RESOURCES, INDUSTRY MEMBERSHIP, AND FIRM PERFORMANCE: THE ROLE OF CAPABILITY CONFIGURATIONS IN VALUE CREATION FOR IPO-STAGE NEW VENTURES

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RESOURCES, INDUSTRY MEMBERSHIP, AND FIRM PERFORMANCE:
THE ROLE OF CAPABILITY CONFIGURATIONS IN VALUE
CREATION FOR IPO-STAGE NEW Ventures

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ABSTRACT

A widely held belief is that resource constraints and industry conditions can threaten the performance of entrepreneurial ventures. While previous research links resources to different performance outcomes, no research has explored the performance implications of resource use, especially for new ventures. Building from resource-based theory and contingency theory, we examine indirect (through capability formation/use) effects that occur within the ‘black box’ between resources and performance for a sample of entrepreneurial firms undertaking an IPO. Further, we extend theory in an entrepreneurial context to explain how underlying routines allow resources to be managed for greater value across different industries—conditions that make resources valuable in some contexts and not in others.

INTRODUCTION

Scholars offer different behavioral, structural, and environmental explanations of factors inducing or compelling their growth and performance under various conditions. Previous research, for example, has examined differences in behavioral and cognitive attributes (e.g., Baum et al., 2001; Katz & Shepherd, 2003), ecological and evolutionary conditions (e.g., Agarwal et al., 2002; Eisenhardt & Schoonhoven, 1990; Robinson & McDougall, 2001), network ties and interorganizational relations (e.g., Florin et al., 2003), and strategic orientation (e.g., Echols & Tsai, 2005) as potential explanations for new venture success. Some scholars have applied resource-based perspectives to sharpen the focus on relative firm advantages (e.g., Baker & Nelson, 2005; Katila & Shane, 2005). According to this perspective, firms differ in their resource positions, providing a source of performance heterogeneity across firms (Peteraf, 1993). This body of work, based on the resource-based view (RBV) of the firm, stresses the importance of resources and capabilities in guiding firm activity toward competitive advantage. When applying resource-based theory to explain why new ventures perform differently, however, results are mixed. Some scholars suggest that new ventures are undercapitalized and face a ‘liability of newness’ that constrain efforts to accumulate resources (Certo, 2003), making it difficult to compete, especially against established firms, stifling growth, and resulting in higher mortality rates for young firms. On the other hand, scholars have also argued that new ventures ‘make do’ and even flourish by leveraging different resource combinations and by making more efficient use of resources (Mahoney & Michael, 2005) to exploit opportunities despite their constraints. Still, surprisingly little is known about how new ventures exploit their resources to achieve market and financial success (Katila & Shane, 2005). This gap is puzzling because poor choices about resource use by new ventures not only can undermine their performance, but also can affect their survival.

Entrepreneurial firms, especially IPO-stage new ventures, provide an important context to examine these relationships. Their formation and growth is responsible for much of the wealth creation in developed and emerging economies. An important milestone for young firms is the IPO because the issuance of publicly traded stock generates needed capital and transforms a firm from private to public
ownership. This is especially significant for new ventures because these proceeds can be used to reconcile existing obligations and to fund growth (Pagano et al., 1998). Further, the transition from the private to public market often necessitates a change in organizational goals, as top managers of IPO firms confront the different goals and time horizons of the investor community. Accordingly, IPO-stage new ventures inform theory development, both because of the resources they accumulate and because of the economic activity they generate, underscoring their value as a research context for the examination of resource use.

This study brings capabilities to the foreground in the examination of new venture performance. We address two questions: 1) To what extent is the configuration of organizational capabilities likely to influence performance among new ventures? And importantly, does capability formation and use partially mediate the relationship between venture resources at IPO and performance? 2) Is resource value contingent on industry context? The role of human capital is considered, bringing agency into theory explaining capability formation and use (Feldman & Pentland, 2003). Following contingency theory logic, we also examine the potential moderating influence of industry context—conditions that can make resources valuable in some contexts and not in others.

CONCEPTUAL DEVELOPMENT

The RBV is one of the most prominent theoretical perspectives in strategic management (Penrose, 1959; Barney, 1991). Central to this perspective is the idea that firms’ resources determine heterogeneity, and that such differences drive value creation via development of competitive advantage. Tracing the origins of their work to Penrose (1959) and Barney’s (1991) more recent articulation, resource-based scholars argue that a firm’s unique resource portfolio not only influences performance but also affects the rate and direction of its growth. In other words, the RBV assumes that the sources of superior performance are internal to the firm. In particular, it links firm performance to the resources and capabilities possessed by a firm (Barney, 1991; Peteraf, 1993). According to this perspective, performance is sustainable when resources are inimitable and lack viable substitutes (Priem & Butler, 2001). Relative performance advantages result when firms combine resources to form capabilities and then effectively leverage those capabilities to exploit specific market opportunities (Grant, 1991). Research also suggests that performance depends on the context in which firms develop and deploy resources and capabilities along their value chain, making the same configuration of capabilities valuable in one context and not in others.

