4). As a logit model designed to predict the likelihood of any given acquisition resulting in acquirer losses—objectively indicated as the formal recognition of an impaired asset—positive coefficients are logged values of parameters that increase the likelihood of an AAI, while negative coefficients indicate less likelihood of an AAI. Pertinent to H1, predicting superior performance by spin-ins, we would expect that the parameter asset type (AT), which is coded as "1" for all spin-ins, will be negative if in fact spin-ins reduce the likelihood of an AAI. A one degree-of-freedom model comparison (Judd, McClelland, & Ryan, 2011) comparing a baseline model, consisting of well-established control variables (Model 1), with one containing the variable AT, reveals a parameter estimate for AT that is a statistically significant predictor of acquisition outcomes ($b = -0.87$, $p < .001$). By exponentiating the coefficient, we can generate an odds ratio for AT, of 0.419, meaning that, all else held equal, there is a 58% lower likelihood of an AAI occurring with spin-ins. In Model 4, which contains three well-known impediments to successful acquisitions (IA, CEO hubris, and PAI), the parameter estimate for AT ($b = -0.92$, $p < .001$) remains statistically significant, indicating that acquirers of spin-ins face substantially less risk of an AAI. Overall, these logit model findings support the matched set AAI data presented in Table 3, confirming H1's prediction that spin-in acquisitions, on average, outperform non-spin-ins.

Marginal Effects of Interactions

Having demonstrated that the pursuit of acquisition-driven CE through spin-ins meaningfully reduces the odds of incurring an AAI, it is important to ask why this occurs. What is it about spin-ins that makes them significantly less prone to value-destroying, failed acquisitions? Hypotheses 2, 3, and 4 (H2, H3, and H4) consist of predictions that spin-ins will have a statistically significant marginal effect in attenuating the most prominent impediments to successful acquisitions. As the logit model reveals, all three of these variables have statistically significant, positive coefficients in Models 3 through 8, meaning that each of these three variables increases the odds that an AAI will occur, regardless of AT. Spin-ins and non-spin-ins are both deleteriously impacted by IA, CEO hubris, and PAI, under all scenarios comprising our model analysis.

However, our investigation is not interested in average values for all acquisitions, but rather the specific ability of spin-ins to potentially attenuate some portion of the adverse effects of these three. Consistent with methods research (Hoetker, 2007; Wiersema & Bowen, 2009) and comparable empirical studies in entrepreneurship assessing interaction effects (e.g., Drover, Wood, & Payne, 2014), we sought to ascertain the "additive measure of unique variation in the dependent variable that cannot be accounted for by other factors in the analysis" (Pierce, Block, & Aguinis, 2004, p. 919). For this purpose, we developed three variables—one each for Hypotheses 2, 3, and 4—to capture the interaction between AT and the primary obstacles to value-creating acquisitions, yielding AT × IA (H2), AT × CEO hubris (H3), and AT × PAI (H4).

As the logit model results (Table 4) show, regardless of whether these three interactions are analyzed individually (Models 5, 6, and 7), or collectively (Model 8), each has a statistically significant, negative parameter estimate, indicating that the interaction effect of each reduces the risk of an AAI occurring. This is notable since the coefficients for IA, CEO hubris, and PAI are each positive across the models, which means that on their own they increase the odds of an AAI. This sign change for the interaction terms suggests that spin-ins (coded as "1" for AT) appear to

attenuate the adverse impact of IA, CEO hubris, and PAI. However, as noted by Wiersema and Bowen (2004, 2007), this alone is not enough to conclude that there is a statistically significant marginal effect for each of these interactions in the context of a complete model of predictors. For this purpose, it is necessary to derive the marginal mean of each interaction term for spin-ins and non-spin-ins across the full range of values, which we present in Table 5.

As these calculated means demonstrate, spin-ins display a lower probability of AAI for all interactions and all levels, evidenced by the statistically significant t-tests for each of the nine mean differences comprising the marginal analysis. For example, Hypothesis 2 predicts that the use of spin-ins attenuates the negative impact of asymmetric information on acquisition performance. If correct, then the marginal effect of the AT × IA should indicate a lower occurrence of AAI in the spin-in condition. The negative coefficient for AT × IA in the context of logit Model 8 ($b = -0.58$, $p < .001$) implies an odds ratio of 0.560, suggesting that spin-ins have the effect of halving the adverse impact of IA. Isolating this term and examining it at low, moderate, and high levels of asymmetry (Table 5), the spin-in condition for AT × IA reveals a clear interaction effect when comparing the marginal means.

In support of Hypothesis 2, this confirms that there is a statistically reliable basis to conclude that spin-ins materially reduce the occurrence of AAIs by attenuating the negative effects of IA. Moreover, the impact of spin-ins improves acquisition-related outcomes at all levels of the parameter IA. Using the graphing approach recommended by Cohen et al. (2003), we display these effects in Figure 1.

For very low levels of prior association, IA will be more acute (Officer, Poulsen, & Stegemoller, 2009), resulting in a higher probability of AAI for both spin-ins and non-spin-ins. However, non-spin-ins continue to face a far higher AAI rate even as prior association increases and information asymmetries decrease. As Figure 1 indicates, the variance in probability is greater at very high levels of prior association (i.e., lower levels of IA), but this is largely due to the fact that very few prior associations extended beyond 5 years.

