CENTER FOR FINANCIAL STUDIES

CFS Working Paper Series

No. 523

William Schulze, David Deeds, Robert Wuebker, Roman Kräussl

Toward a Pecking Order Theory of Strategic Resource Deployment

Center for Financial Studies | Goethe University | Theodor-W.-Adorno-Platz 3 | 60323 Frankfurt am Main | Germany
Phone +49 69 798 30050 | Fax +49 69 798 30077 | info@ifk-cfs.de | www.ifk-cfs.de

The CFS Working Paper Series

presents ongoing research on selected topics in the fields of money, banking and finance. The papers are circulated to encourage discussion and comment. Any opinions expressed in CFS Working Papers are those of the author(s) and not of the CFS.

The Center for Financial Studies, located in Goethe University Frankfurt's House of Finance, conducts independent and internationally oriented research in important areas of Finance. It serves as a forum for dialogue between academia, policy-making institutions and the financial industry. It offers a platform for top-level fundamental research as well as applied research relevant for the financial sector in Europe. CFS is funded by the non-profit-organization Gesellschaft für Kapitalmarktforschung e.V. (GfK). Established in 1967 and closely affiliated with the University of Frankfurt, it provides a strong link between the financial community and academia. GfK members comprise major players in Germany's financial industry. The funding institutions do not give prior review to CFS publications, nor do they necessarily share the views expressed therein.

Center for Financial Studies | Goethe University | Theodor-W.-Adorno-Platz 3 | 60323 Frankfurt am Main | Germany
Phone +49 69 798 30050 | Fax +49 69 798 30077 | info@ifk-cfs.de | www.ifk-cfs.de

TOWARD A PECKING ORDER THEORY OF STRATEGIC RESOURCE DEPLOYMENT

William Schulze
University of Utah, Department of Entrepreneurship and Strategy
1645 East Campus Center Drive, Salt Lake City, Utah 84112-9304
william.schulze@business.utah.edu

David Deeds
University of St. Thomas, Department of Entrepreneurship
2115 Summit Avenue St. Paul, MN 55105

Robert Wuebker
University of Utah, Department of Entrepreneurship and Strategy
1645 East Campus Center Drive, Salt Lake City, Utah 84112-9304

Roman Kraeussl
University of Luxembourg, School of Finance
4, rue Albert Borschette L-1246

The authors are indebted to Jay Barney, Matt Barlow, William Hesterly, Joe Mahoney, Cameron Verhaal, Todd Zenger, and members of the Entrepreneurship and Strategy Research Group at the University of Utah for their comments on earlier versions of this paper.

TOWARD A PECKING ORDER THEORY OF STRATEGIC RESOURCE DEPLOYMENT

A premise of the capabilities perspective in strategy is that firm-specific capabilities allow some firms to be unusually adept at exploiting growth opportunities. Since few firms have the capacity to internally generate the quantity or variety of strategic resources needed to exploit growth opportunities, the ability to externally acquire complementary resources is critical to the acquisition of competitive advantage. However, the external sourcing of resources exposes the firm's strategic resources to risks of expropriation. We argue this threat gives capable firms incentive to use internally generated strategic resources to pursue growth opportunities before turning to external sources. A pecking order theory of strategic resource deployment is implied. Data from a 22-year sample of cross-border investment partnership decisions made by U.S.-based venture capital firms lend support to our theory.

Keywords: Resource Acquisition, Dynamic Capabilities, Venture Capital

With roots in the resource-based view of the firm (Barney, 1991) and evolutionary economics (Nelsen and Winter, 1982), the dynamic capabilities perspective has emerged as a core construct in the field of strategic management (Helfat *et al*., 2007). A central premise of the perspective is that the experience and skills of the firm are embedded in the knowledge and judgment acquired by its employees in the course of doing business. Experience and accumulated learning provide the firm with increased operational capacity and capabilities. Over time, path dependence leads to the accumulation of a stock of firm-specific knowledge and physical, human, and organizational assets (Winter, 2003; Zollo and Winter, 2002). These resources and capabilities are strategically important, since their qualities and productivity underlie the firm's current competitive position and, when put to best use, their idiosyncratic properties allow the firm to achieve levels of performance that others cannot match.

However, firm-specific resource and capability sets vary greatly with respect to their quality, productivity, and adaptability. Since few firms are able to internally generate the quantity or variety of strategically valuable resources necessary to exploit more than a few of the growth opportunities that are available to them, the ability to supplement internally-generated strategic resources with externally sourced resources is viewed as a critical, if not defining, skill in the ongoing process of generating and sustaining competitive advantage (Mahmood, Zhu, and Zajac, 2011; Zollo and Singh, 2004). However, external sourcing can expose the firm to a variety of risks rooted in information asymmetries and opportunism (Rothaermel and Deeds, 2004), any of which may reduce the firm's ability to protect strategically valuable capabilities from imitation or replication (Gulati and Singh, 1988; Dyer and Singh, 1988). Surprisingly, the field has yet to empirically examine whether or how external sourcing decisions are influenced by the quality of the firm's strategic resources and threats of opportunism and adverse selection.

This study builds on the pecking order theory of financial structure (Myers and Majluf, 1984) to offer an analogous pecking order theory of strategic resource deployment. In finance, pecking order logic suggests that due to risks associated with adverse selection, information asymmetries, and signaling costs, firms have incentive to initially rely on internally generated financial resources to support growth initiatives. When applied in strategy, pecking order logic suggests that adverse selection, information asymmetries, and opportunism motivate skilled firms to use their strategic resources to pursue promising growth opportunities before turning to external sources. Since a firm's strategic resources have been historically its most productive, we argue that firms will alter their deployment of those resources over time, continually seeking to put them to their highest and best use. This line of reasoning implies that, in certain circumstances, as the productivity of the projects in which a firm has invested strategic resources becomes clear, they will alter their investment profile in an effort to optimize use. The impetus to optimize strategic resource use motivates them to seek to replace or supplement internally generated strategic resources with externally acquired resources for less promising projects and/or for those that appear destined to fall short of projected returns. Doing so assures that the firm's strategic resources are continually put to their best use, thereby maximizing returns to the firm.

We explore this conjecture using venture capital syndication practice as our context, and examine 22 years of data about partner selection in international (cross-border) investment by U.S.-based venture capital (VC) firms. Cross-border VC investment is a fruitful context in which to test our conjectures for four reasons. First, the scale and risk of investment are such that VCs must seek complementary resources from partners but, due to the speculative nature of the investment, are unable to use joint ventures, strategic alliances, or other conventional governance

solutions to safeguard their capabilities. Second, VC investment unfolds over multiple rounds of investment, which allows us to examine how partner selection decisions change at discrete identifiable points in time, while holding the target firm constant. Third, data is abundant and available for an extended period of time, which allows for a more rigorous test of our propositions. Finally, the population of U.S.-based VC firms, especially as compared to EU-based VC firms, is relatively homogeneous with respect to the organizational form, structure, sources of funding, and regulation (Gompers and Lerner, 2004). Firms, therefore, face similar incentives and constraints when making partnership decisions. Our results confirm that resource quality shapes the deployment of strategic resources, and that resource deployment strategy alters to reflect the changing fortunes of their investments.

THEORY DEVELOPMENT

The pecking order theory of financial structure is among the most influential theories in finance. The theory postulates that adverse selection motivates firms to prefer to rely on internal sources of finance before turning to external sources, and if external resources are required that that debt is preferred to equity. The rationale for the order of preference lies in information asymmetries and signaling costs. Internal sources are preferred to external sources due to lower information and transaction costs, and management's preference to reward current shareholders over new shareholders. Pecking order theory also predicts that in cases where the firm elects to rely on external sources of capital, they will prefer the use of debt to equity because using debt signals that the firm's equity is currently undervalued. While researchers have found that the theory is not strictly correct—a variety of variables have been identified that, under different conditions, influence the order of selection—a substantial body of empirical work lends support to its overall form (Leary and Roberts, 2010).