Although widely embraced, the RBV has its critics. Criticisms largely reflect a failure to consider three underlying factors in combination: the value and rarity of firms’ resources and capabilities, the decisions firms make about how they are used, and the context of their use (Priem & Butler, 2001). RBV research is split along two traditions, one focused on resources firms possess and the other on choices firms make when managing them. Traditional approaches link performance to resource possession. Advantages accrue when resources are valuable, rare, inimitable, and non-substitutable (Barney, 1991). More recently, resource theorists have begun to examine how firms accumulate, combine, and leverage resources (Morrow et al., 2007; Sirmon et al., 2007). Unfortunately, research has so-far failed to adequately combine these two approaches and to consider the contingent influence of industry conditions.

Evolutionary theory (Nelson & Winter, 1982) and the dynamic capabilities literature (Teece et al. 1997) bridge these two theoretical traditions and provide useful perspectives for understanding how firms build capabilities. Specifically, resource-based arguments imply that capabilities partially mediate the resource-performance link (e.g., Dosi et al., 2002); however, no theory has substantiated this relationship and it stands untested. Nevertheless, capabilities are argued to enable firms to acquire, develop, and deploy resources, to convert those resources into value-enhancing products, and to transform resources as the basis for sustainable competitive advantage. Accordingly, capabilities emerge in situations where the recurring cost of careful deliberation among organizational members would otherwise make organizations an inefficient structure for collective action (Dosi et al., 2002).
Furthermore, routines provide a source of competitive advantage in the formation and use of organizational capabilities by supplementing, or even substituting for, rational, calculative strategic decision-making logic pertaining to the allocation (use) of scarce resources. Routines appear prominently in descriptions of organizational capabilities, serving as their nervous system (Winter, 2000) or building blocks (Dosi et al., 2002). They represent persistent patterns of learned behavior or distinctive organizational procedures (Nelson & Winter, 1982). In turn, routines store organizational experience in a form that allows firms to more effectively accomplish patterned and repetitious tasks and actions exhibiting continuity over time (Winter, 2003).

As a venture accumulates experience in a certain routine, it gains proficiency. As new ventures gain proficiency in a routine, they increase the speed and reliability of decision-making, enhancing their ability to achieve desirable outcomes.

How firms configure capabilities helps explain performance differences in firms. Capability configurations represent a distinctive combination of organizational capabilities consisting of routines, the attributes of those routines, and interdependencies formed across different configurations that allow firms to establish, maintain, and extend a competitive advantage (Lavie, 2006). Moreover, they reflect the value-maximizing behaviors of rational decision makers (Dutta et al., 2005). Performance depends on the degree to which capabilities fit with value-maximizing sets relative to the degree of convergence among industry members. Over time, firms affect performance outcomes by adjusting their capability configurations and narrowing capability gaps (Lavie, 2006). We consider two new taxonomies in this study (see Table 1): market-managing capabilities and market-creating capabilities. Market-managing capabilities are value-enabling because they permit firms to exploit existing product-market positions (March, 1991). Although they can enable some adjustments to processes that underlie existing positions, such capabilities are not used to make substantive changes. By contrast, market-creating capabilities substantially augment existing positions, create new ones, or fundamentally alter the processes by which goods and services are produced. They consist of dynamic routines (Teece et al., 1997) that are value-enhancing because they permit firms to benefit from altering current positions and from bundling current and newly accessed resources into new positions. As such, their use involves more complexity and risk.

**HYPOTHESES**

Resources are at the heart of the RBV. However, advantages emerge not simply by similarities or dissimilarities in resources, but by how resources are used. Resource allocation within firms is important in understanding how firms make productive use of their resources through choices characterized by uncertainty, complexity, and conflict. Performance differences can occur when firms employ similar resources in different ways (Peteraf & Bergen, 2003). The motivation to transform available financial resources into growth is fixed in what Penrose (1959) refers to as the ‘entrepreneurial ambition’ of new ventures, which she describes as management’s propensity for taking risks to ensure growth occurs. According to this perspective, optimal performance requires a balance between the exploitation of existing resource endowments and the development (or acquisition) of new resource positions. Thus, it provides a compelling basis to examine different capability configurations and the resources they use.

We examine the direct and indirect performance effects of two resource types: financial capital and human capital. Financial capital refers to ‘liquid’ financial resources at IPO—net proceeds from an IPO plus tangible and intangible net current assets at IPO (Katila & Shane, 2005). Capital availability relaxes internal controls (Nohria & Gulati, 1996) and enhances the innovativeness of large firms and privately-held companies (e.g., George, 2005). In other words, excess capacity provides an internal mechanism for growth that allows firms to more fully utilize available resources. Nevertheless, expanded financial capital by itself is not a valuable resource per se until management puts it to productive use (Amit & Schoemaker, 1993; Morrow et al., 2007). Human capital represents the knowledge, skills, and ‘life’ experiences residing in and utilized by a firm’s most senior executives (Hitt et al., 2001; Subramaniam & Youndt, 2005). It is accumulated through education and work experience (Hitt et al., 2001), which provide higher levels of articulable knowledge in functional
disciplines, broader managerial know-how, and better awareness of industry routines (Wiersema & Bantel, 1992). Superior human capital increases managerial capacities for information processing, enhances the ability to discriminate among decision options, and boosts innovativeness. Managers educated at top universities possess higher levels of codified knowledge (Hitt et al., 2001) and often gain access to superior social networks. In turn, these informationally-rich external networks provide access to valuable resources and increase visibility to market opportunities.

