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The Importance of Slack for New Organizations Facing 'Tough' Environments

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ABSTRACT Strategy-based models centre on the management of unique and valuable resources to take advantage of specific market opportunities. Less examined in this approach are the roles of slack resources in the process of generating firm value – particularly for new firms in 'tough' environments where fewer opportunities are available. Using a cohort panel of 951 new manufacturing firms over nine years, our findings provide evidence for the importance of financial slack resources in understanding opportunity generation and also for reconciling theoretical arguments regarding the slack resource–performance link. We find that while financial slack does provide buffering capacity (in hostile and dynamic environments), and flexibility for experimentation (in munificent and dynamic environments) as suggested by prior theory, the most positive relationship between financial slack and performance for new firms was in low discretion environments (hostile and stable environments) – where firms need to develop their own opportunities. The implications of these findings for theory are discussed.

INTRODUCTION

Large established firms often focus on extracting profits from current product lines and are unwilling or unable to capitalize on new opportunities that develop due to inertia (Agarwal and Audretsch, 2000). In contrast, new firms must continue to discover and exploit new opportunities to enhance profitability (Wu, 1989). Such opportunities can be triggered by changes in the environment (Shepherd et al., 2007). For example, highly dynamic environments characterized by change and uncertainty generate more opportunities for value creation (Zahra, 1993). Highly munificent environments reflect market growth and more attractive opportunities for a broader number of competitors (Castrogiovanni, 1991). Upon discovery, organizations still need resources to 'capitalize' on these opportunities. Slack resources provide discretionary funding to pursue new projects, improve processes, and/or develop new markets. It would appear that the route to superior profits is limited to organizations well positioned in environments presenting many attractive opportunities and also having the slack to capitalize on those opportunities.

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However, there is a growing literature and evidence that some firms generate above average returns in 'tough environments' identified by a scarcity of opportunities available across several environmental factors. For example, Baker and Nelson (2005) found evidence of firms extracting profits from seemingly invaluable resources in low growth industries. The resource-based literature (RBV) has addressed this through the notion of incomplete market information and the ability of firms to recombine resources in novel ways unforeseen by competitors that increase returns to the firm (Denrell et al., 2003). Furthermore, RBV scholars have started to address in greater detail 'how' firms manage the process of transforming unique resources to create value while considering environmental contingencies (Sirmon et al., 2007). But less is known about the role of slack resources, though less unique, in generating opportunities for profit under tough environmental conditions. Specifically, what is the role of financial slack in enhancing profitability across environments that differ in their favourability – environments that generate many attractive opportunities for profit and environments that do not? We address this void in resource-based arguments by drawing from the managerial discretion and bricolage literatures to develop and test a model that explains the differential role of slack in generating opportunities for profit under tough environmental conditions. The amount of slack that a firm maintains is often a strategic decision (Bourgeois, 1981) – too much slack leads to inefficiencies (Leibenstein, 1969) and too little slack leads to constraints in decision making (Yasai-Ardekani, 1986). Managerial discretion, or 'latitude of action' informs us of slack's role in the breadth of strategic choice in concert with other environmental, organizational, and managerial characteristics (Hambrick and Finkelstein, 1987). Levi-Strauss's (1966, p. 17) concept of bricolage is often explained as making do 'with whatever is at hand' (Baker et al., 2003; Levi-Strauss, 1966; Weick, 1993). A growing literature has used the concept to explain patterns when firms encounter challenges in resource constrained environments (Baker and Nelson, 2005; Garud and Karnoe, 2003). We adapt these here to develop arguments for slack–performance relationships in differing contexts.

In doing so, we make three primary contributions. First, resource-based studies have focused on the possession of rare and valuable resources in generating a sustainable competitive advantage. Our model proposes that financial slack, while not unique, plays an important strategic role in firm performance and adds to the explanatory power of resource-based arguments. By examining the slack–performance link in combination with different environmental contexts, we find that financial slack resources have relationships with performance that differ from RBV resource propositions in substantive ways. Second, scholars have focused on organizations capitalizing on opportunities arising from (or in) favourable environments (Eisenhardt and Schoonhoven, 1990) and the role of slack in doing so (e.g. Cheng and Kesner, 1997; Patzelt et al., 2008). We give greater prominence to acting on opportunities for profit under tough environmental conditions. In doing so, we offer a more fine-grained and strategic treatment of the role of slack given the nature of the environmental conditions that a firm faces. Third, in the strategy/finance literature there are two streams of thought on the slack–performance relationship. One view indicates that slack has negative effects on performance by allowing strategic and structural mismatches that increase inefficiency (Brush et al., 2000; Jensen and Meckling, 1976; Leibenstein, 1969; Litschert and Bonham, 1978;

Yasai-Ardekani, 1986). Another viewpoint suggests that slack positively effects performance through intra-organizational cooperation, increased experimentation, and buffering from external shocks (Bourgeois, 1981; Cyert and March, 1963; Meyer, 1982). Empirical results are mixed but have been somewhat empirically reconciled by the introduction of a squared term where the slack–performance relationship is curvilinear (George, 2005; Tan, 2003; Tan and Peng, 2003). Although we empirically accommodate a curvilinear relationship, we also offer a theoretical reconciliation by explaining how and why the slack–performance relationship varies depending on how favourable the environment is for presenting opportunities for profit to new firms.

The paper proceeds as follows. First, we introduce the notion of opportunity availability in different environments. Next, we consider slack resources and their role in managerial discretion. Then, we examine the slack–profitability link considering the combined contexts of environmental dynamism and munificence. We conclude with a discussion of the implications of our model and findings.

OPPORTUNITIES TO ENHANCE PERFORMANCE

Opportunities are situations or conditions that are favourable to goal attainment (Sarasvathy et al., 2003). A primary goal of business is to develop firm value (Conner, 1991). Broadly, scholars have emphasized two sources of opportunities in value creation – the firm and the environment.

Financial Slack and Opportunities for Profit

If the firm is required to generate its own opportunities internally, its success will be determined in part by the managerial discretion it has to generate novel combinations of currently held resources. One important antecedent to managerial discretion is the availability of slack resources (Hambrick and Finkelstein, 1987). Slack develops when a firm is able to maintain resources in excess of those needed for basic operating expenses (Bourgeois, 1981; Cyert and March, 1963). For new firms, the slack resources available are not only from operations, but also from an initial stock of capital that shields the firm (Fichman and Levinthal, 1991). In either regard, slack serves several key functions.

Slack buffers the firm from internal and external variation (Cyert and March, 1963; Pfeffer and Salancik, 1978; Thompson, 1967), reduces intra-organizational conflict by providing resources for a wider variety of projects (Cyert and March, 1963), and allows firms to experiment leading to organizational change and innovation (Nohria and Gulati, 1996). However, slack may also have negative consequences: higher levels of slack have been associated with firm inefficiency through investments in projects that do not increase shareholder value (Jensen, 1986; Leibenstein, 1969), diminished willingness to accept risk (Miller and Leiblein, 1996), and the acceptance of strategic or structural mismatches with the environment (Litschert and Bonham, 1978). How can these competing perspectives regarding slack be reconciled? One approach has been to consider whether there is an optimal level of slack after which there is diminishing (and perhaps negative) returns (George, 2005; Tan and Peng, 2003). Another approach has been to examine whether different forms of slack have greater applicability for different strategic

approaches (Love and Nitin, 2005; Mishina et al., 2004). This study considers another possibility – the nature of slack–performance relationship is dependent on the availability of resources in the environment.

The exchange between organizations and their environments has broadly been described from two vantage points. Some envision environments as 'stocks of resources' while others view environments as 'sources of information' (Aldrich and Mindlin, 1978; Scott, 2003). Both dependency on resources and uncertainty of information are aspects that challenge firms as they make strategic decisions. Attempts to empirically assess the environment are often considered along the specific dimensions of dynamism, munificence, and complexity (Aldrich, 1979; Dess and Beard, 1984; Keats and Hitt, 1988). Dynamism reflects the rate of change and magnitude of instability in the environment generating greater uncertainty and knowledge asymmetries among competitors. Munificence reflects the availability of resources in the environment when industries are growing. Complexity reflects the amount of information processing required to make strategic decisions and is related to the concentration of competition in the industry. While complexity is clearly an important consideration in a strategic response (George, 2005), it is less frequently associated with opportunity generation in the literature than is munificence or dynamism (e.g. Eisenhardt and Schoonhoven, 1990; Sirmon et al., 2007). This may arise because increased complexity is more closely associated with adjustments to current organizational structure and decentralizing decision making when information processing requirements are higher (Bobbitt and Ford, 1980; Keats and Hitt, 1988; MacCrimmon and Taylor, 1976). Thus, we examine the slack–performance relationship with the contingent and combined effects of dynamism and munificence.