We propose a similar ordering of preference when firms face decisions regarding the deployment of strategic resources. The rationale for the order of preference lies in the productivity of strategic resources, information asymmetries, and the threat of opportunism. Internally generated strategic resources are preferred to externally acquired resources because of their superior productivity and because information asymmetries, along with time-compression diseconomies, make it difficult for managers to obtain comparable yields from externally acquired resources. Internal resources are also initially preferred to external resources because it is in the early stages of investment, when uncertainty is greatest and the firm's skills are the most taxed, that the *imprimatura*[1] of the firm's strategic resources is exposed and the threat of expropriation is at its height. External resource providers—prospective partners, technology and industry experts, analysts, and advisory services—might then be able to gain information about the firm's strategic resources that is otherwise obscure. The selection of a focal technology, details about how the focal firm evaluates opportunity, its selective use of outside experts, how firms establish valuation and manage negotiations, and insight into how skilled firms manage the "on-boarding" or integration process, are examples of processes that occur during the early stage of any investment. These mechanisms are idiosyncratic and can be competitively important, but are less visible at a distance or to those who engage with the firm at later stages of the acquisition process or project implementation.

Decision-makers confronting growth opportunities must choose whether to pursue these opportunities solely through the use of internally-generated resources or to turn to external sources, or some combination thereof, to pursue the opportunity. Pecking order theory implies

[1] *Imprimatura* is an underlay of paint or stain used by renaissance artists that outlines the architecture of a painting. Other elements in the painting are created by applying paint in thin layers, promoting a sense of translucence that adds depth and light to the painting. *Imprimatura* is revealed only under close scrutiny and/or when exposed to certain angles of light.

that the decision to seek external resources or capabilities should be contingent on *both* the quality of the firm's strategic resources and a concern for protecting resources from opportunism and expropriation. The concern for maximizing returns while protecting strategic resources should give skilled firms *disincentive* to seek external entanglements when pursuing highly attractive investment opportunities. It also follows that, when faced with resource constraints, firms should first choose to obtain needed resources from partners or resource providers who pose the least threat of expropriation.

In contrast, less skilled firms have *incentive* to seek external partners as a mechanism for increasing their capacity to undertake promising investments, which exposes potential partners to adverse selection. Partnering with external resource providers can also serve as a vehicle for the acquisition of capabilities that lie outside their domain of expertise and/or are superior in quality to their own. They are, therefore, likely to seek external partners sooner than more skilled firms. The costs associated with post-investment monitoring are also important. Consequently, those with whom the firm had prior relationships, and/or firms that are socially or geographically proximate—and, hence, more likely to be trusted and/or less costly to monitor—are preferred to providers who are distal. However, adverse selection may also force less skilled firms to rely on less proximate providers than their skilled counterparts.

The notion that a firm's resource stocks vary in quality (Dierickx and Cool, 1989; Deeds and Decarolis, 1999) and that the supply of redeployable strategic resources is limited (Barney, 1989; Cool and Schendel, 1988) also suggests that highly capable firms should have dynamic resource deployment strategies (Black and Boal, 1994). For example, pecking order logic suggests that once a firm has determined that returns from a project will not meet expectations, highly capable firms will try to substitute scarce, but highly productive internally-sourced

resource sets with externally-sourced resource sets, and/or will try to improve the yield on investment by turning to low(er) cost external resource providers. In contrast, adverse selection and other agency threats not only increase the cost of external resources for less capable firms, but also limit the number of external providers available to them. The result is that less skilled firms have limited ability to alter their resource deployment strategy in the face of changing fortunes.

Having laid out the logic of the theory, we now illustrate its application by examining patterns of cross-border investment by U.S.-based venture capital firms.

HYPOTHESES

The dynamic capabilities perspective emphasizes that firms develop firm-specific resources and capabilities over time through a series of path-dependent processes that are codified and embedded in firm-specific organizational routines (Zollo and Winter, 2002). Venture capital firms build on initial endowments of human, social, and financial capital and, through quasi-irreversible, long-term investments, develop idiosyncratic capabilities including experience with technologies and industries, networks of relationships, and capacity to mitigate product, market, technology, and operations risk for their portfolio firms. The venture capital literature emphasizes that experience, measured in terms of volume of investment and the industrial and geographic diversity of those investments, supports both capability development (Hsu, 2004; Lindsey, 2008), and investment success, i.e., exit via initial public offering (IPO) or a merger/acquisition (M&A) (Gompers, 1996; Kaplan and Schoar, 2005; Lee and Wahal, 2004).

Venture capital firms that have proven particularly adept at identifying investments that achieve exit via IPO or M&A are viewed as being highly skilled and competitively advantaged.

The ability to successfully exit investments is supported and extended by the decision to focus on particular industries or market domains (Gompers, Kovner, and Lerner, 2009), and the development of a network of social and professional relationships that gives them privileged access to investment opportunities and information about those opportunities (Hochberg, Ljungqvist, and Lu, 2007; 2010). Accordingly, the networks used to source deals, the processes employed to evaluate them, the financial partners selected for co-investment and monitoring of the firm, and the constellation of ancillary specialized service providers that the VC relies on, differ (Gompers and Lerner, 2003). Access to market segments is jealously guarded. Hochberg, Ljungqvist, and Lu (2010), for example, document that local VC's prevent non-local VCs from gaining access to attractive local investment opportunities by blocking the access of outside investors to their market, and punish those that co-invest with outsiders, thereby raising barriers to market entry. Fombrun and Shanley (1990) and Roberts and Dowly (2002) document that, over time, venture capital firms assemble an increasingly refined constellation of legal and technology experts, advisory services, analysts, and other service providers who are trusted and accustomed to working with the focal investment firm. These providers, all working in symphony with the lead firm's partners, help source deals, conduct due diligence, and establish valuation—processes that are critical to a venture capital firm's success. It is not surprising that venture capital firms view their deal sourcing routines and evaluation processes, as well as their carefully cultivated professional networks, as the "crown jewels" of the firm (Sahlman, 1990; De Clercq, Fried, Lehtonen, and Sapienza, 2006). These firm-specific capabilities—their rareness, value, and their ability to protect firms from exploitation or duplication—are core to a venture capital firm's capacity to raise funds and deploy them successfully (Sahlman, 1990; Gompers, 1996; Gompers and Lerner, 1999).

VC investment typically unfolds over a number of rounds of investment, each of which is staged to provide the portfolio firm with needed funds while assuring that performance goals are reached. The lead investor is the VC firm that initializes the investment relationship and (usually) provides 25% or more of the funds. Their goal is to craft an investment strategy that, at each stage, propels the portfolio firm toward exit, while minimizing the dilution of the lead VC firm's ownership and control rights. Ideally, portfolio firm value will increase to a point where the lead VC can use that valuation to justify added investment and/or raise outside funds without suffering a dilution in value. The lead investor therefore has incentive to obtain funds from outside providers who are able to provide the portfolio firm with the types of resources needed to increase its value, while posing the least threat of expropriation.

In all cases, it is the lead investor who ultimately establishes valuation and negotiates terms with the entrepreneurial firm. The lead investor, therefore, plays a critical role in the recruitment of investment syndicate members and they, not the entrepreneurial firm, negotiate the terms of syndicate participation. For example, lead investors will recruit partners who possess expertise that the lead investor needs to establish valuation or resources that are needed to close the deal. However, both partner selection and the terms of their relationship will be carefully managed to protect the interests of the lead investor. For example, lead investors may limit the amount of financial information made available to syndicate partners who were recruited to provide technical expertise, whereas those recruited primarily for financial purposes may be granted access to financial but not technical data. Doing so limits the access of a syndicate partner to some, but not all, of the strategic resources (i.e., valuation procedures and technical expertise) the lead investor brought to bear on the investment. We also interviewed a number of VCs and confirmed that they use a variety of strategies to protect strategic resources,

including hiding the identity of outside experts, minimizing the information and access rights, and keeping due diligence processes proprietary.

Lead VCs cannot, however, fully limit strategic partner access to their strategic resources. First, while the precise mechanisms or tools used to establish valuation and negotiate terms are tightly controlled by the lead VC, at least some information about how those conclusions were reached, as well as the data on which they are based, must be shared with syndicate members. Second, VC firms compete to develop and maintain connections to the managerial and technical experts that they rely on to resolve product, market, and management problems in portfolio firms (Hellmann and Puri, 2002; Hochberg, Lindsey, and Westerfield, 2012). These resources are strategic because VCs compete with each other for the opportunity to fund promising ventures, and entrepreneurs are often willing to accept worse terms in order to affiliate with VCs whose portfolio and track record indicate they can offer portfolio firms access to new customers, markets, distribution channels, or help them acquire needed technology and expertise (Hsu, 2004). Once deployed, however, the identity of these actors, as well as the skills and resources they bring to bear on problems, become known within the investment syndicate.