**Formation of Market-Managing Capabilities**

Market-managing capabilities are value-enabling because they bring stability and greater efficiencies by permitting firms to more effectively exploit different positions (March, 1991). Market-managing capabilities concern the ability of firms to perform important functional activities more effectively than competitors with otherwise similar resource endowments. Although market-managing capabilities can enable some adjustments to processes that underlie existing positions, they are not used to make substantive changes. Examples include manufacturing, distribution and logistics management, procurement and inventory management, finance and financial reporting, labor relations and human resource management, and service management and customer support. Different ways to develop or enhance market-managing capabilities include: development of demand and supply planning capabilities leading to more reliable and predictable forecasting of production and inventory requirements; use of decentralized cross-functional team-based structures that facilitate increased spans-of-control by eliminating management layers and bureaucracy; improvements to manufacturing and facilities management capabilities that enable firms to reduce cycle times and increase thereby reducing per unit costs; and the integration of specialized capabilities from intermediate markets that allow firms to increase efficiencies through strategic outsourcing.

There are several reasons to believe that firms with higher levels of financial capital will increase allocations to market-managing capabilities. First, the behavioral theory of the firm treats firms as coalitions of actors, and its proponents offer ample evidence that financial capital provides opportunities for managers to appease internal political affiliations (e.g., Cyert & March, 1963). In other words, it acts as an inducement, representing “payments to members of the coalition in excess of what is required to maintain the organization” (Cyert & March, 1963: 36). Second, investors often encourage IPO-stage firms to make investments that retire debt, secure lower risk premiums, reduce the cost of capital, and make production and administrative processes more efficient, thereby maximizing profit potential (Pagano et al., 1998). Thus, firms are more likely to use proceeds to fund these capabilities when adjustments not only improve financial performance, but also enhance ratios used by investors to value their equity. Third, an important goal of the IPO process is to reduce conditions that create valuation difficulties for investors. This can result in IPO-stage firms strengthening the regulatory and investor relation systems expected of public firms (Certo, 2003), often requiring investments in underlying routines. We propose:

**Hypothesis 1a:** Financial capital at IPO is positively associated with allocations to market-managing capability formation/use.

Actions involving the conduct of underlying routines are guided by subjective interpretations and improvisations of different decision makers (Feldman & Pentland, 2003). Agency is therefore apparent in management’s collective choices. Given the small size and brief histories of IPO-stage new ventures, human capital greatly influences their behavior (Baum et al., 2001). Firms that possess superior human capital show a greater capacity for the ‘integrative complexity’ that occurs when structural complexity increases. Thus, superior human capital is essential to their ability to exploit performance benefits in that it allows them to add value to existing factors of production (Hitt et al., 2001). Furthermore, IPO-stage new ventures depend on investors’ evaluations to gauge economic value; yet, these firms have limited records of accomplishment and therefore face a skeptical investing public (Certo, 2003). Initially, young, entrepreneurial firms gain legitimacy by offering credible signals of quality that redress specific concerns
regarding product viability, competitive efficacy, and marketing efficacy (Higgins & Gulati, 2003). One such signal is the quality of the human capital embodied in the TMT (Cohen & Dean, 2005). These signals affect investors’ perceptions of returns. Specifically, we argue that firms headed by TMTs with superior human capital endow their firms with greater legitimacy and are less likely to require investments in administrative structures to establish legitimacy. This is not to say that firms with superior human capital view market-managing capabilities as unimportant; rather, they are more adept at managing the uncertainty associated with complex day-to-day business activity and better prepared for the demands of public trading. We propose:

_Hypothesis 1b: Human capital at IPO is negatively associated with allocations to market-managing capability formation/use._

**Formation of Market-Creating Capabilities**

Whereas market-managing capabilities permit firms to exploit existing product-market positions, market-creating capabilities represent organizational capabilities that are used by firms to establish new ones. Examples include research and development, engineering design, brand management and advertising, new product introduction, alliance formation and management, mergers and acquisitions, and divestitures. Approaches to developing or enhancing market-creating capabilities include: investments aimed at improving the quality and effectiveness of basic and/or applied research abilities; cultivation of interfirm linkages and alliances in different markets to access novel, specialized market information or to facilitate entry into new markets; and development of specialized capabilities that support the integration of acquisition targets and alliance partners.