While doing so, we recognize the following boundaries to this study. First, slack may take a number of forms within the organization (for a review, see Daniel et al., 2004).[1] A fundamental difference in these slack resources is the degree of managerial discretion available in their deployment (Sharfman et al., 1988).[2] In this study we focus on available slack, or more specifically called here financial slack (Mishina et al., 2004). New firms often begin primarily with financial resources allocating these to other resource forms over time. Financial slack is readily available to be put to alternate uses as the firm develops its strategy and processes and can also be redirected if the environment changes (Cheng and Kesner, 1997). Slack from debt/equity (potential) or inventory (recoverable) are possible, but are less accessible and less flexible than financial slack, respectively. Instead, we control for these other forms of slack isolating the effect of financial slack on performance over time for new firms. Second, we investigate financial slack and describe it in terms of the managerial discretion it provides. We do not measure managerial discretion per se as it can be affected by other factors, but slack is well established as one, if not the most, 'discretionary' resource (Hambrick and Finkelstein, 1987; Sharfman et al., 1988). Finally, we investigate performance in terms of profits while recognizing that other measures of performance may require different logics for slack allocation (Mishina et al., 2004; Penrose, 1959). Indeed, firms want to confirm that opportunities are profitable before pursuing growth on a larger scale (Davidsson et al., 2009). We do provide supplementary analysis with a growth dependent variable for comparative purposes and discussion.

Environmental Dynamism, Financial Slack, and Opportunities for Profit

Environmental dynamism refers to the rate of change and the magnitude of instability in the external environment. This instability creates deficits in information regarding cause and effect relationships between environmental factors and outcomes (Duncan, 1972; Sirmon et al., 2007). Incomplete information leads to greater uncertainty in strategic decisions regarding questions of state (e.g. What is going to happen?), effect (e.g. How will this impact our organization?), and response (e.g. What action are we going to take?) (Milliken, 1987). Highly dynamic environments are associated with greater uncertainty and more potential opportunities. Technology breakthroughs, globalization, regulatory shifts, and other changes generate opportunities for firms who are able to recognize and exploit new means–ends frameworks (Bhide, 2000; McMullen and Shepherd, 2006; Sarasvathy, 2001). Dynamic environments create asymmetries in information leading to shortages or surpluses in the markets and opportunities for firms with specific knowledge of how to evaluate and capitalize on these market inefficiencies (Kirzner, 1997; McGrath, 1997). Evidence suggests that firms pursuing new opportunities through entrepreneurial strategies have enhanced performance in these environments (Miller, 1988; Wiklund and Shepherd, 2005; Zahra, 1993).

Generally for firms, low dynamic (highly stable) environments change less and thus offer greater certainty for competing firms to assess the current and future state of the environment (Milliken, 1987). This reduced uncertainty means that resource input valuations will be widely known and more closely reflect their 'realizable' economic value, reducing opportunity for generating rents (Barney, 1986). If it is (even approximately) the case that existing resources are accurately valued related to their current uses, then how are opportunities generated in stable environments? One avenue may be the introduction of complex resources that are difficult for others to evaluate due to their novelty. These complex, causally ambiguous resources are combinations of resources modified or connected in ways that are idiosyncratic, creating at least short-term advantages for the firm (King and Zeithaml, 2001). To the extent that these complex, causally ambiguous resources are also path dependent and involve time compression diseconomies, the advantage for the firm can be extended (Dierickx and Cool, 1989; Reed and DeFillippi, 1990). These complex resources might include: teams with considerable experience working together, factory buildings with permanent fixtures, and unique equipment that has been customized making it difficult or costly to replicate (Denrell et al., 2003). One could imagine a company hiring an employee of a competitor to learn about and hopefully acquire their novel approach. Even with this employee transfer, it would be difficult for an individual to transfer know-how of uniquely customized processes or knowledge dispersed across an experienced team and reassemble it with the same effectiveness in another company.

From one perspective, it appears that financial slack is necessary to move quickly to grasp opportunities presented by changes in the environment (Sharfman et al., 1988) and therefore performance could be expected to increase with financial slack but at a faster rate for those in more dynamic environments. Rather than focus on externally presented opportunities, we offer a different perspective – one that focuses on the

internal generation of opportunities. That is, it is possible that firms may find opportunity in the combination of inputs that individually have little or no value in the market. Baker and Nelson (2005) found that firms used bricolage, or 'making do by applying combinations of the resources at hand to new problems and opportunities' (Baker and Nelson, 2005) to generate value from resources discarded or ignored by the market. It appears that while environmental uncertainty – a characteristic of a highly dynamic environment – creates the basis for a firm's asymmetric information advantage when it comes to opportunity, low dynamic environments requires that this uncertainty be created by the firm itself through novel (re)combinations. Once created, these complex resources may be difficult to imitate (Denrell et al., 2003). For example, imitating the resource may be difficult due to time compression diseconomies where the faster a firm attempts to develop the resource, the greater its cost of development (Pacheco-De-Almeida and Zemsky, 2007).

Specifically, new firms often find it difficult to obtain capital regardless of industry sector (Mason and Harrison, 2003). However, financial resources are often more available from external capital sources (i.e. initial public offerings, business angels, and venture capitalists) for opportunities in dynamic environments than in stable environments. Why? Venture capital firms typically invest in younger firms that 'operate in markets that change very rapidly' (Gompers and Lerner, 2001, p. 145), such as high technology (Bygrave and Hunt, 2005) and biotechnology (Lerner, 1994). In contrast, there are fewer external sources of equity funding in stable environments. Stable environments are often perceived by venture investors and the initial public offering markets as highly competitive, boring, and with limited upside potential (Gompers and Lerner, 2001). Thus, these new firms in stable environments must rely more on their financial slack to generate opportunities than do new firms pursuing opportunities in dynamic environments.

Slack facilitates experimentation to generate new products, services, procedures, or ideas (Cyert and March, 1963; Woodman et al., 1993) and increases managerial discretion to search broadly for valuable opportunities; both of which lead to higher rates of innovation (Cohen and Levinthal, 1990; Damanpour, 1991; Farr and Ford, 1990; Tushman and Nelson, 1990). These innovations are particularly important to new firms which do not have the well developed internal routines or extensive social networks that established firms have to enhance profitability (Stinchcombe, 1965). Indeed, while the attention and available resources of established firms are commonly directed towards the refinement of previously established routines, relationships, and processes (Ocasio, 1997), new firms must focus on establishing distinctive competencies and capabilities to gain an attractive market position. When dynamism is higher, new firms can rely on knowledge or skills that are not widely understood to develop a foothold in the market. These attractive market positions are harder to find in stable environments because information is more accessible among competitors, therefore financial slack is particularly critical to enable new firms to create a market niche to improve performance (Agarwal and Audretsch, 2000). Thus,

Hypothesis 1: For new firms, profitability increases with financial slack but at a faster rate in more stable environments than in more dynamic environments.

Environmental Munificence, Opportunities for Profit, and Financial Slack

Munificence is identified by the availability or scarcity of resources in the environment (Aldrich, 1979; Dess and Beard, 1984). Higher munificence environments are identified with increasing growth and higher absolute levels of resources. Higher resource availability increases potential inputs and the likelihood of developing complex resources that generate above average economic returns (Sharfman et al., 1988). Resource availability reduces selective pressures in the environment and increases opportunity by allowing a greater diversity of goals, strategies, and organizational structures (Brittan and Freeman, 1980).

Generally for firms, low munificence, or hostile environments, reflect lower market growth and greater competition for limited available resources (Castrogiovanni, 1991). Resource shortages in the environment have been shown to constrain strategic planning and limit the flexibility of firms (Koberg, 1987; Pfeffer and Salancik, 1978). Reduced strategic options lead to fewer opportunities for firms to gain a competitive advantage in the market. From one vantage, highly munificence environments necessitate rapid decision making (Baum and Wally, 2003; Eisenhardt, 1989) and greater discretion of managers in implementing strategic choices that improve performance (Finkelstein and Hambrick, 1990). Given that financial slack can facilitate rapid action and managerial discretion, the perspective would suggest that performance increases with financial slack but at a faster rate for those in more munificent environments. However, we offer a different perspective where financial slack is more important for firms in hostile environments (less external resources are available) in order to generate new opportunities.