Since VCs only lead investments about which they are especially optimistic, the decision to lead a round of investment, and their deployment of strategic resources, go hand in hand. It follows that protection of these valuable routines and processes from imitation and expropriation by other VCs should be an important consideration when determining which partners the VC should turn to when resources are needed. Together, we anticipate that these considerations will force less skilled firms to rely on providers who are less socially and geographically proximate. It follows that:

H1: The propensity to seek external resources is moderated by the quality of a firm's capabilities such that highly capable firms and less capable firms will differ with respect to the location of their syndicate partners.

Not all investments perform as well as initially expected. Portfolio firms may face technological or market development challenges that take longer to overcome than projected, or face competitive challenges that reduce the anticipated financial value of the firm. Due to the structure of VC investment, lead investors are able to adapt to changing fortunes by changing exit strategy or altering the financial structure of the investment in ways that reduce its cost and risk. Examples of a change in exit strategy are common. Firms that were once thought likely prospects for IPO might then be viewed as better candidates for acquisition by an existing firm. Firms may adapt by leveraging the existing syndicates' networks to identify prospective acquirers, or may choose to alter the composition of the investment syndicate by seeking syndicate partners who have relationships with potential acquirers and investment bankers that may facilitate acquisition. It follows that:

H2: The propensity to seek external resources is moderated by the quality of a firm's capabilities such that highly capable firms and less capable firms will differ with respect to the timing of when they syndicate with partners from different locations.

Informed by pecking order theory and drawing from the dynamic capabilities literature, we have argued that highly capable firms differ from their less capable counterparts as to when and where they source external resources. Building on dynamic capabilities theory, we suggest that irrespective of the source and timing, venture capital firms will differ on an additional

dimension—their ability to unlock value from relationships with members of the investment syndicate (Sorenson and Stuart, 2001). It stands to reason that capable venture capital firms would also be more adept at both tapping into and effectively employing the capabilities of their investment relationships, positively influencing investment outcomes. Skilled firms can also profit if, after valuation is established and the threat of expropriation reduced, they are able to reduce their resource costs. For example, skilled firms might be able to improve returns by obtaining funds from offshore firms, who face greater barriers to market entry than the highly skilled firms (Hochberg *et al*., 2010), or from those who might be willing to provide funds at lower cost in order to gain standing or improve their stature within the industry (Hochberg *et al*., 2007). Common wisdom also holds that it is less costly for offshore partners ("local investors" from the perspective of the entrepreneurial firm) to monitor local investments. Offshore partners might also be able to leverage local networks and add value to the target firm if they are allowed to become more actively engaged in its management. Finally, offshore partners might be able to facilitate the acquisition of the portfolio firm by acquirers who are also less geographically or socially proximate to the lead investor. Accordingly, we hypothesize that:

> *H3: The quality of a firm's skills moderates the relationship between the use of external resources and investment performance such that highly capable firms will derive greater benefits from syndicate partners than less capable firms.*

SAMPLE AND METHOD

We test our hypotheses using a sample of cross-border venture capital investment activity, a context that offers several distinct advantages for the purposes of this study. First, the decision to invest in distant markets suggests the focal firm believes it has the financial and operational capacity to make a successful investment. Said another way, the decision to invest abroad can be

viewed as a sign that the focal firm believes it has the ability to productively redeploy strategic resources from domestic to international use. Second, the cross-border context magnifies the host of information asymmetries that firms must overcome to achieve success, which should tax the firm's skills, expose their *imprimatura*, and give U.S.-based firms added incentive to create partnerships with local firms. Third, the selective focus on cross-border investment from the United States into EU-15 nations enhances the salience of the cross-border metric while reducing the risk that its influence is confounded by distance—as might be the case if the sample included cross-border investments *within* the EU-15. The combination of the quality of data, the ability to employ robust measures, and the fact that U.S.-based firms have multiple incentives to seek offshore partners for their investment syndicates make this a rigorous empirical context in which to test hypotheses concerning pecking order effects.

The data for our study are mainly drawn from the VentureXpert database published by Thomson Venture Economics. VentureXpert data is well-suited for scholarly research on cross-border venture capital investment since Thompson One Private Capital reports that it has the greatest coverage of the U.S. and European markets (Reuters, 2009). VentureXpert is the only venture capital investment database endorsed by both the National Venture Capital Association (NVCA) and the European Venture Capital Association (EVCA), and has been used extensively in research on venture capital investment in both the United States and Europe. VentureXpert contains basic business, geographic, and financial information on funds, firms, and portfolio companies, as well as detailed data on individual financing rounds. To improve the robustness of the information on exits, we merged VentureXpert data with data from two other databases: SDC New Issues and SDC Mergers and Acquisitions.

Our sample excludes data for financing rounds allocated to buyouts, bridge loans, and acquisitions, as well as corporate venture capital investments. Studies have found that venture investment conducted by corporations has demonstrably different investment preferences and management strategies compared to professional venture investors (Dushnitsky and Lenox, 2005). For the purposes of this study, we restrict analysis to investments made by 204 U.S. venture capital firms in firms located in the EU-15 between 1980 and 2002. We lagged our performance indicators by three and five years, and so include data on exits via IPO or M&A through 2007.

In the period 1980 to 2002, U.S.-based venture capital firms made 1,063 rounds of investment in firms located in the EU-15. Syndicates comprised exclusively of U.S.-based venture capital firms funded 891 (84%) of investments in our sample. Syndicates that included at least one EU-based venture capital firm funded 172 (16%) rounds. Our sample therefore contains information about 204 US-based VC firms who made 1,063 rounds of investment in 972 entrepreneurial firms located in the EU-15 over a 22-year time span.

We use four dependent and eight independent variables in our models. The first two dependent variables are *Domestic Partner* and *Offshore Partner*. *Domestic Partner* is a dummy variable that takes the value of 1 when the focal round of investment includes a U.S.-based syndicate partner and zero otherwise. *Offshore Partner* is a dummy variable that takes the value of 1 when a focal round of investment includes a non-U.S. based syndicate partner, and zero otherwise. Both *Domestic Partner* and *Offshore Partner* are also employed as independent variables. The remaining dependent variables indicate whether the cross-border investment exited via *IPO* or *Merger and Acquisition (M&A)* during the period 1983 to 2007. For each

round date, these variables take the value of 1 if the exit is achieved during that round and 0 otherwise.

We use five independent variables to describe the quality of the venture capital firm's skills and resources. Our first variable, *VC Firm Success,* captures "a firm's capabilities and achievements and make the firm highly distinctive" (Rindova, Petkova, and Kotha, 2007). We follow convention (e.g., Hochberg *et al*., 2007; Sorensen, 2007) and measure it as the ratio of total number of deals by the venture at the time of the round that achieved exit (i.e., IPO or M&A) to the total number of deals the focal venture capital firm had made at time of the round of investment.

Kaplan and Schoar (2005) and Lee, Pollock, and Jin (2011) document that a VC firm's reputation and skills are strongly associated with investment experience, which we measure using three variables: *VC Firm Age,* measured in years at the round date; *Firms Backed* is the total number of portfolio firms the VC firm had backed at the time of the round of investment; and *Previous International Rounds* is a count of the number of cross-border deals in which the focal venture capital firm has participated at the date of investment in the target firm. We focus on previous international rounds, as opposed to total rounds, to isolate the expertise that is most relevant to the study. Lastly, we use *Executive Count, or* the number of general partners in the venture capital firm, as a measure of the amount of human capital available to the firm at the time of the round.

We use four independent variables to describe the critical attributes of each round of investment. *Round Number* of investment in the target firm is total number of financing rounds received by the target firm at the date of the round. Since lead investors have strong incentive to minimize the number of investors with whom they must share the proceeds from the investment,

we include both *Round Amount* and *Syndicate Size* as covariates. *Round Amount* controls for the influence of the size of investment on syndicate composition. *Syndicate Size* is the number of syndicate members at the time of the round of investment. We also use a dummy variable coded by VenturXpert to identify the *Lead Investor* in a given round of investment.[2] Lastly, we use a series of dummy variables to control for *Industry, Year,* and *Country* effects.