In similar fashion, Hypothesis 3 predicted that spin-ins will materially attenuate the adverse impact of CEO hubris, which has been shown empirically to contribute to poor acquisition outcomes (Ferris et al., 2013; Hayward & Hambrick, 1997). Our interest, then, was to determine the marginal effect of spin-ins that can be uniquely attributed to AT's interaction with CEO hubris. Here too, the negative coefficient for AT × CEO hubris in the context of logit Model 8 ($b = -0.49$, p

Table 5. Marginal Means for Interaction Terms by Level.

		Mean probability of AAI				
Variable	Level	Spin-ins	Non-spin-ins	Difference	*SE*	*t*-test
AT	N/A	0.45	0.73	0.28	0.0036	–77.99
AT × IA	Low IA	0.22	0.41	0.19	0.0018	–104.7
	Mod IA	0.35	0.67	0.32	0.0048	–67.21
	High IA	0.66	0.79	0.13	0.0100	–13.04
AT × CEO hubris	Low CEO hubris	0.21	0.37	0.16	0.0018	–87.64
	Mod CEO hubris	0.32	0.61	0.29	0.0044	–65.96
	High CEO hubris	0.62	0.86	0.24	0.0093	–25.78
AT × PAI	Low PAI	0.51	0.65	0.14	0.0029	–47.57
	High PAI	0.39	0.84	0.45	0.0088	–50.95

Note. AAI = acquirer asset impairment; AT = acquisition type; IA = information asymmetry; PAI = post-acquisition integration.

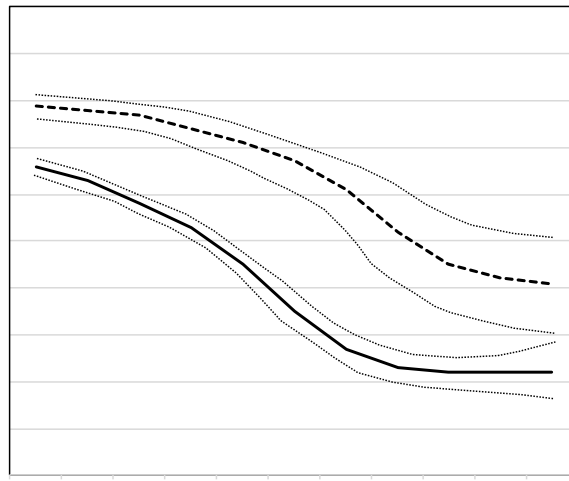

Figure 1. Acquisition type–information asymmetry interaction (95% conf. intervals).

< .001) results in an odds ratio of 0.613, meaning that spin-in acquisitions will result in AAIs with about 40% less frequency than non-spin-ins, all else held constant. The marginal impact of spin-ins on CEO hubris (Table 5) is material and statistically significant. For example, at moderate levels of CEO hubris—the level at which more than one third of acquiring CEOs are situated—the AAI probability for spin-ins is 32% versus 61% for non-spin-ins. This finding supports Hypothesis 3, as is shown in Figure 2. As the graph indicates, at all levels of CEO hubris, spin-ins have a lower probability of an AAI.

Existing studies on CEO hubris have convincingly demonstrated its strong association with overpayment for acquired assets. The bivariate correlation in our study for CEO hubris and intangible assets as a percentage of the acquisitions price is 0.22 ($p < .01$). Since goodwill involves the accounting recognition of a purchase price in excess of identifiable assets, it is a classic instance of betting on the come (e.g., Hayward & Hambrick, 1997). Overconfident, acquisitive CEOs load their respective balance sheets with goodwill from expensive deals. However, among spin-in acquisitions, the influence of CEO hubris appears to be markedly lower. Functionally,

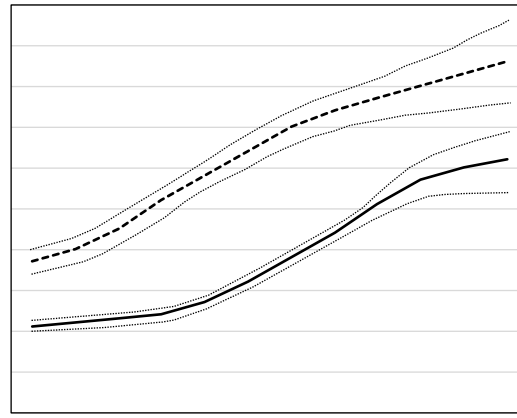

Figure 2. Acquisition type–CEO hubris interaction (95% conf. intervals).

what these differences mean is that the pervasive, unfavorable influence CEO hubris exerts is substantially mitigated by spin-ins at low, moderate, and high levels.

Our fourth hypothesis (H4) predicted that spin-ins would also be effective at attenuating the adverse effects associated with the well-established challenges that accompany integrating acquired entities (Larsson & Finkelstein, 1999; Sears & Hoetker, 2014). To achieve targeted revenue and cost control synergies, acquiring firms must, to some degree, integrate the target entity; however, full and complete integration runs the risk of throttling the innovation that was purchased through the acquisition (Hambrick & Cannella, 1993). Thus, acquirers must decide whether they will fully integrate the acquired firm into existing operations and reporting structures or allow for greater autonomy (Graebner, 2004). Studies have shown that integration problems are a primary cause of failed acquisitions (Pablo, 1994; Singh & Zollo, 1998; Vaara, 2003; Yu et al., 2005).