Penrose's (1959) resource-based arguments suggested that firms are not necessarily limited by the resources at hand because of the many potential combinations of services that these available resources can offer. For example, in the development of the Danish wind turbine industry, 'many different resources were reused, combined and deployed by constellations of different players, with the entire bricolage process supporting and demonstrating "distributed agency" (Garud and Karnoe, 2003), rather than "heroic" individually driven entrepreneurship' (Baker and Nelson, 2005, p. 333). These creative new combinations of resources can overcome limitations to action (Weick, 1979), allowing managers to disregard the limitations of material inputs, try out new solutions, and deal with the results. Firms that made the most of the resources at hand, were 'actively exercising their tolerance for ambiguity and messiness and setbacks, and their ability to improvise and take advantage of emerging resources and opportunities' (Baker and Nelson, 2005, p. 356).

Limited resources in the environment require that firms depend more on internal resources to develop opportunities. Higher levels of internal resources have been associated with increased innovation and a willingness to explore new options even when environmental threats are higher (Damanpour, 1991). Voss et al. (2008) provided some evidence for this argument when they found that resource availability in non-profit theatres was associated with increased exploration rather than exploitation when environments were more threatening. It appears that financial slack helps firms by increasing managerial discretion and the pool of creative options available internally to the firm (Woodman et al., 1993).

Specifically, new companies are particularly vulnerable to a lack of available capital needed to respond to opportunities and threats (Shane, 2003). Start-ups with more capital are more likely to survive, grow, and become profitable because available resources buffer the firm from adverse conditions (Bates, 1995; Carroll and Hannan, 2000; Delacroix and Swaminathan, 1991). Available capital also influences external stakeholders' perceptions of legitimacy and stability providing partners for new firms to convert opportunities into financial returns (Baum, 1996). Finally, the strategic choice of maintaining available resources as a new firm adapts to a scarce environment increases the potential avenues for profiting from developing opportunities. Therefore,

Hypothesis 2: For new firms, profitability increases with financial slack but at a faster rate in more hostile environments than in more munificent environments.

Environmental Dynamism and Munificence, Opportunities for Profit, and Financial Slack

For organizations to be competitive, strategic decisions must be comprehensive by accounting for multiple contextual dimensions (Miller and Friesen, 1983; Wiklund and Shepherd, 2005). Growing markets may be characterized by *high dynamism and high munificence* (Eisenhardt and Schoonhoven, 1990). Increasing market size and the possibility for above average returns attracts new entrants. This competition increases the rate of change and uncertainty in the environment as the number of firms and the nature of competition changes (Tushman and Anderson, 1986). In this rapidly changing environment (Eisenhardt, 1989), new firms have greater opportunities to challenge dominant designs or paradigms that may have been developed by older firms who invested during market emergence (Eisenhardt and Schoonhoven, 1990). High discretion environments characterized by high growth rates and demand instability increase the role of managerial decision making as an explanation of firm performance (Finkelstein and Hambrick, 1990; Goll and Rasheed, 1997). Market imperfections due to incomplete information provide opportunities to intentionally choose an alternative strategy, or out of necessity, develop idiosyncratic resource combinations using knowledge and capabilities unique to the firm (Baker and Nelson, 2005; Denrell et al., 2003). Higher munificence indicates greater resource availability for these new opportunities. Though greater uncertainty in outcomes might entail greater risk of downside loss, there is also a countervailing incentive to try new options due to diminished competition for resources.

Low dynamism and low munificence environments have the characteristic of mature markets. Customer familiarity with products leads to established buying preferences and reduced variation for a given market (Hambrick et al., 1982). This reduced uncertainty allows competitors to establish patterns in production processes, product designs, and modes of service (Eisenhardt and Schoonhoven, 1990; Porter, 1980). Reduced uncertainty favours larger firms due to efficiencies that can be extracted from economies of scale developed by larger capital outlays. Therefore, younger or smaller competitors will be limited to strategic niche opportunities where they do not compete with larger

established competitors (Agarwal and Audretsch, 2000; Caves and Porter, 1977). Low munificence environments indicate greater competition for resources with the ratio of environmental opportunity to environmental capacity decreasing for the industry as a whole (Castrogiovanni, 1991). Low munificence further reduces strategic opportunities in stable environments.

Decisions regarding resource management are important to competitive advantage and are influenced by the firm's context (Zott, 2003). Recent theory addressing environmental contingencies for RBV indicates that there are advantages for firms acquiring resources that allow preferential access to future options in uncertain environments (Sirmon et al., 2007). Furthermore, these resource options become more valuable in less munificent environments when fewer resources are available. These resources allow greater adaptability to a variety of future opportunities with reduced downside risk. What is *not* addressed is strategic choices related to slack necessary to acquire those resources.

When munificence and/or dynamism is high, the environment is a source of resources and opportunity (Pfeffer and Salancik, 1978). 'Growing markets suggest brisk activity, market opportunities, funding sources, and competitive variation' (Hambrick and Finkelstein, 1987, p. 381). Similarly, dynamic environments are associated with shifting demand patterns providing opportunities for firms to create and exploit new means–ends frameworks (Sarasvathy, 2001; Zahra, 1993). These environments provide both necessary resources and opportunities for the firm. In contrast, when variation is reduced, there is greater competition for the same market space requiring the firm to be resourceful in creating its own opportunities. Yet, firms without resources, specifically financial slack resources, are restricted in the range of viable solutions available to managers (Yasai-Ardekani, 1986). The ability to be resourceful requires at least some level of discretionary resources to generate strategic opportunities and this is particularly true in low dynamism/low munificence environments (Carroll and Hannan, 2000; Delacroix and Swaminathan, 1991). Firms can be disciplined by this scarce environment increasing the utility of financial slack resources on performance.

Specifically, new firms often seek a niche in hostile markets where the profit potential for established corporations is not large enough to cover their fixed evaluation and monitoring costs (Bhide, 2000). While innovation is often a source for market entry, many new firms compete without a unique product or service. Bhide's (2000) study of 'Inc. 500' companies found that 88 per cent of the companies surveyed reported their initial success as the 'exceptional execution of an ordinary idea'. Available resources allow new firms to innovate or execute more effective strategies with ordinary ideas against other undercapitalized firms in markets where opportunities appear limited. Therefore,

Hypothesis 3a: For new firms, the positive relationship between financial slack and performance will be strongest when the environment is both stable and hostile.

Hypothesis 3b: For new firms, the positive relationship between financial slack and performance will be weakest when the environment is both dynamic and munificent.

RESEARCH METHODS

Sample

The sampling frame (1994–2002 inclusive) was drawn from a database of all Swedish firms compiled from various official government data registers. All incorporated companies must register with the Swedish patent office before commencing operations, and must file annual reports (which are certified by a chartered accountant). Similarly, initial industry affiliation and changes in affiliation must be reported by companies to Statistics Sweden and are included in the database. Our selection of a panel cohort of all new firms starting within given industries in 1994 provides at least four distinct advantages. We eliminate the likelihood of survivor bias by starting with firms in the first year of existence. Additionally, we strengthen our design by including all new firms within a given industry, eliminating potential selection concerns. As a result, we are better able to achieve 'quasi-comparability' on our variables of interest – financial slack resources and the environment (Cook and Campbell, 1979). The fact that all firms pass through the same environmental changes at the same age reduces unobserved heterogeneity. Finally, our study compares firms by industry for each year after founding. This is particularly critical as each year in firm development involves its own hazards in learning organizational processes, establishing social ties to stakeholders, and establishing a market for products and services (Shane, 2003). New firms were selected from both high technology industries (aerospace, computers, electronics, pharmaceuticals, technical machinery) and non-technology intensive industries (wood and paper products, materials manufacturing, manufacturing and recycling) to capture variation in industry environments. The initial panel contained 8928 observations for 1357 firms. Independent new organizations' resource availability and allocation of slack resources may be quite different from subsidiaries of parent organizations (Brown et al., 2005). Therefore, we eliminated 197 subsidiaries from our sampling frame. The feasible generalized least squares (FGLS) technique used in this study required the elimination of 125 firms with only one initial observation and 71 firms with extensive missing data to achieve convergence. An examination of eliminated firms with one year of data revealed that essentially all had no sales or employees and could be considered companies that never began operation ('shelf' companies). Therefore, the final sample represents 951 firms and 6158 observations.