RESULTS

Descriptive statistics and correlations for our sample are reported in Table 1 and regression results in Tables 2 and 3. We use GEE or General Estimating Equations, and not probit regression, since it allows for the use of robust standard errors when using time series data and binary, categorical, or count dependent variables. GEE, therefore, "corrects" for serial correlation and other dependencies among variables included in panel studies. Another advantage of using GEE is that its coefficients are interpreted as reflecting the *average* marginal effect of the independent variable on the probability that the outcome of interest will occur. Probit, in contrast, provides only a *point* estimate of the marginal effect of the variable, which greatly complicates interpretation. Hausman tests confirm the use GEE and robust standard errors adequately compensated for threats related to serial correlation. Variance inflation factor statistics of less than 1.0 for all models indicate that the threat of multicollinearity is low. We report results using a three-year lag in performance. (Results using a five-year lag do not differ materially from those obtained the reported three-year lag, and so are not reported.) Controls for performance (IPO or M&A), industry, year, and country are included where appropriate.[3]

[2] We do not, however, include *Lead Investor* in most of our regressions because of missing observations (including it causes sample size to fall from 927 to 798). We therefore chose to use it to check the robustness of our results: No material change in the direction or significance of our results is observed when *Lead Investor* is included in our models.

[3] All results available on request.

We address the threat of endogeneity in three ways. First, we controlled for investor selection bias (the risk that partner selection is driven by lead investor partner preferences) by clustering data at the level of the entrepreneurial firm and including entrepreneurial firm-level fixed effects in our models. No material differences in the results were observed. Second, we follow convention and use an instrument, *Portfolio Diversity*, in two-stage least-squared analyses to control for endogeneity in our tests of H1 and H2 (Table 2). *Portfolio Diversity*, a measure of the industrial diversity of a VC firm's portfolio, is uncorrelated with either DV (*Domestic or Offshore Partner*) but correlated with two important predictors, *Round Amount* (0.01; $p \leq .001$) and *Syndicate Size (0.02;* $p \leq .001$). Results indicate that *Round Amount* and *Syndicate Size* are not significant in any of our four 2SLSQ models, which suggests that endogeneity does not influence our observations. Third, we lag our dependent variables (IPO and M&A) a minimum of three years in our test of H3, which reduces the prospect that the outcomes achieved are causing our independent variables to take on the observed values (Arellano and Bond, 1991).

[INSERT TABLE 1 ABOUT HERE]

Table 2 indicates that U.S.-based VCs achieved a 14% rate of success on *IPO* and a 5% rate of success on *M&A*. Mean composite success rate for U.S.-based VCs is 16%. The average U.S.-based VC firm was large (34 partners), well established (15 years old), and had relatively significant international investment experience, as indicated by 27 prior rounds of international investment. The mean number of rounds of investment in a target firm is 1.12. Interestingly, only 16% of cross-border deals included offshore partners. Inspection of the correlation table revealed no anomalies. Consistent with our theory, the correlation between *Offshore Partner* and *Round Number* is large and positive (0.54: $p \leq .001$) while the correlation between *Offshore Partner* and *Domestic Partner* is large and negative (-0.19; $p \leq .001$).

[INSERT TABLES 2 AND THREE ABOUT HERE]

While not hypothesized, a number of empirical relationships reported in this paper collectively confirm the intuition that past performance is strongly related to subsequent investment performance, for example, the correlation between *VC Firm Success* and *IPO* (0.32: $p \leq .001$) and between *VC Firm Success* and *M&A* (0.08: $p \leq .001$) in Table 1; the significant negative main effects reported in models 3 and 4 of Table 2 (-0.19: $p \leq .001$; -0.70: $p \leq .001$); the positive and highly significant main effect of *VC Firm Success* in models 1 through 3 in Table 3 (0.86: $p \leq .001$, 0.77: $p \leq .001$, 0.14: $p \leq .001$); and the positive and highly significant interaction between *VC Firm Success* and *Offshore Investors* (0.54: $p \leq .001$) in Model 4 of Table 3. These results suggest that *VC Firm Success* can serve as a proxy for the quality of the focal VC firm's skills.

Table 2 reports results of our moderated GEE regressions on *Domestic Partner* and *Offshore Partner*. Models 1 and 3 include the main effects; and Models 2 and 4 include product terms that represent the interaction between *Domestic Partner* and *VC Firm Success* and *Offshore Partner* and *VC Firm Success.* Model 1 of Table 2 indicates that the relationship between *Round Number* and *Domestic Partner* is direct and negative (-0.36: $p \leq .001$), but that the relationship between *Round Number* and *Offshore Partner* is positively moderated by *VC Firm Success* (0.47: $p \leq .001$), suggesting that syndication practices of skilled and less skilled VCs differ. Specifically, the change in sign for *Round Number* across models indicates that *Offshore Partners* are recruited in later rounds of investment, and that more capable firms tend to recruit *Offshore Partners* later than less successful firms. These relationships are readily evident in the simple slopes presented in Figure One. The likelihood that a skilled firm will recruit an offshore partner in early rounds is about 45% and rises to almost 66% in later rounds. The

likelihood that less skilled firms will recruit domestic partners is about 43% in early rounds and remains essentially unchanged. The likelihood that skilled firms will recruit domestic partners is early rounds is about 50% in early rounds but falls to about 35% in later rounds. Together, the data lend support to H1 and H2, which postulated that VC firm capabilities would influence decisions concerning the timing and use of external providers.

We use two dependent variables to test H4. Models 1 and 2 of Table 3 indicate that the use of *Domestic Partner* or *Offshore Partner* is unrelated to the probability of IPO, while Model 4 of Table 3 indicates that *VC Firm Success* x *Offshore Partner* (0.54: $p \leq .001$) is strongly related to the probability of exit via *M&A.* Collectively, these results lend support to H3.

Interpretation of the results for H3 is aided by the plots of the simple slope provided in Figure 2. Figure 2 is fascinating, since it hints that the participation of an offshore syndicate partner in a U.S.-led cross-border investment has important strategic implications for the lead investors. Specifically, the figure indicates that the probability that a cross-border investment made by a U.S.-based investment syndicate that involves an offshore partner will exit via M&A is about 20% greater than in deals that lack an offshore partner. However, the data and figure provide no data about the causal role of the offshore partner in exit success. Post-hoc analyses were conducted to further probe these intriguing relationships.

Post-Hoc Analysis

While Figure 2 clearly indicates that involving an offshore partner improves the odds of eventual exit via M&A, it provides no information about why a U.S.-based VC would chose to involve an offshore partner in a deal after excluding them during previous investment rounds. We explore two scenarios that might account for the observed relationship. It is widely accepted that offshore partners have access to local networks, networks that are costly for U.S.-based VCs to reach. In

fact, this is the standard line of reasoning for theories of international venture capital investment—it is taken as given that the challenges associated sourcing, monitoring, and structuring early stage deals warrant the inclusion of an offshore partner (Mäkelä and Maula, 2006; Wright, Pruthi and Lockett, 2005). It follows that U.S.-based VCs might have incentive to recruit offshore partners in the hope that their engagement will improve the odds that the target firm might be eventually acquired by an offshore investor that lacks ties to U.S.-based members of the investment syndicate.

Another scenario is based on the premise that U.S.-based VCs who that find that their initial hopes for an early exit via IPO were misplaced are highly motivated to raise the funds needed to carry the target firm to exit at least cost to the early investors. There are several reasons why funds from an offshore partner might cost less than funds raised from U.S.-based VC firms. First, it is likely that an offshore partner would view the willingness of the U.S.-based VC to make an offshore investment as a signal of its quality and, so, due to the implied reduced risk of investment, be willing to accept lower returns than a non-local investor (Hochberg *et al*., 2010). Second, a non-U.S. based investment firm may have strategic incentive to seek affiliation with skilled U.S.-based VC. Such incentives may include the reputational benefits that might accompany co-investment with U.S.-based VCs, or access to better quality deal flow by virtue of affiliation with syndicate members (Hochberg *et al*., 2007). It follows that offshore partners have a number of incentives to co-invest with U.S.-based VCs, and so might be willing to demand less ownership in exchange for their investment in the local firm.