Although value-enhancing, such capabilities often require firms to operate in domains where they lack knowledge or experience. Returns, then, have less certainty as firms exert less control over outcomes (Chattopadhyay et al., 2001). Nevertheless, _ceteris paribus_, a positive association exists between financial capital and the propensity to invest in market-creating capabilities. This propensity may be greater for IPO-stage new ventures completing the transition into the public arena because IPOs create ‘public shares’ that can also be used as currency to fund expansion. Further, financial capital may allow firms to experiment with innovative programs, diversification strategies, and R&D that might not otherwise be pursued under resource-constrained conditions. In other words, financial resources act as inducements to experiment, take risks, and make strategic choices.

Opponents counter that increasing financial resources eventually diminish incentives to innovate (Nohria & Gulati, 1996) and promote undisciplined investments in higher risk projects (Jensen, 1986, 1993; Leibenstein, 1978). This suggests a non-linear (inverted U-shape) relationship between financial capital and the formation of market-creating capabilities. There are several reasons to believe this relationship is non-linear. First, the process of augmenting existing positions or establishing new ones is a highly complex task (Morrow et al., 2007). Learning to operate in diverse product-market segments is subject to certain time compression diseconomies (Dierickx & Cool, 1989), whereby the amount of new experiences firms can absorb is constrained by time. Second, as the number and diversity of positions increase, information asymmetries emerge (Hitt et al., 1996). This produces information deficits, distracting attention from innovativeness to the increasing complexities of managing more diverse governance structures. Third, profitable decision options diminish over time, making further investments difficult to recoup. With increased investments, costs incurred will likely overwhelm a firm’s ability to exploit opportunities. We propose:

_Hypothesis 2a: Financial capital at IPO has a non-linear association (inverted U-shaped) with allocations to market-creating capability formation/use._
Superior human capital also enhances development and use of dynamic routines (Florin et al., 2003). Knowledge embodied in managers’ human capital reinforces experiential lessons learned from using certain routines, which increases the likelihood of further adoption over time (Nelson & Winter, 1982). This is especially important for the formation and use of market-creating capabilities because such actions are complex, often involving investments without reasonable expectations of return. Research has linked human capital with new product development (Subramaniam & Youndt, 2005), mergers (Zollo & Singh, 2004), and internationalization (Carpenter et al., 2001). Following an IPO, firms endowed with superior human capital are better able to effectively plan, strategize, and problem-solve, and thus are better able to develop and adapt to new routines. Further, superior human capital increases the likelihood that entrepreneurial opportunities will be ‘discovered’ as these firms find new ways to increase benefits by innovating or by engineering new processes. Again, profitable decision options diminish over time (Nohria & Gulati, 1996), making further investments difficult to recoup. Information deficits that emerge as diversity increases direct attention to financial controls reducing management’s propensity for strategic growth (Hitt et al., 1996). We propose:

Hypothesis 2b: Human capital at IPO is positively associated with allocations to market-creating capability formation/use.

Influence of Industry Membership and Uncertain Conditions

Industries impose demands on firms that may influence hypothesized relationships. This view is consistent with contingency theory assertions that environmental properties impose constraints on the range of actions that a firm might pursue (Goll & Rasheed, 1997). Further, because the degree of fit affects performance, it is important that adaptations of capabilities be appropriate for different industry contexts (Doty et al., 1993). Thus, we explore the moderating effects of environmental dynamism on capability formation and use. Dynamism refers to environmental instability and represents change that is difficult to predict. It is manifested in the level of uncertainty about forces that are often beyond the control of individual firms. Owing to resource constraints and legitimacy concerns, these effects are more salient for IPO-stage new ventures. These firms are particularly vulnerable to volatile conditions that require frequent strategic adjustments because of their relative inexperience in handling crisis situations and lack resources to withstand shocks. Such conditions make the identification of new opportunities more difficult, which restricts investments (Chattopadhay et al., 2001). Further, uncertain conditions increase the likelihood that firms will act in domains in which they are most familiar. Nevertheless, a firm’s propensity to preserve its financial resources will increase (Chattopadhay et al., 2001), reducing incentives to pursue new investments. We propose:

Hypothesis 3a: Dynamism positively moderates the relationship between financial capital at IPO and allocations to market-managing capability formation/use.

Hypothesis 3b: Non-linear association (inverted U-shaped) between financial capital at IPO and allocations to market-creating capability formation/use will be negatively moderated by dynamism.

Management teams that operate in environments with higher levels of dynamism face greater decision complexities. Such instability can create large, non-routine information-processing requirements. This restricts decision options and represents another instance of high external task demands in which managers devote attention to actions that respond to environmental changes rather than to value creation strategies. As dynamism increases, they rely more heavily on their ability to meaningfully interpret increasingly ambiguous information, which increases pressures to restrict investments in actions with uncertain outcomes (Chattopadhay et al., 2001). In turn, managers operating under these conditions are more likely to pursue internally directed investments, because these actions are more familiar to them and are generally less risky to implement. Therefore, dynamism at IPO will attenuate the effects of human capital on the formation of both configuration types following the IPO. We propose:
Hypothesis 4a: Dynamism positively moderates the relationship between human capital at IPO and allocations to market-managing capability formation/use.

Hypothesis 4b: Dynamism negatively moderates the relationship between human capital at IPO and allocations to market-creating capability formation/use.