Dependent Variable

Performance was measured as operating profit or revenues minus expenses (EBIT). This definition best captures the concept of entrepreneurial profit discussed in the theoretical literature (Shane, 2003). Profit is the most commonly monitored measure by owners of new organizations to determine how well management achieved sales and controlled costs and is used as a basis for comparison to competitors (Bracker and Pearson, 1986). We chose to use operating profit because it is the basis of other accounting ratio profit measures. Lenders also use the figure to determine the level of debt a business can support and equity investors use it as an indicator to value their investment. The profit measurement is similar to net profit ($r = 0.626$; $p < 0.001$) and gross profit used by prior

researchers (George, 2005; Tan and Peng, 2003) ($r = 0.961$; $p < 0.001$). Performance was lagged one year ($t + 1$) to better capture effects of financial slack and help to establish the direction of causality.

Independent Variables

Organizational slack has been measured by both accounting-based financial and non-financial measures (e.g. Daniel et al., 2004; Mishina et al., 2004; Nohria and Gulati, 1996). Past research has used categories of available, recoverable, and potential slack to distinguish the relative discretion available to managers in applying resources for alternate use (Bourgeois and Singh, 1983; Bromiley, 1991; Hambrick and D'Aveni, 1988; Steensma and Corley, 2001). We use accounting-based measures normally related to available, recoverable, and potential slack. *Financial slack* (available slack) is the cash reserves in a firm for a given year and provides the greatest freedom in allocation for various uses. Similar uses of financial slack have been shown to influence strategic choices (Combs and Ketchen, 1999) and performance (George, 2005) in prior studies. This high-discretion form of slack represents our independent variable. Other forms of slack are controls (to be addressed in the next section).

Researchers have argued that the influence of slack is relative to target levels of slack rather than absolute levels of resources (Bromiley, 1991; March and Shapira, 1987). Given the variety of contexts in this study, it is likely that target levels of slack will differ by industry. It is also likely that the levels of slack held are dependent on the size of the firm. Therefore, we index our measures of slack by dividing each firm's slack measure by four-digit ISIC industry mean values while controlling for firm size across all measures. We present our results as 1 minus indexed available slack so that firms with more than industry average slack are positive and those with less are negative.

Environmental variables were developed following Dess and Beard's (1984) formulation for complexity, munificence, and dynamism using four-digit ISIC codes for the population of Swedish firms; this was calculated for each year of the period studied. *Munificence* describes the abundance of resources in the environment reflected by industry growth. Following prior work, munificence was measured as a moving five-year average of the slope divided by the mean for industry sales (Dess and Beard, 1984; Goll and Rasheed, 1997). *Dynamism* refers to the rate of change and the magnitude of instability in the external environment. This is reflected by unstable sales growth making strategic forecasting and operational planning difficult for firms. Dynamism was operationalized as instability in sales growth measured by the standard error of the regression slope divided by the mean value of sales using a moving five-year average prior to the panel year (Dess and Beard, 1984; Mishina et al., 2004). The moving five-year average for environmental variables used in this longitudinal study provide a more realistic picture of the fluid nature of the industry environment.

Control Variables

Control variables were included for firm and industry-level effects. For firm level, *size* is likely associated with levels of resources held or available so its control is important. We

shared similar concerns with prior researchers (George, 2005) that adjusting slack variables for size using the same common denominator of sales would lead to biased estimates. Therefore, an independent control for size as the logarithm of sales for each year was included (cf. Mishina et al., 2004; Singh, 1986). *Recoverable slack* represents the level of resources contained in current operations. Miller and Leiblein (1996) suggested that recoverable slack is a particularly important slack dimension because of its immediate impact on operations. Recoverable slack was operationalized as accounts receivable plus inventory following prior studies (Steensma and Corley, 2001).[3] *Potential slack* represents the remaining borrowing capacity of a firm or resources not yet put into operations. Potential slack is the logarithm of equity-to-debt ratio for the firm. Larger ratios represent greater opportunity to acquire additional discretionary funds for future investment (Hambrick et al., 1996; McArthur and Nystrom, 1991). Industry controls were computed based on all firms in a respective industry. *Industry profitability* was the logarithm of average profitability for firms within the same four-digit ISIC code as the focal firm and may indicate opportunities to generate slack. *Size of competitors* was operationalized as the log of sales for firms in the same industry. *Density* was the number of competing firms in the same four-digit ISIC sector and captures the level of competition for available resources in the environment (Aldrich and Ruef, 2006). *Complexity* was operationalized using the inverse of Herfindahl's index as a measure of the concentration of sales in an industry by summing the square of sales market share in a four-digit ISIC sector (cf. Li and Simerly, 1998). Lower values indicate greater monopoly-like conditions as the available strategic options of new firms are reduced by larger firms that may control sales and distribution channels (Keats and Hitt, 1988; Khandwalla, 1973; Starbuck, 1976).

Broader industry level effects were captured using dummy variables at the two-digit ISIC level. Sixteen dummies were included from ISIC 20–37, with ISIC 21 (pulp and paper products) used as the excluded category in the models.

Analysis

Due to the longitudinal nature of the data we expected a violation of several assumptions of OLS regression. Our choice between an adjusted fixed effects model and a random effects model was determined by a Hausman test which indicated that the random effects model was appropriate for this panel set. Following recent research (Bae and Gargiulo, 2004; George, 2005; Sine et al., 2005), we chose a modified feasible GLS model that accounts for the presence of heteroscedasticity and serial correlation in the data. We did not assume contemporaneous correlation, recognizing that the time period (T) must be greater than the number of cross-sectional units (N) for meaningful analysis (Beck and Katz, 1995).

Sample attrition is a downside to panel studies, particularly for new firms where failure is a common occurrence (Shane and Stuart, 2002). Systematic relation of attrition to the dependent variable may bias the estimates. In this study we controlled for attrition using inverse propensity score weighting which has been shown to provide high levels of agreement between weighted estimates to true values in prior studies (McGuigan et al.,

1995).[4] This approach utilizes a logistic model to estimate a firm's likelihood to be present in a follow-up wave as a function of baseline variables for all firms.

RESULTS

Table I provides descriptive statistics and correlations for each of the variables in our study. Table II reports the results of the feasible GLS analysis of the effects of financial slack on new firm performance and the contingent and combined effects of the environment on the financial slack–performance relationship. In our modelling approach, we were guided by the recommendation of methodologists (Ganzach, 1997) and recent work (George, 2005; Tan and Peng, 2003) to include both the linear and quadratic forms of slack. Model 1 is a baseline control model. Model 2 adds the main effect of financial slack. Models 3 and 4 introduce the two-way interactions of dynamism and munificence with financial slack, respectively. Finally, Model 5 is the fully specified model testing the three-way interaction of dynamism, munificence, and financial slack on performance.

In Hypothesis 1 we hypothesized that performance would increase with financial slack at a faster rate in more stable environments than in dynamic environments. The moderating effect of dynamism on the financial slack–performance relationship was not significant in the main effects interaction from Model 4 ($\beta = -0.069$; $p > 0.05$), but was significant for the squared financial slack–dynamism interaction term ($\beta = 1.667$; $p < 0.001$). As illustrated in Figure 1, the relationship between financial slack and performance changes at a faster rate (steeper positive slope) in lower dynamism than higher dynamism environments. This difference diminishes at higher levels of financial slack due to the concave shape of the low dynamism curve. The dynamism–financial slack interaction is also negative and significant in Model 5 ($\beta = -4.787$; $p < 0.05$), providing

Table I. Descriptive statistics and correlations[a]

Variables[a]	*Mean*	*S.D.*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1. Performance (EBIT)/100	5.72	(32.85)										
2. Industry profitability[f]	7.35	(0.95)	0.02									
3. Density/100	9.91	(9.00)	−0.01	−0.37								
4. Competitor size[f]	2.66	(0.72)	0.02	0.85	−0.37							
5. Complexity/100	12.24	(15.94)	−0.02	0.37	−0.39	0.31						
6. Dynamism	0.04	(0.03)	−0.03	−0.08	−0.21	−0.10	0.07					
7. Munificence	0.03	(0.06)	0.00	0.10	−0.18	0.12	0.10	0.30				
8. Firm size[f]	7.53	(1.81)	0.27	0.11	−0.04	0.13	−0.03	−0.08	−0.01			
9. Potential slack[b,e]	0.04	(1.38)	−0.06	0.02	0.05	0.05	−0.05	−0.06	−0.04	−0.33		
10. Recoverable slack[c,e]	0.40	(1.06)	0.38	−0.08	0.04	−0.07	−0.05	−0.02	−0.02	0.48	−0.16	
11. Financial slack[d,e]	0.58	(2.15)	0.23	−0.05	0.00	−0.04	−0.04	−0.01	0.00	0.26	0.04	0.37

Notes:
[a] Number of observations = 6158. Correlations above 0.02 are significant at $p < 0.05$. Industry dummies not shown.
[b] Equity-to-debt ratio.
[c] Accounts receivable + inventory.
[d] Liquidity.
[e] Indexed to industry average.
[f] Log-transformed variable.