The results for our test of PAI (AT × PAI) are in line with the findings for H2 and H3, indicating that spin-ins, on average, attenuate negative fallout from acquisition integration risks. Spin-ins were found to be a statistically significant, favorable moderator of PAI difficulties ($b = -0.30$, $p < .01$), thereby reducing the odds that integration challenges will lead to an asset write-down by 26%. Once again, the marginal effects tell an interesting story. As shown in Table 5, the marginal means for AT × PAI are statistically distinct at each level. Since PAI is a dichotomous predictor, there are only two levels, low and high, the former consisting of firms that remain largely autonomous after acquisition and the latter consisting of firms that are integrated into one of the acquirer's existing business units. At both levels, spin-ins attenuate integration challenges. At low levels of integration, spin-ins have a positive difference of 0.14, while at high levels of integration, the positive spin-in difference swells to 0.45. This finding supports Hypothesis 4, as is shown in Figure 3. At all levels of the interaction, spin-ins reduce the occurrence of AAIs.

Unlike the marginal relationship across levels for AT × IA and AT × CEO hubris, which exhibit essentially parallel effects for spin-ins and non-spins, the interaction involving AT × PAI has a pronounced divergence in the high integration condition. While the probability of an AAI for non-spin-ins increases from 65% to 84%, in moving from low to high integration, the probability of an AAI decreases among spin-ins from 51% to 39%. This suggests that the repatriation of former employees results in more successful integration of the acquired entities into existing operations, such that prior ties play a positive role in achieving the synergies that serve to justify the acquisitions. Rather than the culture clashes and unrealized synergies that often characterize

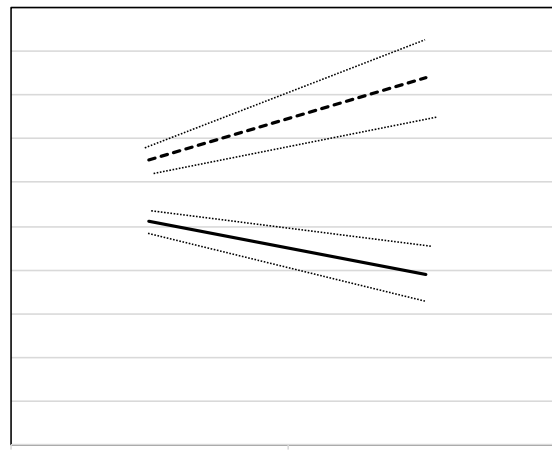

Figure 3. Acquisition type–post-acquisition integration interaction (95% conf. intervals).

the full integration of an acquired entity (Yu et al., 2005), returning employees appear to make the integration process more effective through the use of spin-ins.

Discussion

As noted from the outset, successful acquisitions of any sort are elusive. The pursuit of CE aims through corporate acquisitions is particularly difficult since CE involves "renewal activities that enhance a corporation's ability to compete and take risks" (Phan et al., 2009, p. 199)—activities suggestive of novel thinking, focused goals, and an openness to change—while acquisitions involve complex transactions, limited information, emotion-laden decisions, and daunting integration challenges. Despite these and other impediments, large-scale incumbents increasingly have turned to corporate acquisitions as a primary vehicle to pursue external CE aims (Cartwright & Schoenberg, 2006; Markides, 2006). The reality is, however, that a vast majority of these acquisitions have been a source of shareholder value destruction for the acquiring firms (King et al., 2004; Sirower, 1997). Cognizant of the challenges accompanying the attempt to profitably pursue CE aims through corporate acquisitions, some firms have tinkered with deal terms, organizational forms, governance modes, and PAI strategies (Birkinshaw et al., 2000; Larsson & Finkelstein, 1999). In response to these attempts by innovation-minded firms to rethink acquisition-driven CE, scholars have called for more research into the new varieties of both corporate venturing programs (Narayanan et al., 2009) and organizational forms (Phan et al., 2009).

Taking up this call, the central focus of this investigation involved exploring the extent to which corporate spin-ins constitute a viable approach to address the numerous pitfalls of external corporate venturing. Our findings are important for CE theory in several ways. First, important links between the CE and strategic entrepreneurship literatures have emphasized that competitive advantage often rests on the skills and expertise of individuals (Kuratko & Audretsch, 2009), a disproportionately small percentage of whom constitute the innovative firepower of an organization (O'Boyle & Aguinis, 2012). Yet, the advantages firms derive from human capital can be short-lived, as the increasing mobility of star performers has increased the likelihood of corporate spinouts (Franco & Filson, 2006). In response, Markides (2006) suggests, rather than using resources and managerial talent to grow new businesses inside the organization, established companies should aim to create, sustain, and nurture a network of feeder firms, consisting of entrepreneurial firms, each busy colonizing new niches. There are, however, risks to this approach unless spin-ins are a facet of a firm's CE portfolio. The benefits of using an external development strategy are limited by a parent firm's ability to reincorporate these "feeder firms" back into the parent company. Thus, a fundamental contribution of this study is to point to the existence of a viable, market-based approach for successful, external CE venturing strategies.