Resources, Capabilities, and Performance: The Partial Mediation Effect

Central to RBV logic is the implicit assumption that capabilities ‘transform’ resource endowments (Dosi et al., 2002); outcomes therefore are a function not only of resource characteristics themselves, but of the way in which those resources are used (Morrow et al. 2007; Sirmon et al, 2007). We reason that the greater the functional capability a firm possesses, the more effectively it is able to deploy its resources. This view is consistent with earlier research by Datta and his colleagues:

One can think of capabilities as the efficiency with which a firm uses the inputs available to it (i.e., its resources, such as R&D expenditure), and converts them into whatever output(s) it desires (i.e., its objectives, such as developing innovative technologies). … Since capabilities are an intermediate step between resources and outputs, one can hope to see the inputs that a firm uses and the outputs it achieves, but one can only infer its abilities in converting one to the other (Datta et al., 2005: 278-279)

The key, we argue, is how effectively firms transform their resources to create value. Because capabilities represent a firm’s ability to use resources to achieve productive outputs (Amit & Schoemaker, 1993), benefits that firms realize from resource endowments are indirectly a function of the capabilities that use them. A strong market-managing capability (i.e., manufacturing, inventory management, financial reporting, etc.) entails the integration and coordination of complex tasks that enable firms to increase production throughput and to enjoy lower overhead costs, higher operating margins, and better cash flows. Collectively, superior market-managing capabilities produce lower cost structures and consume fewer resources when producing goods/services. When a firm’s market-managing capabilities are more effective than rivals, firm performance increases (Chen et al., 2004; Lieberman & Demeester, 1999). These capabilities also enable IPO-stage new ventures to diffuse legitimacy concerns arising from the demands of public trading, further enhancing their market performance (Certo, 2003). However, as allocations exceed the ability to capture incremental value, the returns that allocations to these capabilities require may not be generated.

As market-creating capabilities enable firms to establish new positions, allocations to these capabilities naturally enhance performance prospects as well. Despite the progress made in the empirical investigation of firm performance heterogeneity, there are few theories on how capabilities precisely affect firm performance. This is especially true of those ‘dynamic’ capabilities that enable extension of or augmentation to a firm’s market-managing capabilities. Knott’s (2003) theory of persistent heterogeneity, emphasizing the importance of market-creating capabilities to sustaining performance advantages over time, and Schumpeter’s (1942) views on ‘creative destruction’ support this perspective. Specifically, allocations to market-creating capabilities enable firms to sustain and/or further extend a venture’s competitive advantage by avoiding the inertia that inhibits development of new positions. For example, strategy research has linked performance gains with development of different market-creating capabilities, including in alliance management, post-acquisition integration, and strategic outsourcing. This chain of causality implies that such capabilities are a logical prerequisite to firms’ efforts at sustaining performance advantages. We propose:

Hypothesis 5: Allocations to capability formation/use partially mediate the influence of venture resources at IPO on IPO-stage new venture performance.
METHODS

Sample and Data

We rely on a sample of 632 U.S. ventures undertaking an IPO from 1996-2000. Young entrepreneurial firms, specifically IPO-stage new ventures, provide an important context to consider our questions. These firms confront many obstacles in their formation and growth—limits in resources, knowledge, and legitimacy. Our sample consists of U.S. ventures undertaking IPOs between 1996 and 2000. As with prior research involving IPO firms, several restrictions were applied. First, we restricted the sample to firms that were six years old or less at IPO (Robinson & McDougall, 2001; Zahra et al., 2000). Second, certain IPO types are excluded (Ritter, 1991): Regulation A offerings, REITS, spin-offs, banks and insurance companies experiencing a demutualization, closed-end mutual funds, and reverse LBOs. Finally, only single-product firms are included. Firm IPO prospectuses filed pursuant to the Securities and Exchange Commission’s (SEC) Rule 424(b)(1) provided information about the structure of each firm’s board of directors and included descriptions of directors and members of the TMT. Financial data were collected from Standard & Poor’s (S&P) COMPUSSTAT database. We compiled additional data from the Investor Responsibility Research Center (IRRC) Directors database, the Compact Disclosure database, the Center for Research in Securities Prices (CRSP) database, and Thomson Financial’s SDC Merger and Acquisitions database.

Dependent and intervening variables. We use an index-weighted three-year shareholder return measure to represent the growth (decline) in the economic value of each venture over the three-year period following the IPO year. Three-year shareholder return is defined as a firm’s stock market performance, which we calculate as the three-year index-weighted holding period return for a firm’s common stock. This calculation estimates stock price appreciation over a three-year period, including the monthly reinvestment of any dividends received. Specifically, we estimated shareholder return for each firm from the end of the first full fiscal year following a venture’s IPO to the end of the fourth full fiscal year (as adjusted for stock splits) plus average dividends over the three-year period, adjusted for changes in the S&P 500 Index for comparable time periods.