Table II. Feasible GLS regression panel estimates of slack and environment as predictors of performance in new firms[a]

Variable	*Model 1*		*Model 2*		*Model 3*		*Model 4*		*Model 5*	
Industry ISIC 20	0.500	(0.528)	0.541	(0.554)	0.510	(0.528)	0.705	(0.565)	0.646	(0.545)
Industry ISIC 22	−0.381	(0.509)	−0.385	(0.539)	−0.192	(0.513)	−0.271	(0.550)	−0.284	(0.528)
Industry ISIC 23	−0.250	(0.555)	−0.107	(0.673)	−0.095	(0.575)	−0.054	(0.848)	−0.040	(0.884)
Industry ISIC 24	−0.335	(0.570)	−0.133	(0.676)	−0.126	(0.618)	−0.204	(0.680)	−0.566	(0.570)
Industry ISIC 25	1.440*	(0.581)	1.360*	(0.596)	1.421*	(0.583)	1.448*	(0.600)	1.434*	(0.585)
Industry ISIC 28	0.984	(0.542)	0.883	(0.563)	0.866	(0.538)	1.025	(0.573)	0.904	(0.553)
Industry ISIC 29	0.826	(0.514)	0.775	(0.544)	0.851	(0.517)	0.786	(0.555)	0.799	(0.533)
Industry ISIC 30	0.624	(0.537)	0.637	(0.563)	0.615	(0.542)	0.438	(0.571)	0.588	(0.552)
Industry ISIC 31	0.359	(0.582)	0.384	(0.604)	0.425	(0.587)	0.496	(0.614)	0.429	(0.599)
Industry ISIC 32	0.689	(0.549)	0.767	(0.575)	0.805	(0.559)	0.746	(0.581)	0.669	(0.577)
Industry ISIC 33	0.118	(0.538)	−0.601	(0.558)	0.136	(0.543)	−0.061	(0.581)	−0.007	(0.559)
Industry ISIC 34	1.096	(0.702)	1.132	(0.703)	1.411*	(0.721)	1.201	(0.698)	0.932	(0.702)
Industry ISIC 35	−0.137	(0.576)	−0.178	(0.591)	−0.090	(0.577)	−0.130	(0.597)	−0.226	(0.583)
Industry ISIC 36	0.176	(0.520)	0.166	(0.545)	0.208	(0.520)	0.233	(0.556)	0.281	(0.536)
Industry ISIC 37	0.482	(0.547)	0.623	(0.579)	0.582	(0.554)	0.606	(0.585)	0.467	(0.579)
Industry profitability[b]	−0.386***	(0.066)	−0.364***	(0.071)	−0.369***	(0.068)	−0.401***	(0.072)	−0.543***	(0.067)
Density/100	0.000	(0.005)	0.002	(0.005)	0.001	(0.006)	−0.001	(0.000)	−0.001	(0.000)
Competitor size[b]	0.654***	(0.085)	0.611***	(0.096)	0.594***	(0.094)	0.661***	(0.097)	0.895***	(0.088)
Industry complexity/100	−0.004	(0.002)	−0.002	(0.002)	−0.003	(0.002)	−0.001	(0.002)	−0.002	(0.002)
Industry dynamism	−4.908***	(1.043)	−5.404***	(1.062)	−7.077***	(2.024)	−4.159***	(1.038)	−7.710***	(2.109)
Industry munificence	−1.581*	(0.736)	−1.483*	(0.728)	−1.603*	(0.769)	−10.667***	(1.478)	−33.801***	(3.342)
Firm size[b]	0.146***	(0.022)	0.175***	(0.021)	0.113***	(0.023)	0.137***	(0.022)	0.129***	(0.023)
Potential slack	−0.107***	(0.024)	−0.096***	(0.024)	−0.121***	(0.028)	−0.154***	(0.025)	−0.152***	(0.023)
Potential slack ∧2	−0.050***	(0.012)	−0.050***	(0.012)	−0.026*	(0.013)	−0.058***	(0.013)	−0.065***	(0.012)
Recoverable slack	2.223***	(0.192)	2.542***	(0.194)	2.053***	(0.206)	2.466***	(0.194)	2.426***	(0.196)
Recoverable slack ∧2	0.168*	(0.078)	0.227**	(0.077)	0.246**	(0.082)	0.313***	(0.077)	0.299***	(0.078)
Financial slack			0.316***	(0.062)	0.373***	(0.066)	0.946***	(0.067)	0.460***	(0.078)
Financial slack ∧2			−0.064***	(0.018)	−0.079***	(0.017)	−0.114***	(0.019)	−0.048*	(0.021)
Dynamism × financial slack					−0.069	(1.859)			−4.787*	(2.247)
Dynamism × financial slack ∧2					1.6769***	(0.512)			1.185	(0.662)
Munificence × financial slack							−8.205***	(1.286)	−20.609***	(1.970)
Munificence × financial slack ∧2							1.676***	(0.408)	3.081***	(0.601)
Dynamism × munificence									248.715***	(31.832)
Dynamism × munificence × financial slack									227.478***	(31.537)
Dynamism × munificence × financial slack ∧2									−48.250***	(11.500)
Constant	1.741**	(0.630)	1.854**	(0.663)	2.170***	(0.639)	2.734***	(0.672)	2.486***	(0.658)
Degrees of freedom	26		28		30		30		35	
Wald chi-square	781.22***		1017.2***		589.93***		1331.6***		1334.72***	
Incremental change (chi-square)			27.6***		48.89**		381.39***		430.49***	

Notes:
[a] n = 6158; number of firms = 951. Unstandardized estimates reported. Standard errors in parentheses. Incremental changes in chi-square compared to base model.
[b] Log-transformed variable.
Slack variables indexed to industry average. * $p < 0.05$; ** $p < 0.01$; ***$p < 0.001$.

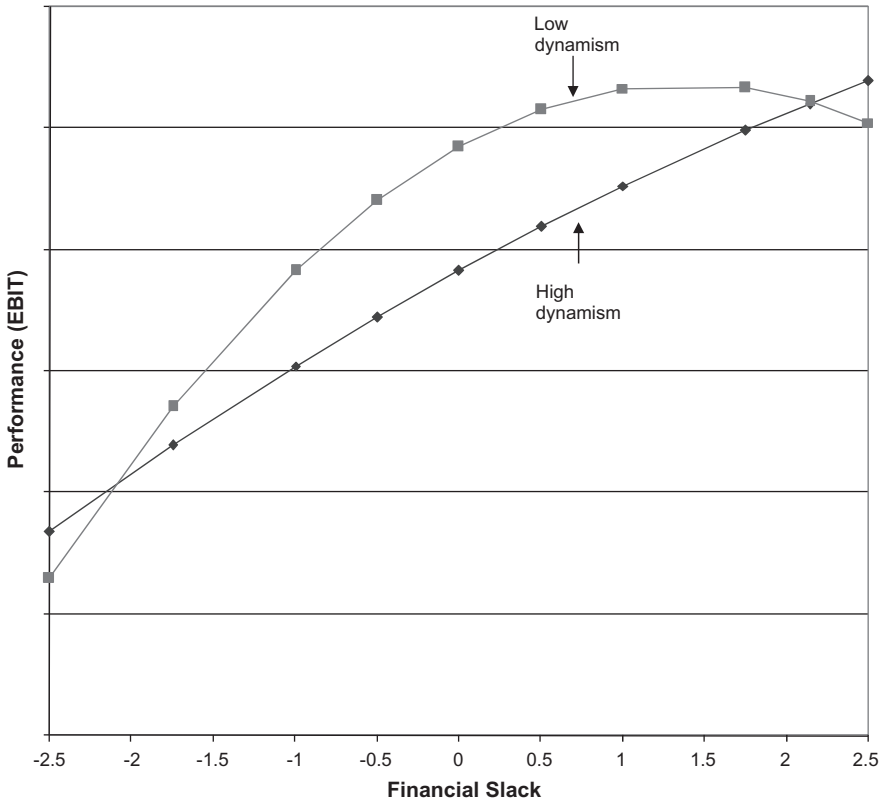

Figure 1. Moderating effects of dynamism on the relationship between financial slack and performance

support for Hypothesis 1 in the fully specified model. We hypothesized (Hypothesis 2) that performance would increase with financial slack at a faster rate in more hostile environments than in munificent environments. The moderating effects of munificence on the financial slack–performance relationship were supported by Model 4 with the financial slack–munificence interaction term negative and significant ($\beta = -8.205$; $p < 0.001$). As shown in Figure 2, the low munificence slope is positive and increasing with financial slack on performance, while a high munificence environment is negative and decreasing with financial slack on performance.