Our second contribution extends the frontier of research on M&As by showing how spin-ins attenuate the negative effects of asymmetric information, CEO overconfidence, and the substantial challenges posed by acquisition integration process thereby achieving the firm's aims of efficient organizing. As the foregoing results demonstrate, spin-in acquisitions outperform non-spin-ins by a sizable margin. While the non-spin-in sample in our study experienced acquisition failure rates in line with the scores of studies that have examined acquisition outcomes in the past 30 years (e.g., Agrawal & Jaffe, 2000; Datta et al., 1992; King et al., 2004; Sirower, 1997), spin-in acquisitions were, on average, value creating for the acquiring firms. This finding has potent implications for both scholars and practitioners since it represents the first large-scale, multiyear pool of acquisitions for which a pathway to systematic success has been identified. Central to spin-ins' comparative advantage are the gains spin-ins generate in organizing efficiency, which, as our findings demonstrate, translates into better post-acquisition outcomes.

Implications for Scholars

Our line of inquiry offers enhancements to existing theory and insights for future studies. Most research on acquisition outcomes has focused on identifying and explaining the extent to which a target company's business is related to that of the acquirer and how this comes to affect M&A outcomes (Hayward, 2002; Rumelt, 1982). Our framework introduces the need to conceptualize hybrid forms of CE that simultaneously incorporate the benefits associated with moving disruptive innovations outside the firm (Benner & Tushman, 2002; Christensen, 1997), while reducing the information asymmetries that have traditionally plagued M&A efforts. Spin-ins were shown to offer superior performance by reconfiguring the "us vs. them" assumptions that often bedevil PAI (Yu, et al., 2005). Our framework builds on a robust conceptualization of relational ties and offers a more nuanced theoretical perspective on how the selection of AT contributes to acquiring innovation profitably or unprofitably. Through this, we provide greater precision in assessing the impediments to successful M&A strategies, while improving the predictive value of acquisition outcome models.

Our study also underscores the importance of developing better measures to test the comparative impact of internal and external innovation efforts. The results of our analysis suggest that there is fertile ground in developing more comprehensive organizational theories of how and why some CE initiatives succeed and others do not, particularly in balancing the dual objectives of firm renewal and efficient organizing. The examination of spin-ins offers a compelling tool to reimagine and reassess the conditions under which firms decide to pursue internal versus external CE efforts, as well as the comparative success or failure in minimizing disruptions to existing business lines. We also open the door for fresh questions about how and why firms face PAI challenges.

Scholars pursuing research streams in CE, M&A, and strategic human resource management can leverage and extend our explanatory framework by exploiting the far longer performance horizons we have used in this study versus prior empirical work on corporate acquisitions. Since acquisition-related performance unfolds over many years during which acquiring firms attempt to develop profitable synergies, we took significant steps in designing our study to employ long-term measures of acquisition performance. In particular, our study demonstrates the efficacy of AAI as a robust measure of synergies (or lack thereof) across a time horizon that is far longer than previous studies of corporate acquisitions. AAI provides a more accurate measure and a more reliable evidence of long-term performance. Although the development of datasets using AAI is costly and time-consuming, our results suggest that there are multiple theoretical and empirical justifications for such an investment.

Implications for Practitioners

Our findings also stake out new strategic ground that is relevant to managers tasked with leading innovation efforts through acquisition-driven CE. Spin-ins are far from being a "silver bullet," but they offer a number of fascinating prospects. Many industries are moving toward increasing levels of open innovation, searching for new technologies outside the boundaries of the firm, particularly in industries with high-velocity technological change (Eisenhardt, 1989). Absent the prior ties we highlight in this study, there is ample reason to be skeptical regarding the value-creating potential of acquisitions despite their popularity. In marked contrast, our hybrid framework stemming from the spinout and spin-in model illustrates how acquisitions with prior ties enable firms to retain scarce talent, while minimizing the common pitfalls of CE pursued through corporate acquisitions. This also sheds new light on the crucial challenges of PAI. The findings

indicate that acquirers need to take a broader view of the interaction between ex-employees and current employees than extant frameworks have contemplated (Birkinshaw et al., 2000).

Beneficial facets of spin-ins may be amplified with even greater attention to the reintegration process. While spin-ins result in significantly better acquisition-related outcomes than non-spin-in acquisitions, their efficacy as a component of any firm's corporate entrepreneurship strategy may be bounded by the acquirer's ability to handle organizational and cultural disruptions that stem from social cognition, particularly involving the reunification of innovative ex-employees and those who remained with the parent.

The M&A performance shortfalls caused by integration challenges have long been noted in the literature (Birkinshaw et al., 2000; Graebner, 2004; Nahavandi & Malekzadeh, 1988; Vaara, 2003). Superior acquisition performance has been found to occur only if synergies can be gained through effective PAI (Larsson & Finkelstein, 1999), by properly accounting for the crucial role of human capital in integration (Birkinshaw et al., 2000; Cartwright & Cooper, 1990). Consistent with these arguments, our study confirms that spin-ins attenuate the value destruction associated with information asymmetries, CEO overconfidence, and PAI. In the end, spin-ins appear to offer a lower risk, higher return formula for the acquisition of innovation through market-based, external corporate venturing.

Limitations and Opportunities

As with all studies, design decisions attendant to our investigation involved trade-offs that result in limitations, boundary conditions, and opportunities for future research. The first concerns the focus on software, electronics, and high-tech manufacturing firms. The use of these knowledge-intensive industries is consistent with related research (i.e., Agarwal et al., 2004) and was apropos to our research question, which necessitated industries where innovation plays an important role and where there exists a sizable population for a match-pair design. However, other sectors may not display the same large effect size we found in our study, and, in fact, may not even have a significant occurrence of spin-ins. Although our study makes no claims regarding the overall rate of spin-in occurrence, they represented approximately 10% of our fully vetted transaction pool. This should be taken as a conservative, minimum value since it is possible that other spin-ins occurred that we were unable to verify. Other sectors are unlikely to have a considerably higher spin-in rate, given the innovation-oriented rationale for spin-ins, but many may have a far lower rate. In either case, spin-ins are an important type of acquisition that merits additional future research to examine interindustry comparisons.