We conducted three post-hoc analyses to test these alternative explanations. First, we reasoned that if U.S.-based VCs believe that the recruitment of offshore syndicate partners will improve the odds that the entrepreneurial firm will be acquired by an offshore investor, then the

portion of acquiring firms located outside the United States should be greater when deals involve offshore partners as compared to deals that are funded exclusively by U.S.-based VCs. Curiously, the data indicate that 82% of the deals that did *not* involve an offshore partner were acquired by non-U.S. firms, but that only 50% of the deals involving an offshore partner were acquired by non-U.S. firms. Second, we reasoned that if access to offshore networks is important, then U.S.-based VCs might have incentive to recruit multiple offshore partners in an effort to increase and enrich the exchange of information. It turns out that the number of international participants involved in an investment is unrelated to the probability of exit via M&A. Together, these results are incompatible with the conjecture that the conduct of U.S.-based VCs is motivated by the ability of the offshore partner to facilitate acquisition by a non-U.S. firm.

Lastly, we test our conjecture that U.S.-based VCs have financial incentive to raise funds from offshore investors by comparing the average number of rounds of investment for acquisitions that did not involve offshore partners to the average number of rounds for acquisitions that involved offshore partners. The data indicate that successful deals that did not involve offshore partners received an average of 1.45 rounds of investment as compared to an average of 2.7 rounds of investment for successful deals involving offshore partners. While we lack data that would allow us to directly test the proposition that deals involving offshore partners require more capital investment than deals that do not, the difference in the number of rounds of investment suggests that financial strategy influences the composition of the investment syndicate. Together, the results of these post-hoc tests are consistent with the view that, from the perspective of the investment syndicate, the primary role of an offshore investor is to provide low cost capital, not to facilitate acquisition of the portfolio firm.

DISCUSSION

In this paper, we test a pecking order theory of strategic resource deployment, which asserts that a firm's ability to redeploy strategic resources is tempered by a concern to protect them from imitation, replication, or expropriation, such that they prefer to first use (internally-generated) strategic resources to pursue growth opportunities before turning to external providers. In support, we found (Table 3) that highly capable firms are 86% more likely to achieve exit from cross-border venture investments via IPO and 54% more likely to exit via M&A than less skilled firms. However, results indicate the later outcome is positively moderated by the inclusion of an offshore partner in the investment syndicate. We also found (see Table 1): (a) that that the likelihood that U.S.-based VC firms will recruit an offshore partner in early rounds of investment was significantly lower for skilled firms as compared to less skilled firms, and (b) that the likelihood that a skilled firm will recruit an offshore partner rose about 20% across rounds of investment. Meanwhile, we found that less skilled firms are about 10% more likely to include offshore partners in the first round of investment than more skilled firms, and that the likelihood that a less skilled firm will recruit an offshore partner remained essentially unchanged across rounds. We believe these findings suggest support for both of the aforementioned claims.

One of the merits of the study is that the quality of data and measures, combined with the fact that U.S.-based firms have multiple incentives to seek offshore partners for their investment syndicates, make this a theoretically rigorous context in which to test hypotheses concerning pecking order effects. We also believe this context is especially well-suited for study since competitive advantage within the industry rests on the accumulation of a complex set of skills, financial resources, and cooperative relationships with a variety of outside providers, including competitors, industry and technology experts, advisory services, and so on. These characteristics

make imitation, replication, and expropriation of the firm's strategic resources a continued threat, and so can be assumed to play a powerful role in shaping the firm's strategic conduct.

Interestingly, while our theory and evidence suggest that competitive conduct within investment syndicates should be commonplace, an in-depth search found only one related study. Hochberg *et al*. (2012) explored propositions concerning partner selection in U.S.-based VC syndicates, but used firm-level data about investments in U.S.-based entrepreneurial firms, and aggregated syndicate membership data across all rounds of investment in their analysis. They found (1) that firms that have similar capabilities and resource endowments rarely partnered, (2) that skilled firms tended to have significantly smaller syndicates than less skilled firms (after controlling for firm size, age, and so forth), (3) that skilled firms tended to match with firms that lacked similar capabilities, and (4) that capital itself did not specifically influence selection. The later observation follows from the fact that since capital is fungible and every VC firm has (some) capital available to invest, its effect on the partner selection process was unrelated to the set of factors that did, in fact, appear to influence selection—those factors included past success, executive count, breadth of expertise as indicated by the diversity of their investment portfolio, and so forth. Thus, while Hochberg et al. were able to document that skilled firms or "smart money" tended to partner with "dumb money," they were unable to identify factors that explained how or why "smart money" chose a particular source of "dumb money." (Hochberg *et al*., 2012: 25). While the methods employed in the study make it difficult to detect pecking order effects, the fact that (1) skilled firms seem to eschew similarly endowed prospective partners, (2) have smaller networks, and (3) seek "dumb money" as prospective partners, are patterns of behavior that are largely consistent with our proposed pecking order theory.

While the results of our study are consistent with both the capabilities perspective and our proposed theory, it is clear that more research is required. For example, we argued earlier that it is reasonable to expect that skilled firms are limited with respect to both the quantity and types of resources (strategic or otherwise) that are available to them for investment in growth opportunities, and that the amount and types of resources required to fund different opportunities will vary. It follows that some investments will force skilled firms to rely on external sources to either (a) supplement the stock of resources that are currently available to them and/or (b) to provide complementary resources (i.e., that are currently not available to the focal firm) that are needed for investment. Unfortunately, we are unable to test these and related propositions since we lack any direct measure of the types of resources or services provided by each partner at each stage of investment. While results of the post-hoc analyses hint that U.S.-based VCs appear to rely on offshore partners as a source of financial capital, these tests lack empirical rigor and so must be viewed with caution. Research about the efficacy of the various strategies that VCs employ to protect strategic assets from imitation, replication, and expropriation is also clearly needed.

The context of our study also limits the generalizability of our first claim regarding the firm's ability to successfully redeploy strategic resources. After all, VCs are in the business of pursuing new, risky, investment opportunities and therefore have little choice but to "redeploy strategic resources" in that pursuit. Several factors temper this observation. First, the context of our study is cross-border investment, which necessarily involves the transfer of firm, industry, and technology specific expertise across international boundaries. Cross-border investment thus requires firms to manage multiple sources of risk (e.g., sovereign, regulatory, and currency risks), none of which attend domestic investment. Second, the fact that prior cross-border

investment success directly predicts IPO but not M&A hints that these are different phenomenon. Thus, while it remains unlikely that cross-border venture capital investment is a context that one should rely on to make strong claims about the merits of our theory, it remains that the context is appropriate to the question and that the results are largely consistent with its premises.

Pecking order theory is also somewhat at odds with earlier venture capital research (e.g., Sorenson and Stuart, 2001; Hochberg *et al*., 2007), which tends to depict co-investment as a localized and largely cooperative (that is to say, as a not competitive within local networks) endeavor. Logic and evidence, however, suggest that the more nuanced perspective described in this paper more accurately describes the dynamic of competition within the industry. In this aspect, the VC industry is much like the industries studied by Dyer and Singh (1998) who, along with others (Gulati and Singh, 1998; Gulati and Gargiulo, 1999), emphasize the extent to which competition and collaboration among competitors is concomitant—that, over time, both processes contribute to the competitive advantages held by incumbents.

A final contribution of this paper is that it extends pecking order logic from its roots within finance and applies it to the field of strategy. In finance, pecking order theory serves as a theory or, at least, as a heuristic, about capital structure. Extending pecking order logic to strategic management, however, allows us to develop theory about how information asymmetries, adverse selection, and opportunism influence a core question of strategic management: How to protect strategic resources from appropriation. Meanwhile, the increased use of networked organizational forms, distributed manufacturing, and increasing inter-connectivity among products and across platforms (Porter and Heppleman, 2014) has made the task of simultaneously deploying and protecting strategic resources both more challenging and strategically salient. The notion that opportunism may limit one's ability to leverage strategic

resources, and that pecking order logic may influence their order of deployment, therefore, has implications for both theory and practice.

In conclusion, in this paper we argued that decisions about the reconfiguration and redeployment of strategic resources lies at the heart of dynamic capabilities theory, yet theory about these processes remains under-developed. The proposed pecking order theory of strategic resource deployment, therefore, fills a theoretical and empirical void in the literature. The application of this theory to cross-border venture capital investment is also useful since it not only demonstrates the utility of the theory, but also advances a more nuanced view about the dynamics of cooperation and competition within that industry. The paper therefore contributes to two important literatures and, hopefully, will inspire more research about the important, but neglected, questions that we address in this study.