The results from Model 5 indicate a significant and positive coefficient for the three-way interaction of financial slack × munificence × dynamism ($\beta = 227.478$; $p < 0.001$). To better understand the nature of the significant three-way interaction, we developed plots based on median splits of both munificence and dynamism, creating plots for the four possible combinations of dynamism and munificence (Aiken and West, 1991). Figure 3a illustrates that in low dynamism environments, increasing levels of financial slack has a greater positive association with performance when environments are hostile than when environments are munificent. Figure 3b illustrates that in high dynamism environments, increasing levels of financial slack also have a more positive association with performance when environments are hostile than when environments are muni-

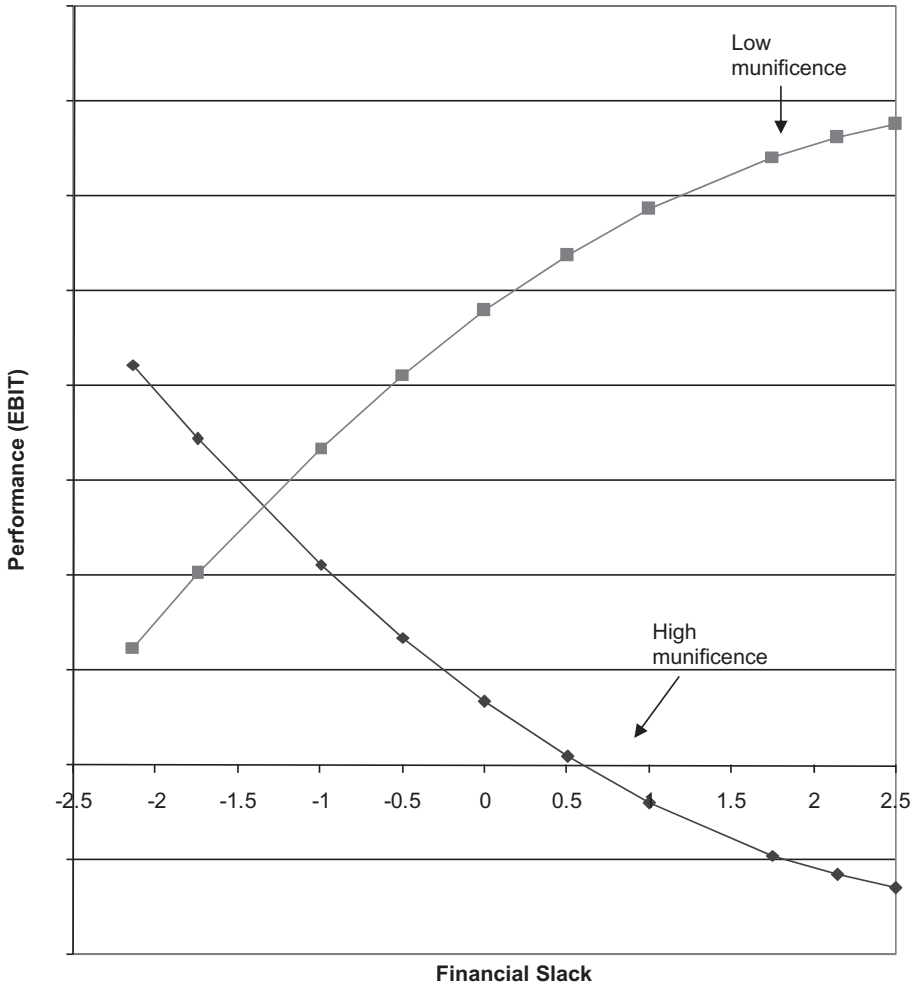

Figure 2. Moderating effects of munificence on the relationship between financial slack and performance

ficent. To test our hypothesis, we followed the approach developed by Dawson and Richter (2006) for testing slope differences in three-way interactions. Table III highlights the different context combinations of dynamism and munificence along with the slope comparison, *t*-values, and significance. All the slopes were significantly different from one another ($p < 0.001$).[5] Hypothesis 3a was supported with the low dynamism–low munificence slope having a significantly greater positive effect on the financial slack–performance relationship than the other combinations shown in Table III and Figure 3. Hypothesis 3b was not supported however. We learned that the relationship between financial slack and performance is weakest in low dynamism–high munificence environments rather than the high dynamism–high munificence environment hypothesized. Based on these results, we find that performance increases with financial slack at a faster rate in more hostile environments than in munificent environments and this positive moderation is greater in stable environments than in dynamic environments.

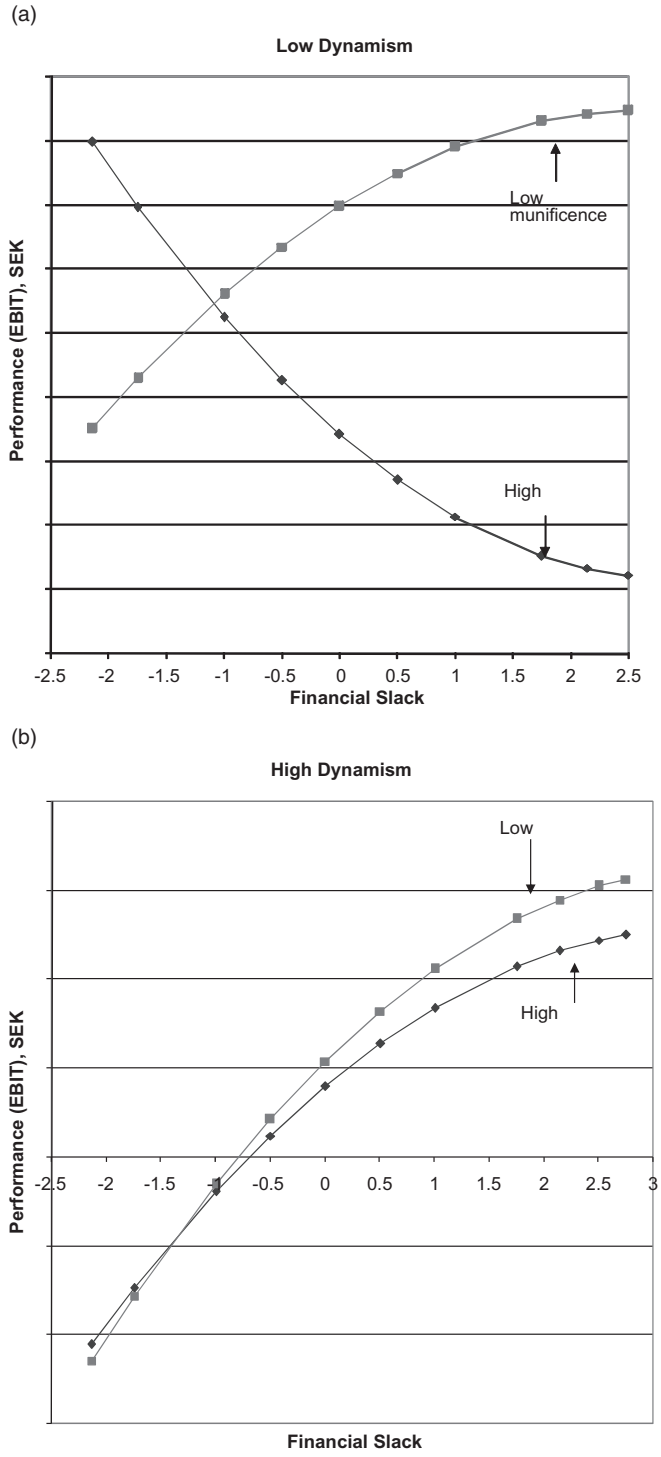

Figure 3. Effect of (a) low and (b) high dynamism and munificence on the financial slack–performance relationship