Indicators for the two new latent constructs were identified and factor-analyzed to establish the measures. Selected indicators include measures of ventures’ operating expenses, production efficiency and working capital management, capital intensity, and innovation. When combined to represent the configuration of organizational capabilities, these dimensions provide an overview of sample ventures’ resource allocation actions—specifically, how they configure organizational capabilities to compete against rivals in their given industry segments. We considered five indicators of market-managing capability formation/use: (1) direct production costs (e.g., cost of goods sold), (2) non-production overhead/administrative costs (e.g., selling, general, and administrative costs), (3) inventory turnover, (4) receivables turnover, and (5) payables turnover. We also considered five indicators to measure market-creating capability formation and use: (1) capital expenditures, (2) plant and equipment newness, (3) R&D, (4) advertising, and (5) the total value of acquisitions during the period. Selected indicators represent measures of discretionary expenditures that are controllable by a venture, each of which reflect realized allocations, rather than strategic intent (Finkelstein & Hambrick, 1990). They allow a more parsimonious analysis of strategic tradeoffs, are widely recognized measures of firm behavior, and are generalizable across industries (Hofer & Schendel, 1978).

Independent, moderator, and control variables. We represent financial capital at IPO as the difference between working capital ‘available’ and working capital ‘required’ at IPO (Brealey & Myers, 1996). Working capital available is defined as a firm’s cash and cash equivalents, accounts receivable, inventory, marketable securities, and other current assets; this figure includes the net proceeds raised by the firm from its IPO (i.e., amount raised after deducting underwriting discounts and offering expenses). Working capital required is defined as a firm’s current liabilities (e.g., accounts payable and accrued expenses).
measured in the quarter that immediate precedes the IPO. The TMT is comprised of the five senior-most executives across the top two tiers of management—specifically, the CEO, COO, CFO, and the two remaining highest ranking managers. Following previous studies, we comprise human capital using three indicators: elite education (% of TMT graduating from elite educational institutions; D’Aveni, 1990; Useem & Karabel, 1986), educational attainment (average number of years of higher education obtained by the TMT; Wiersema & Bantel, 1992), and industry experience (average number of years of work experience in a venture’s primary industry for the TMT; Wiersema & Bantel, 1992). Measures were collected from S&P’s COMPUSTAT database, Thomson’s New Issues database, and firm IPO prospectuses pursuant to SEC Rule 424(b)(1).

We test for industry membership using a market-based measure of environmental dynamism (Beckman et al., 2004). Specifically, we summed the market capitalization for each firm operating in an industry represented by one or more new ventures in the sample (classified with 3-digit SIC codes); this value represents the capital flows for each industry. We took the natural logarithm of each market capitalization value to reduce skewness and regressed industry market capital on time over the five years immediately preceding the year of a venture’s IPO (Keats & Hitt, 1988). Dynamism is determined by dividing the antilog of the standard error of the slope coefficient by the mean value of the dependent variable (market capitalization) for industry segment \( k \). We also control for age at IPO, firm size, CEO duality, board structure (e.g., percentage of inside directors), TMT/director ownership (percentage of shares owned by officers and directors), environmental munificence, and year indicators/dummies (control for systematic differences across the five periods).

**Model Specification**

We use random coefficient modeling (RCM) to test the hypotheses (Singer & Willett, 2002), allowing examination of these relationships across different levels of analysis. Specifically, we model relationships at two levels: level-1 or the between-firm level (within industry), which consists of firm-specific attributes, and level-2 or the between industries-level, which consists of industry-specific characteristics. We followed the approach advocated by Raudenbush and Bryk (2002) to fit multilevel models Consistent with this approach, we began each analysis by fitting an unconditional means model (e.g., the so-called “null” model) that contains no predictors at level-1 or level-2 to partition the variance into between-firm/within industries and between-industry components. Independent, moderator, intervening, and control variables were added to each subsequent model to test the hypothesized relationships. All hypotheses were tested using SAS’s (software package) PROC MIXED procedure. Further, we simultaneously test for indirect effects involving the two dimensions of capability formation using the multivariate extension of the product of coefficients strategy available for models involving multiple mediators. This test uses the multivariate delta method (Bishop et al., 1975) to derive the standard error of the total indirect effect using the formula derived by Sobel (1982).

**RESULTS**

Overall, the results of the empirical analyses lend support for most of the study’s hypotheses. In particular, the combination of these results and the underlying theoretical logic lends partial support for the indirect effect of capability formation and use account on the relationship between venture resources at IPO and the market performance of new ventures following an IPO. Specifically, we find that resource endowments at IPO have a direct and meaningful influence on the formation and use of different organizational capabilities following the IPO. As expected, financial capital is positively associated with the formation and use of market-creating capabilities (Hypothesis 1a). This finding is consistent with the view that young, entrepreneurial firms allocate financial resources to strengthen administrative capabilities following an IPO, in part, because they face a ‘liability of market newness’ and also because they require additional competencies to cope with the demands of public trading (Certo, 2003). In contrast to the inverted U-shaped relationship posited in Hypothesis 1b, however, we find that financial capital has
a U-shaped association with the formation and use of market-creating capabilities for new ventures following an IPO. This suggests that firms initially focus attention on short-term returns, pursuing investments that enable them to exploit existing positions, rather than investing initially in new ones; in other words, young firms tradeoff investments in exploitation and exploration to balance demands on the firm (Gupta et al., 2006). It is possible that new ventures recognize these complexities and opt to exploit existing positions before pursuing new ones. Further, we also find that human capital is associated with capability formation and use following an IPO. Specifically, human capital is negatively associated with market-managing capability formation and use (Hypothesis 2a) and positively associated with the formation and use of market-creating capabilities (Hypothesis 2b). Firms with superior human capital appear more effective at leveraging capabilities to exploit existing positions.