LITERATURE CITED

Arellano M, Bond S. 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies* 58(2): 277–297.

Barney JB. 1989. Asset stocks and sustained competitive advantage: A comment. *Management Science 35*(12): 1511–1513.

Barney JB. 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17(1): 99–120.

Black JA, Boal KB. 1994. Strategic resources: Traits, configurations and paths to sustainable competitive advantage. *Strategic management journal* 15(S2): 131–148.

Cool K, Schendel D. 1988. Performance differences among strategic group members. *Strategic Management Journal* 9(3): 207–223.

De Clercq D, Fried V, Lehtonen O, Sapienza H. 2006. An entrepreneur's guide to the venture capital galaxy. *Academy of Management Perspectives* 20(3): 90–112.

Deeds DL, Decarolis DM. 1999. The impact of stocks and flows of organizational knowledge on firm performance: An empirical investigation of the biotechnology industry. *Strategic Management Journal*.

Dierickx I, Cool K. 1989. Asset stock accumulation and sustainability of competitive advantage. *Management science 35*(12): 1504–1511.

Dyer J, Singh H. 1998. The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage. *The Academy of Management Review* 23(4): 660–679.

Dushnitsky, G., & Lenox, M. J. (2005). When do firms undertake R&D by investing in new ventures?. *Strategic Management Journal*, *26*(10), 947-965.

Fombrun C, Shanley S. 1990. What's in a Name? Reputation Building and Corporate Strategy. *The Academy of Management Journal* 33(2): 233–258.

Gompers PA. 1996. Grandstanding in the venture capital industry. *Journal of Financial Economics* 42(1): 133–156.

Gompers P, Kovner A, Lerner L. 2009. Specialization and Success: Evidence from Venture Capital. *Journal of Economics & Management Strategy* 18(3): 817–844.

Gompers P, Lerner J. 2004. *The Venture Capital Cycle* (Second Edition ed.). Cambridge: MIT Press.

Gompers P, Lerner J. 1999. An analysis of compensation in the U.S. venture capital partnership. *Journal of Financial Economics* 51(1): 3–44.

Gulati R, Garguilo M. 1999. 'Where do interorganizational networks come from?' *American Journal of Sociology* 104 (5): 1439–1493.

Gulati R, Singh H. 1998. The Architecture of Cooperation: Managing Coordination Costs and Appropriation Concerns in Strategic Alliances. *Administrative Science Quarterly* 43(4): 781–814.

Helfat C, Finkelstein S, Mitchell W, Peteraf M, Singh H, Teece D, Winter S. 2007. *Dynamic Capabilities: Understanding Strategic Change in Organizations.* Malden,MA: Blackwell.

Hellmann T, Puri M. 2002. Venture Capital and the Professionalization of Start-up Firms: Empirical Evidence. *Journal of Finance* 57: 169–198.

Hochberg YV, Ljungqvist A, Lu Y. 2007. Whom you know matters: Venture capital networks and investment performance. *Journal of Finance* 62: 251–301.

Hochberg YV, Ljungqvist A, Lu Y. 2010. Networks as a barrier to entry and the competitive supply of Venture Capital. *Journal of Finance* 65: 251–301.

Hochberg YV, Lindsey L, Westerfield M. 2012. Partner Selection in Co-investment Networks: Evidence from Venture Capital. SSRN 1855764

Hsu DH. 2004. What do entrepreneurs pay for venture capital affiliation*? Journal of Finance* 59(4): 1805–1844.

Kaplan SN, Schoar A. 2005. Private Equity Performance: Returns, Persistence, And Capital Flows. *The Journal Of Finance* 60(4): 1791–1823.

Leary MT, Roberts MR. 2010. The pecking order, debt capacity, and information asymmetry. *Journal of Financial Economics* 95(3): 332–355.

Lee PM, Wahal S. 2004. Grandstanding, certification and the underpricing of venture capital backed IPOs. *Journal of Financial Economics* 73(2): 375–407.

Lee PM, TG Pollock, Jin K. 2011. The contingent value of venture capitalist reputation. *Strategic Organization* 9: 33–69.

Lindsey LA. 2008. Blurring firm boundaries: The role of venture capital in strategic alliances. *Journal of Finance* 63(3): 1137–1168.

Mahmood IP, Zhu H, Zajac EJ. 2011. Where can capabilities come from? Network ties and capability acquisition in business groups. *Strategic Management Journal* 32(8): 820–848.

Mäkelä MM, Maula MVJ. 2006. Interorganizational Commitment in Syndicated Cross-Border Venture Capital Investments. *Entrepreneurship Theory & Practice* 30(2): 273–298.

Myers S, Majluf N. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13: 187–211.

Nelson RR, Winter SG. 1982. *An Evolutionary Theory of Economic Change*. Cambridge, MA: Belknap Press of Harvard University Press.

Porter MA, Heppleman JE. 2014. How smart connected products are transforming competition. *Harvard Business Review* 92(11): 64–88.

Reuters; Thomson One Private Capital; 27 January, 2009. http://tinyurl.com/cs3yg2;

Rindova V, Petkova A, Kotha S. 2007. Standing out: How new firms in emerging markets build reputation. *Strategic Organization* 5(1): 31–70.

Roberts PW., Dowly GR. 2002. Corporate reputation and sustained superior financial performance. *Strategic Management Journal* 23(12): 1077–1092.

Rothaermel FT, Deeds DL. 2004. Exploration and exploitation alliances in biotechnology: A system of new product development. *Strategic Management Journal* 25(3): 201–221.

Sahlman WA. 1990. The structure and governance of venture-capital organizations. *Journal of Financial Economics.* 27(2): 473–521.

Sorensen M. 2007. How smart is smart money? A two-sided matching model of venture capital. *Journal of Finance* 62: 2725–2762.

Sorenson O. Stuart T. 2001. Syndication networks and the spatial distribution of venture capital investments. *American Journal of Sociology* 106: 1546–1588.

Winter SG. 2003. Understanding dynamic capabilities. *Strategic Management Journal* 24(10): 991.

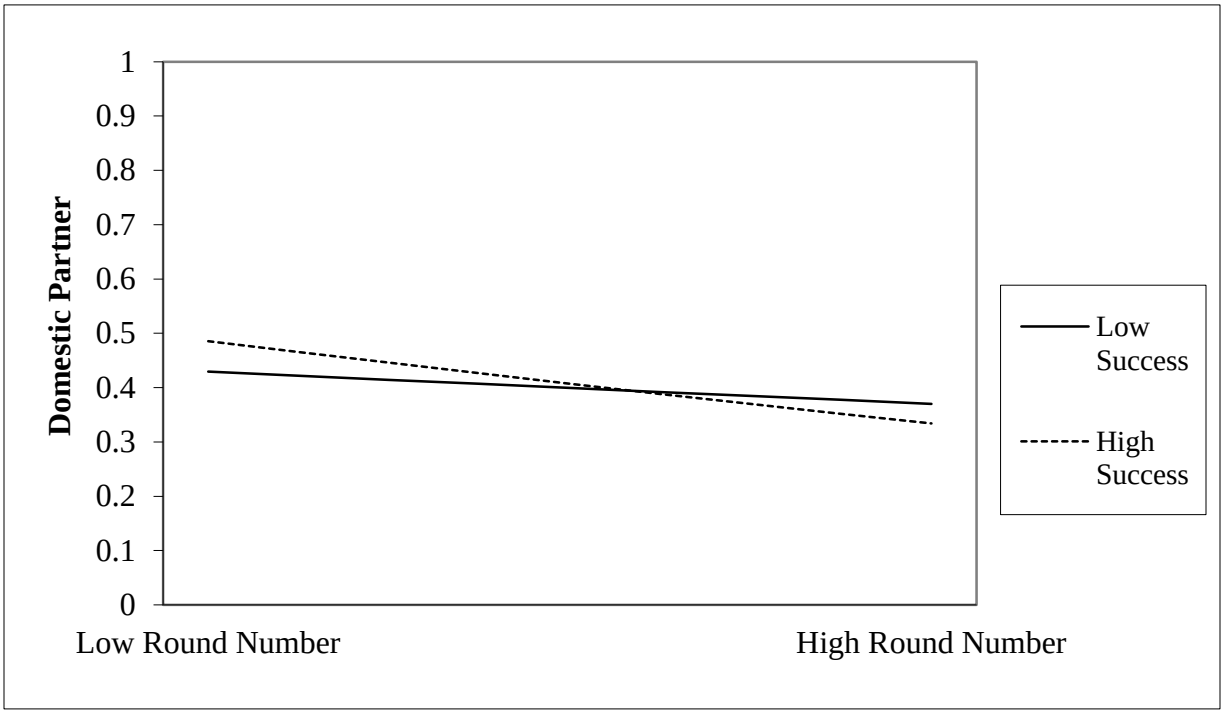
Wright M, Pruthi S, Lockett A. 2005. International venture capital research: From cross-country comparisons to crossing borders. *International Journal of Management Reviews* 7(3): 135–165.