Table III. Three-way interaction test for slope difference of environmental context–financial slack on performance

Context	*Pair of slopes*	*t-value for slope difference*	*p-value for slope difference*
	(1) and (2)	−123.29	0
(1) High dynamism, high munificence	(1) and (3)	181.44	0
(2) High dynamism, low munificence	(1) and (4)	−191.13	0
(3) Low dynamism, high munificence	(2) and (3)	195.95	0
(4) Low dynamism, low munificence	(2) and (4)	−383.22	0
	(3) and (4)	−272.28	0

The inclusion of two-way and three-way interactions and quadratic terms for financial slack introduces the possibility of harmful multicollinearity among the variables. Following Aiken and West (1991), we mean-centred the variables (transforming the data into deviation score form with means equal to zero) to minimize the distortion due to high correlations between the interaction and higher order terms and the main effect variables. Testing the variance inflation factor (VIF) as an indication of instability in the parameter estimates indicated all variables in each of the models were below a recommended maximum of 10 – assuming there are no other indicators of instability (Belsley et al., 2004; Kutner et al., 2004). To look for additional indication of instability, we examined models where the main effects and interaction terms were orthogonalized using a modified Gram–Schmidt procedure (Saville and Wood, 1991). This technique 'partials out' the common variance, creating transformed variables that are uncorrelated with one another. We found that with both our mean-centred and orthogonalized models, that 'sign-flipping' did not occur as covariates were added from Models 1–5, indicating that the additional variables had enough of their own variance to be included in the models. We also checked for the robustness of our results across model specifications. We conducted both a fixed effects panel analysis with heteroscedastic and autocorrelation-consistent variance estimates and a dynamic model (Arellano and Bond, 1991) with lagged dependent variables. The magnitude, significance, and signs of the coefficients for the three-way interactions in both comparison models were consistent with the reported feasible GLS results with a significant increase in the variance explained.[6]

DISCUSSION

In this study, we considered how organizational environments influence the relevance of arguments regarding slack–performance relationships. We found that environmental munificence and dynamism considered together moderate the extent to which current theory explains the role of slack resources in the performance of new firms. The results of this study make several contributions to the management literature by addressing not only questions of *whether* or *how much* slack is good for performance, but *where* financial slack is good for new firm performance.

One viewpoint has suggested that slack is detrimental to firm performance and this will be particularly true in low munificence environments where firms often pursue questionable projects (Jensen and Meckling, 1976). In contrast, our findings for new firms reveal that the financial slack–performance relationship was more positive as hostility increased. An alternative viewpoint has suggested that if slack is beneficial to firm performance, a primary role will be in buffering the firm from environmental dynamism (Cyert and March, 1963; Thompson, 1967). Our findings show that the financial slack–performance relationship is actually stronger for new firms in stable (low dynamism) environments. We resolve these discrepancies by jointly considering resources and environments in combined contexts, showing that financial slack will have the greatest impact on performance where opportunities must be firm rather than environment driven (low munificence/low dynamism). These findings have several theoretical and practical implications.

Our findings underscore the importance of context in debates regarding resource slack. Neither 'slack is good' nor 'slack is bad' nor 'moderate slack is good' applied consistently across all environments for new firms. In high dynamism environments (Figure 3b), differences in the effect of financial slack were found, with low munificence environments showing a 2.3 times increase in performance from minus 1 to plus 1 standard deviation of financial slack, while high munificence environments showed a less substantial 2.1 times increase from minus 1 to plus 1 standard deviation of financial slack. The differences were even starker in low dynamism environments (Figure 3a), where low munificence resulted in a 1.4 times increase in performance from minus 1 to plus 1 standard deviation of financial slack, while high munificence environments resulted in a 6.0 times decrease in performance from minus 1 to plus 1 standard deviation of financial slack. It is worth noting that the high munificence–low dynamism environment was the only combined context where performance decreased with increasing financial slack. This environment matches well with descriptions of industry cycles where large corporations dominate (Eisenhardt and Martin, 2000). In these markets, leading processes and products are well established, dynamism is lower, and competition is consolidating to a few industry leaders. The literature suggesting that slack leads to inefficiencies and decreased performance (Brush et al., 2000; Jensen and Meckling, 1976) may be more a function of this particular contextual environment than previously understood. Furthermore, we did not have an *a priori* reason for theorizing, but it is also worth noting that the financial slack–performance relationship is more sensitive to the level of munificence than dynamism in the environment. Figure 1 shows similar patterns for increasing levels of financial slack on performance when dynamism is high and low. Figure 2 reveals distinctly opposite patterns for increasing levels of financial slack on performance in high and low munificence environments. It appears that missed opportunities for available resource utilization in growth environments (high munificence) hinders performance more than slack resources choices related to dynamism. These findings for new firm performance are important and worthy of further research to understand new firm market entry and attention to particular contexts in resource level decisions.

We tested whether our results were robust to different measures of performance. We ran models without the lag in the dependent variable as studies have shown that slack

levels for a given year may be related to the performance in the same year (Daniel et al., 2004). Results were quite similar in sign and significance for the main effect and interaction terms. We also ran models with performance measured as two-year sales growth. Mishina et al. (2004) have previously argued that financial slack would negatively relate to growth when expanding on current markets but positively relate to growth when expanding newer product lines where there is less certainty. It is not evident from their study whether the environment interacts with the level of slack in determining growth patterns. The fully specified Model 5 with sales growth as the dependent variable shows similar patterns, with financial slack positively related to growth ($\beta = 5.34$; $p < 0.001$) and the three-way interaction term – financial slack × munificence × dynamism – positive and significant ($\beta = 636.39$; $p < 0.05$), similar to our profitability findings.

Our findings for different measures provide general support for behavioural arguments that financial slack leads to improved performance – particularly in opportunity constrained environments. However, we note at least two caveats. The absolute levels of slack for essentially all the new firms examined were well below their industry average. This lower level of liquidity could be a negative signal of legitimacy to potential investors, suppliers, and customers that the new firm may not be able to meet commitments when they come due (Wiklund et al., 2010). This increased liability of newness (Stinchcombe, 1965) may necessitate a 'built-in' self-disciplining mechanism that finds greater utility to slack for resource-constrained new firms compared to their more established counterparts. We also note that the squared terms for financial slack were generally significant and negative in each environmental context. The concave shape of these slack–performance curves is consistent with efficiency arguments, suggesting a loosening of firm discipline at higher levels of slack (Leibenstein, 1969). Future research might explain differences in the degree of curvature across organizational forms and industries to explain why some firms are more sensitive to resource levels than others. While not central to the focus of this study, we found that each form of slack (financial, recoverable, potential) had different curves with performance, which suggests possibilities for further investigation. Do different theoretical arguments apply to different forms of slack (Tan and Peng, 2003), or are contexts intertwined in explaining where different theories have greater application?

Strategy scholars have also shown considerable interest in the relationship between resources and performance. However, resource-based approaches (e.g. RBV) have often ignored the topic of slack because, although potentially valuable, financial resources do not meet the criteria of being rare or inimitable (Ireland et al., 2003). This study suggests that while financial resources may not be rare or hard to copy, the strategies used for organizing and manipulating these resources in constrained environments might be (Eisenhardt and Martin, 2000). Sustainable competitive advantage likely resides in the ability to rapidly pursue new strategic initiatives and learning benefits rather than in extensive financial resources per se. An important future avenue for RBV scholars would be the further investigation of the process of using liquid resources to create unique and valuable resources.

Another useful extension of this study would be to further refine our understanding and measurement of environments in connection to opportunity creation. While our

combination of well-known environmental measures provided new insights, we also found that these measures both overlapped with, and at times did not capture, other theoretical perspectives that might add value in explaining the resource–performance relationship. For example, we found that our combination of munificence/dynamism closely matched industry life cycle descriptions (Agarwal and Audretsch, 2000; Eisenhardt and Schoonhoven, 1990). However, life cycle scholars draw from evolutionary concepts measuring the market by firm entry and exit rates (Gort and Klepper, 1982). It may be useful to combine notions of growth and dynamism with the level of competition to better understand opportunities and the resources required to capture them.