Additionally, we limited our purview to acquisitions ranging from $10 million to $150 million, comprised only of those undertaken by publicly traded firms. While this range captures the great preponderance of all deals, smaller and larger transactions may reveal results that are more or less extreme than those that emerged from our sample. Regarding prior ties, considerable effort enabled us to identify a sizable population of firms fitting our definition of "prior ties" as being ex-employees. There are, however, other important forms of prior ties, stemming from partnerships, alliances, and contracting agreements that could have the same effect as employment, educational, and industry ties.

Conclusion

In this study, we have proposed a framework wherein spin-ins constitute a hybrid approach to acquisition-driven CE strategic aims. Traditional modes of pursuing CE through corporate acquisitions are highly susceptible to the adverse effects of information asymmetries, CEO hubris, and impediments to effective PAI. This, in turn, leads to expensive failures and chilling

effect on much-needed CE initiatives among large-scale firms. Conversely, hybrid approaches and novel organizational forms, such as spin-ins, appear to attenuate acquisition pitfalls by fundamentally rethinking how innovation can be acquired externally without the unwanted baggage that leads to the value-destroying facets of the M&A Paradox. In this respect, the use of spin-ins supports the increasing recognition and mounting evidence that novel organizational forms, creative alliances, and boundary-spanning consortia may more aptly characterize the emergent nature of corporate entrepreneurial growth initiatives than traditional conceptions of acquisition-driven CE.

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References

Agarwal, R., Echambadi, R., Franco, A., & Sarkar, M. (2004). Knowledge transfer through inheritance: Spin-out generation and survival. *Academy of Management Journal, 47*(4), 501–522.

Agrawal, A., & Jaffe, J. (2000). The post Merger performance puzzle. *Advances in Mergers and Acquisitions, 1*, 119–156.

Alciatore, M., Dee, C. C., Easton, P., & Spear, N. (1998). Asset write-downs: A decade of research. *Journal of Accounting Literature, 17*, 1.

Alles, M., & Alles, A. (2002). The opportunity economy: Enduring lessons from the ride and fall of the new economy. *International Journal of Digital Accounting Research, 2*(1,), 1–25.

Baker, G., Gibbons, R., & Murphy, K. (2002). Relational contracts and the theory of the firm. *The Quarterly Journal of Economics, 117*(1), 39–84.

Barber, B. M., & Lyon, J. D. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of Financial economics, 43*(3), 341–372.

Barth, M. E., & Clinch, G. (1998). Revalued financial, tangible, and intangible assets: Associations with share prices and non-market-based value estimates. *Journal of Accounting Research, 36*, 199–233.

Benner, M., & Tushman, M. (2002). Process management and technological innovation. *Administrative Science Quarterly, 47*(4), 676–707.

Bens, D. A., Heltzer, W., & Segal, B. (2011). The information content of goodwill impairments and SFAS 142. *Journal of Accounting, Auditing & Finance, 26*(3), 527–555.

Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. *Journal of Financial Economics, 37*(1), 39–65.

Berman, S., Down, J., & Hill, C. (2002). Tacit knowledge as a source of competitive advantage in the National Basketball Association. *Academy of Management Journal, 45*(1), 13–31.

Birkinshaw, J., Bresman, H., & Håkanson, L. (2000). Managing the post-acquisition integration process: How the human integration and task integration processes interact to foster value creation. *Journal of Management Studies, 37*(3), 395–425.

Boennen, S., & Glaum, M. (2014). *Goodwill accounting: A review of the literature*. Retrieved from https://ssrn.com/abstract=2462516

Bowen, H., & Wiersema, M. F. (2004). Modeling limited dependent variables: Methods and guidelines for researchers in strategic management. In D. J. Ketchen & D. D. Bergh (Eds.), *Research methodology in strategy and management* (pp. 87–134). New York, NY: Elsevier.

Bruner, R. F. (2002). Does M&A pay? A survey of evidence for the decision-maker. *Journal of Applied Finance, 12*(1), 48–68.

Brush, T., & Artz, K. (1999). Toward a contingent resource-based theory. *Strategic Management Journal, 20*(3), 223–250.

Capron, L., Dussauge, P., & Mitchell, W. (1998). Resource redeployment following horizontal acquisitions in Europe and North America. *Strategic Management Journal, 19*(7), 631–661.

Carson, S. J., Madhok, A., & Wu, T. (2006). Uncertainty, opportunism, and governance: The effects of volatility and ambiguity on formal and relational contracting. *Academy of Management Journal, 49*(5), 1058–1077.

Cartwright, S., & Cooper, C. L. (1990). The impact of mergers and acquisitions on people at work: Existing research and issues. *British Journal of Management, 1*(2), 65–76.

Cartwright, S., & Schoenberg, R. (2006). Thirty years of mergers and acquisitions research: Recent advances and future opportunities. *British Journal of Management, 17*(S1), S1–S5.