Zollo M, Winter S. 2002. Deliberate Learning and the Evolution of Dynamic Capabilities. *Organization Science*. 2002(13): 339–351.

Zollo M. Singh H. 2004. Deliberate learning in corporate acquisitions: post-acquisition strategies and integration capability in U.S. bank mergers. *Strategic Management Journal* 25(13): 1233–1256.

FIGURE ONE: SIMPLE SLOPES

Influence of Domestic Partner on Success by Round



Influence of Offshore Partner on Success by Round

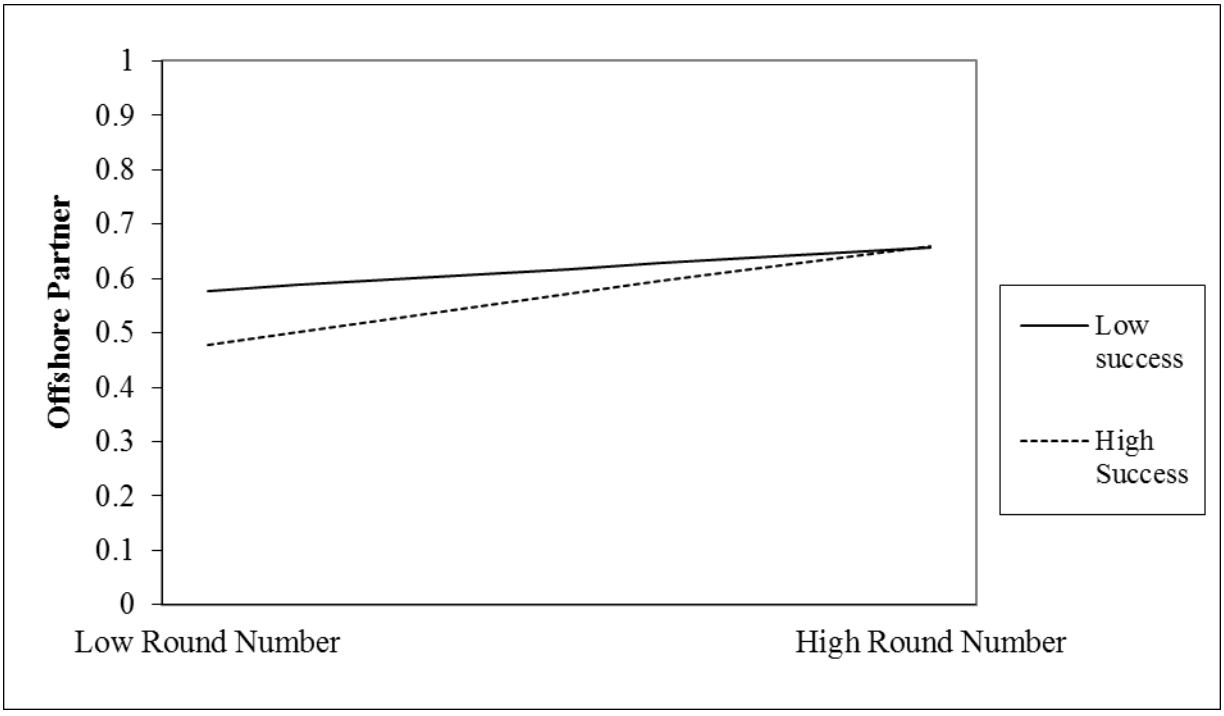


FIGURE TWO: SIMPLE SLOPES

Influence of VC Firm Success x Offshore Partner on Likelihood of M&A

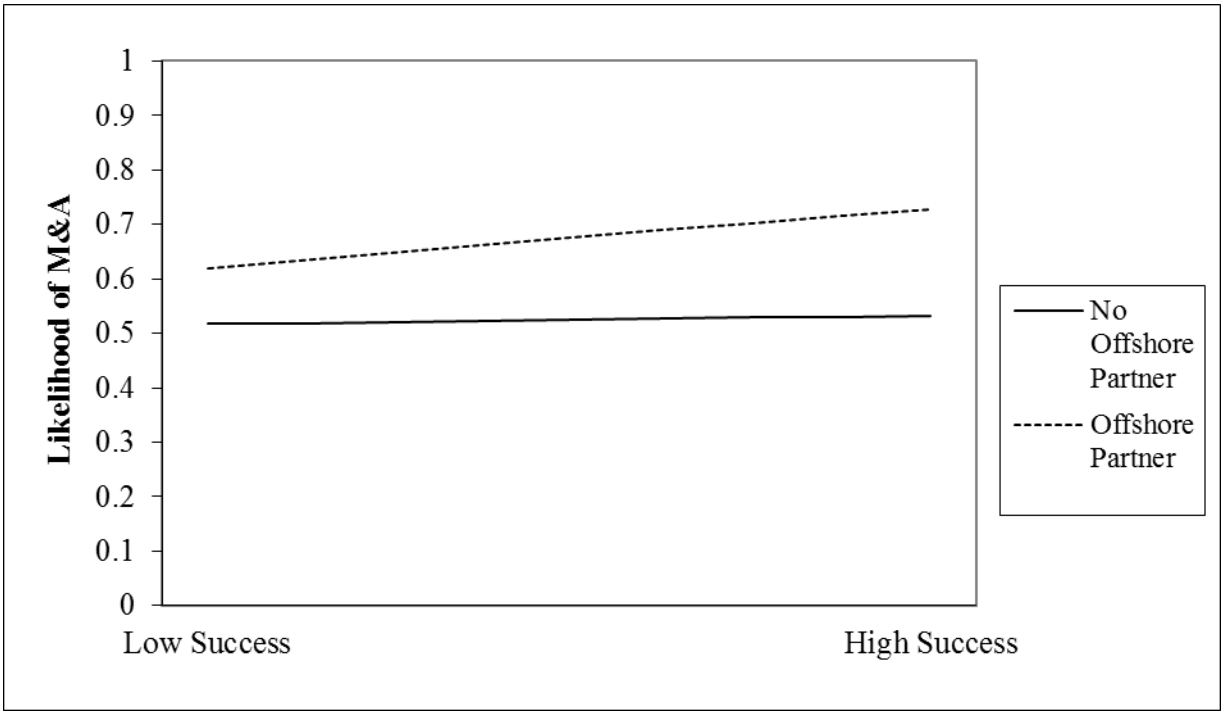


Table 1. Descriptive statistics and Correlations

			mean	sd	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	.	VC Firm Success Rate	0.16	0.12	1												
2	.	VC Firm Age (Years)	14.94	8.95	0.01	1											
3	.	Backed Firms	196.97	156.78	0.30	0.29	1										
4	.	International Rounds	27.21	39.24	0.24	0.17	0.67	1									
5	.	Executive Count	34.07	32.14	0.06	0.41	0.55	0.46	1								
6	.	Round Number	1.12	0.40	-0.01	0.02	0.05	-0.03	-0.02	1							
7	.	Syndicate Size	0.55	0.63	-0.05	0.11	0.03	0.00	0.17	0.12	1						
8	.	Round Amount	10069	17716	0.00	0.07	-0.02	0.00	0.11	0.03	0.30	1					
9	.	Board Seat	0.35	0.47	-0.02	-0.02	-0.02	-0.02	0.00	0.05	0.00	-0.06	1				
10	.	Domestic Partner	0.41	0.49	-0.01	0.07	0.04	0.09	0.16	-0.19	0.62	0.13	-0.06	1			
11	.	Offshore Partner	0.16	0.37	-0.07	0.08	0.04	-0.05	0.03	0.54	0.19	0.07	0.06	-0.37	1		
12	.	IPO	0.14	0.35	0.32	-0.04	0.08	0.00	-0.06	0.03	-0.03	0.02	0.07	-0.02	-0.03	1	
13	.	M&A	0.05	0.23	0.08	0.09	0.02	0.08	0.00	0.09	0.01	0.04	-0.01	-0.05	0.16	-0.02	1