Results also provide partial support for the view that environmental dynamism weakens the influence of venture resources on the formation and use of different capability configurations. Specifically, we find, in contrast to the positive association posited in Hypothesis 3a, that dynamism negatively moderates the relationship between financial capital and market-managing capability formation/use. This contrasts with Chattopadhyay et al.'s (2001) findings that firms facing uncertain competitive conditions tend to direct investments to internal activities; entrepreneurial firms facing uncertain market conditions appear more likely to conserve scarce resources rather than increase investments in this area. Consistent with Hypothesis 4a, we find that dynamism weakens (positively moderates) the negative relationship between human capital and market-managing capability formation and use. Whereas in stable conditions, firms with superior human capital are likely to reduce investments in capabilities aimed at exploiting existing positions, these same management teams are more likely to fortify investments in this area, possibly to buffer the firm against future uncertainties (Agarwal et al., 2002). However, we find no signification interaction between dynamism and either financial capital (Hypothesis 3b) or human capital (Hypothesis 4b) on market-creating capability formation and use.

Finally, results provide partial support for the assertion that the formation and use of different capability configurations account in part for the value created from resource endowments controlled by firms following an IPO. More specifically, we find that financial and human resources in combination with the formation of use of organizational capabilities enhance shareholder return. Specifically, tests of the total (combined) indirect effects for financial capital and human capital, respectively, through the two dimensions of capability formation and use were significant (Hypothesis 5). Further, tests of the specific (individual) indirect effects (of each path) for the two resource types through the two dimensions of capability formation and use suggest the effects of each capability configuration are distinct. In particular, we find that the indirect effect of financial capital and human capital on shareholder return through market-managing capabilities to be significant, while the indirect effect of the two resource types on performance through market-creating capabilities to be non-significant. Collectively, these results support the assertion that capability formation and use partially mediate the relationship between venture resources and IPO-stage new venture performance. Test results are summarized in Tables 2-4.

**DISCUSSION AND CONCLUSIONS**

Understanding how resource use facilitates achieving organizational goals is fundamental to theories of how firms act, evolve, and perform. We find that evolutionary theory (Nelson & Winter, 1982) and dynamic capabilities literature (Teece et al. 1997) provide useful perspectives for examining these factors in combination, especially how underlying routines infuse resources with sustainable value, allowing them to be managed for greater advantage across different industry settings. More specifically, by employing an integrative, multidisciplinary approach, we find that adjustments to the configuration of organizational capabilities affect performance prospects over time. More specifically, we find that adjustments to the configuration of organizational capabilities and the narrowing of capability gaps enhance performance and survival prospects over time. We also find that industry conditions moderate this relationship. Finally, we find that capability formation/use partially mediates the relationship between
resources at IPO and performance. Our results confirm that different capability configurations compete for firm resources, necessitating tradeoffs in allocation decisions between them.

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NOTES

1. Resources, broadly defined, have often been used in the literature in a generic sense to also include capabilities (e.g., Barney, 1991). Others claim that capabilities reflect how firms manage resources (e.g., Dutta et al., 2005) or that capabilities represent a unique combination of resources that enable firms to pursue specific actions that create value (Sirmon et al., 2007). For purposes of this study, we use ‘resources’ to represent tangible or intangible assets (Barney, 1991) that new ventures’ own, control, or are provided access to on a semi-permanent basis, and that allow them to implement their strategies. By contrast, ‘capabilities’ represent organizational routines that allow firms to effectively integrate and use resources to implement their strategies (Lavie, 2006; Winter, 2003). Capabilities serve as the intermediate transformation between allocations of resources by new ventures and the outcomes such resources are intended to achieve (Dosi, Nelson, & Winter, 2002; Lavie, 2006; Winter, 2000).

2. Winter (2000: 983) describes organizational capabilities as “high-level routine[s] (or collection[s] of routines) that, together with its implementing input flows, confers upon an organization’s management a set of decision options for producing significant outputs of a particular type.” ‘Decision options’ language emphasizes a managerial control aspect. ‘Implementing input flows’ is a reminder that production output requires actual inputs before the information processing features of a capability can be enacted.

3. Available financial capital (AFC) bears some resemblance to the concept of free cash flow (FCF); however, the two concepts are considered distinct. FCF assumes the only investment alternatives available for the allocation of FCF are unprofitable alternatives. By contrast, AFC represents financial capital in excess of amounts needed to satisfy current operational demands (Cyert & March, 1963) and assumes that AFC exists because firms have more resources than required to satisfy current demands.