Casella, G. (2008) *Statistical design*. New York, NY: Springer.

Chang, S. (1998). Takeovers of privately held targets, methods of payment, and bidder returns. *The Journal of Finance, 53*(2), 773–784.

Chatterjee, A., & Hambrick, D. C. (2007). It's all about me: Narcissistic chief executive officers and their effects on company strategy and performance. *Administrative Science Quarterly, 52*(3), 351–386.

Christensen, C. (1997). *The innovator's dilemma: When new technologies cause great firms to fail*. Boston, MA: Harvard Business School Press.

Cloodt, M., Hagedoorn, J., & Van Kranenburg, H. (2006). Mergers and acquisitions: Effect on the innovative performance of companies. *Research Policy, 35*(5), 642–654.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied Multiple Correlation/Regression Analysis for the Behavioral Sciences*. UK: Taylor & Francis.

Contractor, F. J. (2000). Valuing corporate knowledge and intangible assets: Some general principles. *Knowledge and Process Management, 7*(4), 242.

Cooper, D., Schindler, P., & Sun, J. (2006). *Business research methods*. New York, NY: McGraw-Hill.

Covin, J., & Miles, M. (1999). Corporate entrepreneurship and the pursuit of competitive advantage. *Entrepreneurship Theory and Practice, 23*(3), 47–64.

Cyert, R., & March, J. (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice Hall.

Datta, D. K. (1991). Organizational fit and acquisition performance: Effects of post-acquisition integration. *Strategic Management Journal, 12*(4), 281–297.

Datta, D., Pinches, G., & Narayanan, V. (1992). Factors influencing wealth creation from mergers and acquisitions: A meta-analysis. *Strategic Management Journal, 13*(1), 67–84.

Davidson, R., & MacKinnon, J. (1992). A new form of the information matrix test. *Econometrica, 60*(1), 145–157.

Deloitte. (2018). *The state of the deal: M&A trends 2018*. Retrieved March 1, 2018, from https://www2.deloitte.com/us/en/pages/mergers-and-acquisitions/articles/ma-trends-report.html

Dess, G., & Lumpkin, T. (2005). The role of entrepreneurial orientation in stimulating effective corporate entrepreneurship. *Academy of Management Executive, 19*(1), 147–156.

Dess, G., Ireland, R., Zahra, S., Floyd, S., Janney, J., & Lane, P. (2003). Emerging issues in corporate entrepreneurship. *Journal of Management, 29*(3), 351–378.

Dosi, G., Nelson, R., & Winter, S. (2000). *The nature and dynamics of organizational capabilities*. Oxford: Oxford University Press.

Doukas, J., & Petmezas, D. (2007). Acquisitions, overconfident managers and self-attribution bias. *European Financial Management, 13*, 531–577.

Drover, W., Wood, M. S., & Payne, G. T. (2014). The effects of perceived control on venture capitalist investment decisions: A configurational perspective. *Entrepreneurship Theory and Practice, 38*(4), 833–861.

Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review, 23*(4), 660–679.

Eisenhardt, K. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management Journal, 32*(3), 543–576.

Emerson, R. (1976). Social exchange theory. *Annual Review of Sociology, 2*, 335–362.

Faulkner, D., Teerikangas, S., & Joseph, R. (2012). *Handbook of mergers and acquisitions*. Oxford: Oxford University Press.

Ferris, S., Jayaraman, N., & Sabherwal, S. (2013). CEO overconfidence and international merger and acquisition activity. *Journal of Finan and Quant Analysis, 48*(1), 137–164.

Fleming, L., & Sorenson, O. (2012). Navigating the technology landscape of innovation. *Sloan Management Review, 44*, 15–24.

Floyd, S., & Wooldridge, B. (1999). Knowledge creation and social networks in corporate entrepreneurship. *Entrepreneurship Theory and Practice, 23*, 123–144.

Francis, J., Hanna, J., & Vincent, L. (1996). Causes and effects of discretionary asset write-offs. *Journal of Accounting Research, 34*, 117–134.

Franco, A., & Filson, D. (2006). Spin-outs: Knowledge diffusion through employee mobility. *RAND Journal of Economics, 37*(4), 841–860.

Fulmer, I., Gerhart, B., & Scott, K. (2003). Are the 100 best better? An empirical investigation of the relationship between being a "great place to work" and firm performance. *Personnel Psychology, 56*, 985–993.

Graebner, M. (2004). Momentum and serendipity: How acquired leaders create value in the integration of technology firms. *Strategic Management Journal, 25*(8–9), 751–777.

Greenwood, R., Hinings, C. R., & Brown, J. (1994). Merging professional service firms. *Organization Science, 5*(2), 239–257.

Grote, M. H., & Umber, M. P. (2006). *Home biased? A spatial analysis of the domestic merging behavior of US firms* (Working Paper Series: Finance & Accounting No. 161). Retrieved from http://hdl.handle.net/10419/23427

Hambrick, D. C., & Cannella, A. A. (1993). Relative standing: A framework for understanding departures of acquired executives. *Academy of Management Journal, 36*(4), 733–762.

Hausman, J. (1978). Specification tests in econometrics, *Econometrica, 46*(6), 1251−1271.

Hayn, C., & Hughes, P. J. (2006). Leading indicators of goodwill impairment. *Journal of Accounting, Auditing & Finance, 21*(3), 223–265.