TABLE 2

GEE REGRESSION RESULTS FOR PARTNER SELECTION

	(1)	(2)	(3)	(4)
	Domestic Partner	Domestic Partner	Offshore Partner	Offshore Partner
VC Firm Success Rate	0.05	0.57***	-0.19***	-0.70***
	(0.09)	(0.16)	(0.07)	(0.13)
VC Firm Age (Years)	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Backed Firms	0.00	0.00	0.001**	0.001**
	(0.00)	(0.00)	(0.00)	(0.00)
Total International Rounds	0.001***	0.001**	-0.001**	-0.001*
	(0.00)	(0.00)	(0.00)	(0.00)
Executive Count	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Round Number	-0.36***	-0.31***	0.47***	0.42**
	(0.04)	(0.04)	(0.05)	(0.05)
Syndicate Size	0.50***	0.51***	0.07***	0.06***
	(0.03)	(0.03)	(0.02)	(0.02)
Round Amount	-0.001*	-0.001*	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Lead Investor	-0.04	-0.04	0.02	0.01
	(0.03)	(0.03)	(0.02)	(0.02)
IPO	0.00	0.00	-0.02	-0.02
	(0.04)	(0.03)	(0.03)	(0.03)
M&A	-0.10*	-0.09	0.18**	0.17**
	(0.06)	(0.06)	(0.07)	(0.07)
Success x Round Number	—	-0.48***	—	0.47***
	—	-0.13	—	-0.11
Constant	0.57***	0.53***	-0.43***	-0.39***
	-0.06	-0.06	-0.06	-0.06
Observations	927.00	927.00	927.00	927.00
Industry Controls	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes
Three Year Lag	Yes	Yes	Yes	Yes
Model chi-square	492.10	516.30	203.60	281.30

Robust standard errors in parentheses

*p≤0.001***; p≤0.01**; p≤0.05****

TABLE 3

GEE REGRESSION RESULTS

	(1) IPO	(2) IPO	(3) M&A	(4) M&A
VC Firm Success Rate	0.86***	0.77***	0.14***	0.08
	(0.07)	(0.10)	(0.06)	(0.05)
VC Firm Age (Years)	0.00	0.00	0.002***	0.003***
	(0.00)	(0.00)	(0.00)	(0.00)
Backed Firms	0.00**	0.00**	-0.001*	-0.001*
	0.00	0.00	0.00	0.00
Total International Rounds	-0.001***	-0.001***	0.001**	0.001**
	(0.00)	(0.00)	(0.00)	(0.00)
Executive Count	-0.001***	-0.001***	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Round Number	0.04	0.04	-0.01	-0.01
	-0.036	-0.035	-0.021	-0.021
Syndicate Size	0.01	0.01	-0.02	-0.02
	-0.027	-0.03	-0.02	-0.02
Round Amount	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Domestic Partner	-0.02	-0.04	0.02	0.00
	-0.03	-0.04	-0.03	-0.03
Offshore Partner	-0.04	-0.11**	0.10**	0.03
	-0.042	-0.05	-0.04	-0.05
Success x Domestic Partner	—	0.15	—	0.08
	—	-0.14	—	-0.09
Success x Offshore Partner	—	0.49	—	0.54*
	—	-0.39	—	-0.28
Constant	-0.04	-0.03	0.00	0.01
	(0.04)	(0.04)	(0.03)	(0.03)
Observations	927	927	927	927
Industry Controls	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes
Three Year Lag	Yes	Yes	Yes	Yes
Model chi-square	164	159.9	24.99	25.8
Robust standard errors in parentheses				

*p≤0.001***; p≤0.01**; p≤0.05****

TABLE 4

CROSS-BORDER ACQUISITION, NO LOCAL HELP

724 Solutions, Inc.
Alexander Mann Group, Ltd. (AKA: Alexander Mann Solutions)
Australian Electronic Manufacturing Sevices Pty, Ltd.
Boldon James, Ltd. (FKA: Protek Network Management, Ltd.)
Completel Europe NV
Coral Eurobet, Ltd. (AKA: Coral Group Holdings PLC)
Cril Telecom Software (AKA: CTS)
Deutsche Telekom AG
Eftia OSS Solutions, Inc.
Element 14, Inc. (FKA: New Jam)
Financial Software & Systems Pte, Ltd.
Flextronics International, Inc. (FKA: Deccanet Designs)
Great Northern Health Management, Ltd.
Harbour Networks Holdings, Ltd.
Hong Kong International Terminals (AKA: HIT)
Iskon Internet d.d
Kernel AS
Landis & Gyr AG (AKA: Landis + Gyr)
OnCue Telecommunications, Ltd.
Pacific NetMarkets (PNM), Ltd.
Patni Computer Systems, Ltd.
Portelco, Inc
PrimaCom AG (FKA: Kabelmedia Holding GmbH)
PSG
Radio Kolor
SBS Broadcasting SA
Solid State System Company, Ltd. (AKA: 3S)
Teem Photonics S.A.
Transaction Technology, Ltd.
Transics NV

Percent Acquisitions by Non-US-based firms = 83%

CROSS-BORDER ACQUISITION, LOCAL HELP

Advanced Power Technology, Inc.
Avivias SA
Cable Management (Ireland), Ltd.
Cerenis Therapeutics Holding SA
Clear Communications Corporation
Data Recording Systems, Inc.
Flextronics International, Inc. (FKA: Deccanet Designs)
Great Northern Health Management, Ltd.
House of Blues Entertainment, Inc. (AKA: HOB Entertainment)
Innovative Silicon, Inc.
Long Term Holdings, Inc. (DBA: Long Term Care Group, Inc.)
Netia SA (FKA: RP Telekom SA)
PassGo Technologies (AKA: CKS, Ltd.)
picoChip Designs, Ltd.
Preferred Health Management, Inc.
Punch Taverns, Ltd.
Rebus Group
Research & Development Laboratories (AKA: RDL)
Sleep Country USA, Inc.
SRG Holdings, Inc. (FKA:Specialty Rubber And Gasket Company)
SSKI Investor Services Pvt., Ltd. (AKA: ShareKhan, Ltd.)
Ultimo Group (AKA: Ultimo)
Vacaciones eDreams SL (AKA: eDreams, Inc.)
Tokyo Metallic Communications Corp.

Percent Acquisitions by non-US-based firms = 50%

TOWARD A PECKING ORDER THEORY OF STRATEGIC RESOURCE DEPLOYMENT

CENTER FOR FINANCIAL STUDIES

CFS Working Paper Series

Recent Issues

All CFS Working Papers are available at *www.ifk-cfs.de*.

No.	Authors	Title
522	Ronald Bosman, Roman Kräussl, Elizaveta Mirgorodskaya	*The "Tone Effect" of News on Investor Beliefs: An Experimental Approach*
521	Otmar Issing	*Completing the Unfinished House: Towards a Genuine Economic and Monetary Union?*
520	Refet S. Gürkaynak, Zeynep Kantur, M. Anil Tas, Secil Yildirim	*Monetary Policy in Turkey after Central Bank Independence*
519	Thomas Hintermaier, Winfried Koeniger	*Household Debt and Crises of Confidence*
518	Raimond Maurer, Olivia S. Mitchell, Ralph Rogalla, Ivonne Siegelin	*Accounting-Based Asset Return Smoothing in Participating Life Annuities: Implications for Annuitants, Insurers, and Policymakers*
517	Andrew Ellul, Marco Pagano, Fabiano Schivardi	*Employment and Wage Insurance within Firms: Worldwide Evidence*
516	Nikolaus Hautsch, Rodrigo Herrera	*Multivariate Dynamic Intensity Peaks-Over-Threshold Models*
515	Stefan Gerlach, Peter Kugler	*Back to Gold: Sterling in 1925*
514	Stefan Gerlach, Reamonn Lydon, Rebecca Stuart	*Unemployment and Inflation in Ireland: 1926 - 2012*

Center for Financial Studies | Goethe University | Theodor-W.-Adorno-Platz 3 | 60323 Frankfurt am Main | Germany
Phone +49 69 798 30050 | Fax +49 69 798 30077 | info@ifk-cfs.de | www.ifk-cfs.de