4. Results for Hypotheses 1-5 are available from the lead author upon request. Results of the tests of the validity of measures for the two dimensions of capability formation and use, including descriptive statistics for the items and examination of the rotated factor patterns, are also available upon request.

REFERENCES


### Table 1: Two Dimensions of Capability Formation and Use

<table>
<thead>
<tr>
<th></th>
<th>Market-Managing Capability Formation/Use</th>
<th>Market-Creating Capability Formation/Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emphasis</strong></td>
<td>Operational/administrative focus.</td>
<td>Development/growth focus.</td>
</tr>
<tr>
<td><strong>Underlying Routines</strong></td>
<td>Operating routines that involve the execution of ‘known procedures’ that are used by firms to satisfy ongoing productive activity.</td>
<td>Dynamic routines that bring about desirable changes—i.e., introduction of new products, entry into new geographic markets, etc.— in the existing set of operating routines.</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Market-managing capabilities bring stability to and thus leverage existing product-market positions. They permit new ventures and established firms to more efficiently and more effectively produce goods or services and to manage related productive and administrative activity using routines that exploit existing product-market positions.</td>
<td>Market-creating capabilities are used by new ventures to extend or substantially augment existing product-market positions, to create new product-market positions, or to alter the process(es) by which future goods and services are produced. They also permit ventures to alter the process(es) by which future goods and services are produced.</td>
</tr>
<tr>
<td><strong>Value Creation Potential</strong></td>
<td>Value-enabling because they exploit existing product-market positions and bring stability and greater efficiencies to existing business activity and therefore affect current performance.</td>
<td>Value-enhancing because they influence performance in the future, permitting ventures to achieve growth by altering organizational scale and scope thereby converting existing and newly accessed resources into new product-market segments that enable competitive advantages to be sustained.</td>
</tr>
<tr>
<td><strong>Examples of Venture Capabilities</strong></td>
<td>Manufacturing, distribution and logistics management, procurement and inventory management, finance and financial reporting, labor relations and human resource management, and service management and customer support.</td>
<td>Research and development, engineering design, brand development and advertising, new product introduction, alliance formation and management, mergers and acquisitions, and divestitures.</td>
</tr>
<tr>
<td><strong>Approaches to Capability Development</strong></td>
<td>Different ways to develop or enhance market-managing capabilities include: development of demand and supply planning capabilities leading to more reliable and predictable forecasting of production and inventory requirements; use of decentralized cross-functional team-based structures that facilitate increased spans-of-control by eliminating management layers and bureaucracy; improvements to manufacturing and facilities management capabilities that enable firms to reduce cycle times and increase thereby reducing per unit costs; and the integration of specialized capabilities from intermediate markets that allow firms to increase efficiencies through strategic outsourcing.</td>
<td>Approaches to developing or enhancing market-creating capabilities through allocations of available resources include: investments in capabilities aimed at improving the quality and effectiveness of basic and/or applied research abilities; cultivation of interfirm linkages and alliances in different industries and geographic markets to maximize the potential for accessing novel, specialized market information or to facilitate entry into uncertain markets; and development of specialized capabilities that support the evaluation of, negotiation with, and integration of acquisition targets and alliance partners enabling firms to further diversify and expand the scale of their revenue-producing activities.</td>
</tr>
</tbody>
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### Table 2: Analysis of Resources on Market-Managing Capability Formation/Use

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
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<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
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<tr>
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<td>—</td>
<td>0.77**</td>
<td>0.85**</td>
<td>0.96**</td>
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<td>Human capital at IPO</td>
<td>—</td>
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<tr>
<td>Financial capital X Dynamism</td>
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<td>-5.59**</td>
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<tr>
<td>Deviance (-2ResLogLik)</td>
<td>3377.2</td>
<td>3219.3</td>
<td>3162.3</td>
<td>3102.9</td>
<td>3053.4</td>
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<td>-57.0***</td>
<td>-59.4***</td>
<td>-49.5***</td>
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### Table 3: Analysis of Resources on Market-Creating Capability Formation/Use

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
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<th>Model 3</th>
<th>Model 4</th>
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<tr>
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<td>-10.75***</td>
<td>-10.68***</td>
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<tr>
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<td>0.29***</td>
<td>0.32***</td>
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<tr>
<td>Human capital at IPO</td>
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### Table 4: Analysis of the Indirect Effects of Venture Resources and Shareholder Return

<table>
<thead>
<tr>
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<td>-0.071***</td>
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<td>Market-creating capability formation/use</td>
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<td>Human capital at IPO</td>
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<td>0.057**</td>
<td>-0.044†</td>
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*a n = 632. *** p < .001; ** p < .01; * p < .05; † p < .10 (For all Tables)

b For Table 4 only. The dependent variable in Models 1, 2, 5, and 6 is 3-Year Shareholder Returns. The dependent variable in Model 3 is Market-Managing Capability Formation/Use. The dependent variable in Model 4 is Market-Creating Capability Formation/Use.