Hayward, M. L.A. (2002). When do firms learn from their acquisition experience? Evidence from 1990 to 1995. *Strategic Management Journal, 23*(1), 21–39.

Hayward, M.L.A., & Hambrick, D. (1997). Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly, 42*(1), 103–127.

Heckman, J. (1979). Sample selection bias as a specification error, *Econometrica, 47*,153–161.

Heeley, M., King, D., & Covin, J. (2006). R&D investment level and environment as predictors of firm acquisition. *Journal of Management Studie, 43*(7), 1513–1535.

Hendricks, K. B., & Singhal, V. R. (2001). The long-run stock price performance of firms with effective TQM programs. *Management Science, 47*(3), 359–368.

Hitt, M., Harrison, J., Ireland, R. D., & Best, A. (1998). Attributes of successful and unsuccessful acquisitions of US firms. *British Journal of Management, 9*(2), 91–114.

Hitt, M., Hoskisson, R., & Ireland, R. (1990). Mergers and acquisitions and managerial commitment to innovation in M-form firms, *Strategic Management Journal, 11*, 29–47.
Hoetker, G. (2007). The use of logit and probit models in strategic management research: Critical issues. *Strategic Management Journal, 28*(4), 331–343.
Hosmer, D, Lemeshow, S., & Sturdivant, R. (2013). *Applied logistic regression*. Hoboken, NJ: John Wiley & Sons.
Hudson, B. (1994). Innovation through acquisition. *Cornell Hotel and Restaurant Administration Quarterly, 35*(3), 82–87.
Ishii, J., & Xuan, Y. (2014). Acquirer-target social ties and merger outcomes. *Journal of Financial Economics, 112*(3), 344–363.
Judd, C. M., McClelland, G. H., & Ryan, C. S. (2011). *Data analysis: A model comparison approach*. New York, NY: Routledge.
Ketchen, D., Ireland, R., & Snow, C. (2007). Strategic entrepreneurship, collaborative innovation, and wealth creation. *Strategic Entrepreneurship Journal, 1*(3–4), 371–385.
King, D., Dalton, D., Daily, C., & Covin, J. (2004). Meta-analyses of post-acquisition performance: Indications of unidentified moderators. *Strat Management Jour, 25*, 187–200.
Klepper, S., & Sleeper, S. (2005). Entry by spinoffs. *Management Science, 51*(8), 1291–1306.
Klepper, S., & Thompson, P. (2010). Disagreements and intra-industry spinoffs. *International Journal of Industrial Organization, 28*(5), 526–538.
Kumar, N. (2009). How emerging giants are rewriting the rules of M&A. *Harvard Business Review, 87*(5), 115.
Kuratko, D. F., & Audretsch, D. B. (2009). Strategic entrepreneurship: Exploring different perspectives of an emerging concept. *Entrepreneurship Theory and Practice, 33*(1), 1–17.
Larsson, R., & Finkelstein, S. (1999). Integrating strategic, organizational, and human resource perspectives on mergers and acquisitions. *Organization Science, 10*(1), 1–26.
Lerner, J. (1996). *The government as venture capitalist: The long-run effects of the SBIR program* (No. w5753). Cambridge, MA: National Bureau of Economic Research.
Li, J., & Tang, Y. I. (2010). CEO hubris and firm risk taking in China: The moderating role of managerial discretion. *Academy of Management Journal, 53*(1), 45–68.
Loughran, T., & Ritter, J. (2004). Why has IPO underpricing changed over time? *Financial Management, 33*(3), 5–37.
Malmendier, U., & Tate, G. (2005). CEO overconfidence and corporate investment. *The Journal of Finance, 60*(6), 2661–2700.
Markides, C. (2006). Disruptive innovation: In need of better theory. *Journal of Product Innovation Management, 23*(1), 19–25.
Martin, K. (1996). The method of payment in corporate acquisitions, investment opportunities, and management ownership. *The Journal of Finance, 51*(4), 1227–1246.
McCarthy, K., & Dolfsma, W. (2012). *Understanding mergers and acquisitions in the 21st century*. Basingstoke: Palgrave Macmillan.
Meek, V. (1988). Organizational culture. *Organization Studies, 9*(4), 453–473.
Michl, T., Gold, B., & Picot, A. (2012). The spin-along approach: ambidextrous corporate venturing management. *International Journal of Entrepreneurship and Small Business, 15*(1), 39–56.
Milgrom, P. R. (1988). Employment contracts, influence activities, and efficient organization design. *Journal of Political Economy, 96*(1), 42–60.
Nahavandi, A., & Malekzadeh, A. (1988). Acculturation in mergers and acquisitions. *Academy of Management Review, 13*(1), 79–90.
Narayanan, V. K., Yang, Y., & Zahra, S. A. (2009). Corporate venturing and value creation: A review and proposed framework. *Research Policy, 38*(1), 58–76.
Nelson, R., & Winter, S. (2009). *Evolutionary theory of economic change*. Cambridge, MA: Harvard University Press.

Ng, D., Westgren, R., & Sonka, S. (2009). Competitive blind spots in an institutional field. *Strategic Management Journal, 30*(4), 349–369.

O'Boyle, E., & Aguinis, H. (2012). The best and the rest: Revisiting the norm of normality of individual performance. *Personnel Psychology, 65*(1), 79–119.

Officer, M., Poulsen, A., & Stegemoller, M. (2009). Target-firm information asymmetry and acquirer returns. *Review of Finance, 13*(3), 467–493.

Pablo, A. (1994). Determinants of acquisition integration level: A decision-making perspective, *Academy of Management Journal, 37*, 803–836.

Perry, J. S., & Herd, T. J. (2004). Reducing M&A risk through improved due diligence. *Strategy & Leadership, 32*(2), 12–19.

Phan, P. H., Wright, M., Ucbasaran, D., & Tan, W. L. (2009). Corporate entrepreneurship: Current research and future directions. *Journal of Business Venturing, 24*(3), 197–205.

Pierce, C., Block, R., & Aguinis, H. (2004). Cautionary note on reporting eta-squared values from ANOVA designs. *Educational & Psychological Measurement, 64*(6), 916–924.

Pinker, S. 2011. *The better angels of our nature*. New York, NY: Penguin.

Ragozzino, R. (2016). Who gets first dibs? A buy-side investigation of the dual tracking phenomenon in M&A. *Long Range Planning, 49*(2), 207–220.

Rau, P. R., & Vermaelen, T. (1998). Glamour, value and the post-acquisition performance of acquiring firms1. *Journal of Financial Economics, 49*(2), 223–253.

Ravenscraft, D., & Scherer, F. (1987). *Mergers, sell-offs and economic efficiency*. Berkeley, CA: The Brookings Institution.

Reuer, J. (2005). Avoiding lemons in M&A deals. *MIT Sloan Management Review, 46*(3), 15–17.

Reuer, J., & Ragozzino, R. (2008). Adverse selection and M&A design: The roles of alliances and IPOs. *Journal of Economic Behavior & Organization, 66*(2), 195–212.

Riedl, E. (2004). Examination of long-lived asset impairments. *Accounting Rev, 79*(3), 823–852.

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70*(1), 41–55.

Rumelt, R. (1982). Diversification strategy and profitability. *Strategic Management Journal, 3*(4), 359–369.

Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal, 40*(3), 534–559.

Schildt, H. A., Maula, M. V., & Keil, T. (2005). Explorative and exploitative learning from external corporate ventures. *Entrepreneurship Theory and Practice, 29*(4), 493–515.

Sears, J., & Hoetker, G. (2014). Technological overlap, technological capabilities, and resource recombination in technological acquisitions. *Strategic Management Journal, 35*(1), 48–67.

Shen, J., & Reuer, J. (2005). Adverse selection in acquisitions of small manufacturing firms: A comparison of private and public targets. *Small Business Economics, 24*(4), 393–407.

Silverman, B. (1999). Technological resources and the direction of corporate diversification. *Management Sciencei45*(8), 1109–1124.

Singh, H., & Zollo, M. (1998). *The impact of knowledge codification, experience trajectories and integration strategies on the performance of corporate acquisitions*. Philadelphia, PA: University of Pennsylvania.

Sirower, M. (1997). *The synergy trap*. New York, NY: Simon & Schuster.

Stahl, G., & Voigt, A. (2005). Impact of cultural differences on M&A performance: A critical research review and an integrative model. *Advances in Mergers and Acquisitions, 4*, 51–82.

Stuart, E. (2010). Matching methods for causal inference. *Statistical Science: A Review Journal of the Institute of Mathematical Statistics, 25*(1), 1.

Trautwein, F. (2013). Merger motives and merger prescriptions. In A. Risberg (Ed.) *Mergers & Acquisitions: A Critical Reader* (pp. 14–26). New York, NY: Routledge.

Trichterborn, A., Knyphausen-Aufseß, Z., & Schweizer, L. (2016). How to improve acquisition performance. *Strategic Management Journal, 37*(4), 763–773.

Vaara, E. (2003). Post-acquisition integration as sensemaking: Glimpses of ambiguity, confusion, hypocrisy, and politicization. *Journal of Management Studies, 40*(4), 859–894.
Wang, L., & Zajac, E. J. (2007). Alliance or acquisition? A dyadic perspective on interfirm resource combinations. *Strategic Management Journal, 28*(13), 1291–1317.
Westhead, P. (1995). Exporting and non-exporting small firms in Great Britain: A matched pairs comparison. *International Journal of Entrepreneurial Behavior & Research, 1*(2), 6–36.
Wezel, F., Cattani, G., & Pennings, J. (2006). Competitive implications of interfirm mobility. *Organization Science, 17*(6), 691–709.
Wiersema, M. F., & Bowen, H. P. (2009). The use of limited dependent variable techniques in strategy research: Issues and methods. *Strategic Management Journal, 30*(6), 679–692.
Williamson, O. (1985). *The economic institutions of capitalism: Firms, markets, relational contracting*. New York, NY: Oxford Press.
Yu, J., Engleman, R., & Van de Ven, A. (2005). The integration journey: An attention-based view of the merger and acquisition integration. *Organization Studies, 26*(10), 1501–1528.
Zacharakis, A., & Shepherd, D. (2001). The nature of information and overconfidence on venture capitalists' decision making. *Journal of Business Venturing, 16*(4), 311–332.
Zahra, S., Nielsen, A., & Bogner, W. (1999). Corporate entrepreneurship, knowledge, and competence development. *Entrepreneurship Theory and Practice, 23*(3), 169–189.
Zucca, L. J., & Campbell, D. R. (1992). A closer look at discretionary writedowns of impaired assets. *Accounting Horizons, 6*(3), 30.

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