Our findings offer departure points for entrepreneurship research as well. Entrepreneurship has been described in the literature as 'the pursuit of opportunity without regard to resources currently controlled' (Stevenson and Jarillo, 1990). This study questions whether this definition applies across all environments. The 'without concern for resources' approach is more likely to find success in high growth (munificent), and to a lesser extent, dynamic environments. In contrast, hostile environments (particularly when dynamism is low) necessitate some level of resources to *create* opportunities.

Limitations and Additional Future Research Opportunities

Our analysis takes advantage of a panel study design and accounts for attrition, but like all studies, there are limitations. First, while we have emphasized discretionary financial resources for new firms in this study, we recognize significant opportunities for broader management studies of human and social capital allocation. Are firms with limited financial resources doomed or do they create other means for achieving firm goals? During the most recent technology downturn, successful IT firms resourcefully cultivated ideas for system reuse, built adaptable and flexible staffing models, and made thoughtful sourcing choices. They also continuously improved the quality of their project management and developed partnerships to offset costs (Varon, 2003). Initial theoretical work (Mosakowski, 2002; Sarasvathy, 2001; Starr and MacMillian, 1990) and qualitative studies (Baker and Nelson, 2005; Baker et al., 2003; Garud and Karnoe, 2003) related to firm resourcefulness have provided an important first step, but more empirical studies are needed. Second, while a cohort of firms has many advantages in terms of research design, it limited our sample size within a given industry to a small number of firms started within that industry for a given year. Future studies, rather than investigating industry effects, may be able to capture further insights into the efficacy of different slack forms within particular industries. For example, nearly all founding condition studies have focused on attributes of the firm. Most timing of entry studies have focused on the environmental conditions caused by the order of entry. A study of the effect of a firm's founding environment on their ongoing performance would be an enriching avenue for further inquiry. Third, while our study captures firms at their inception and accounts for combinations of the environment in stages described by life cycle scholars, we have not investigated market timing or new market entry per se. Future work might extend our efforts by examining forms and levels of discretionary resources in new markets. Fourth, in this study we chose to focus on independent new firms, but we expect that a comparison of the slack resources for independent versus subsidiary firms would be an

interesting avenue for further inquiry. Are there different levels of optimal slack resources between independent and subsidiary firms and are slack resources best held by the subsidiary or parent firm? Similarly, while we anticipate that the results apply to more established firms, this requires further theoretical and empirical work. For example, established firms have greater access to external sources of financial resources, such as a large overdraft capacity at a bank than do new firms. Therefore, we speculate that how firms use their financial slack is more critical to profitability for new firms than for more established firms.

Finally, our study has been limited to financial slack resources and their interaction with the environment. However, we recognize that managerial discretion afforded by these resources may provide alternate strategies that intercede between slack and performance. Investigations like Wiklund and Shepherd's (2005) study of entrepreneurial orientation and resources are needed to better identify how managers deploy resources to impact performance.

Conclusion

Resources have played an important role in organizational theories of survival, growth, and performance. Resource-based work continues to develop in its understanding of the processes and environmental contingencies that affect the management of resources and value creation. Theories also continue to differ regarding the optimal level of discretionary resources a firm should maintain to improve outcomes. In this study, we have attempted to extend (and reconcile) these arguments by exploring how greater context specificity clarifies 'where' resources are most likely to improve performance for new firms. We focused on the level of financial slack resources and demonstrated that their relationship with performance is moderated by the combination of munificence and dynamism in the environment. Specifically, the financial slack–performance relationship is most positive where there are fewer opportunities generated by resources in the environment requiring new firms to generate their own. It is our hope that this study provides a basis for future work that addresses the complex interaction of environments and resources in the evolution of firms.

NOTES

[1] Bourgeois and Singh (1983) divided slack into three categories – available, recoverable, and potential slack. Available slack, or what we specify further as financial slack (Mishina et al., 2004), consists of resources that are not yet committed to specific organizational functions (e.g. excess liquidity). Recoverable slack consists of resources that have already been utilized in operations (e.g. inventory) but can be recaptured without substantial organizational redesign. Finally, potential slack consists of future resources that can be generated by raising additional debt or equity capital (Cheng and Kesner, 1997).

[2] Sharfman et al. note that 'for resources to be considered slack, they must be visible to the manager and employable in the future' (Sharfman et al., 1988, p. 602). We concur noting that some operationalizations of absorbed slack appear to be unrecoverable operating inefficiencies rather than *excess resources*.

[3] A factor analysis of slack resources indicated inventory and accounts receivable loaded on the same factor (0.78). We did not include sales, general, and administrative expenses (SGA) as in some studies as we consider these expenses to be semi-fixed or 'lumpy' and less recoverable (Hambrick et al., 1996). Steensma and Corley (2001) also found that SGA did not load on the same factor as inventory and accounts receivable.

[4] The Heckman selection model (Heckman, 1979) is the most common method to correct for self-selection, including attrition. The method has received criticism due to the difficulty in selecting variables for the prediction of the probit model which cannot be a subset of the variables used to estimate the outcome model without violating the normality assumptions of the model and producing highly biased estimates (Stolzenberg and Relles, 1990). However, we also ran models correcting for attrition using Lee's (1983) generalization of the Heckman selection model. In this correction, probabilities for firm exit are used in a Cox regression model to generate a sample correction variable, *lambda* (Lee, 1983). The selection correction lambda is then included as a control in models of new firm performance (e.g. Sine et al., 2006). We did not find lambda to be significant ($p > 0.05$).

[5] We also used an alternative approach with Z-scores (Clogg et al., 1995) for the median split samples that lead to the same conclusions. The $\mathcal{Z}$-test significance comparisons for the slope coefficients were based on the following:

$$\mathcal{Z}\text{-test}: (\beta_1 - \beta_2)/\mathrm{SQRT}\left(\mathrm{SD}\beta_1^2 + \mathrm{SD}\beta_2^2\right)$$

where $Z = 1.65$ at $p < 0.05$, 2.33 at $p < 0.01$.

[6] Fixed effects results: baseline model $R^2 = 0.17$ ($F = 63.02$, $p < 0.001$); main effects model $R^2 = 0.20$ ($F = 86.88$, $p < 0.001$); fully specified model $R^2 = 0.27$ ($F = 88.56$, $p < 0.001$).

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REFERENCES

Agarwal, R. and Audretsch, D. B. (2000). 'Does entry size matter? The impact of life cycle and technology on firm survival'. *Journal of Industrial Economics*, **49**, 21–43.

Aiken, L. S. and West, S. G. (1991). *Multiple Regression: Testing and Interpreting Interactions*. Newbury Park, CA: Sage.

Aldrich, H. (1979). *Organizations and Environments*. Englewood Cliffs, NJ: Prentice-Hall.

Aldrich, H. and Mindlin, S. (1978). 'Uncertainty and dependence: two perspectives on environment'. *Organization and Environment: Theory, Issues and Reality*, 149–70.

Aldrich, H. and Ruef, M. (2006). *Organizations Evolving*, 2nd edition. London: Sage.

Arellano, M. and Bond, S. (1991). 'Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations''. *Review of Economic Studies*, **58**, 194, 277.

Bae, J. and Gargiulo, M. (2004). 'Partner substitutability, alliance network structure, and firm profitability in the telecommunications industry'. *Academy of Management Journal*, **47**, 843–59.

Baker, T. and Nelson, R. (2005). 'Creating something from nothing: resource construction through entrepreneurial bricolage'. *Administrative Science Quarterly*, **50**, 329–66.

Baker, T., Miner, A. S. and Eesley, D. T. (2003). 'Improvising firms: bricolage, account giving and improvisational competencies in the founding process'. *Research Policy*, **32**, 255–76.

Barney, J. B. (1986). 'Strategic factor markets: expectations, luck, and business strategy'. *Management Science*, **32**, 1231–41.

Bates, T. (1995). 'Self-employment entry across industry groups'. *Journal of Business Venturing*, **10**, 143–56.

Baum, J. (1996). 'Organizational ecology'. In Clegg, S., Hardy, C. and Nord, W. (Eds), *Handbook of Organization Studies*. London: Sage, 77–114.

Baum, J. R. and Wally, S. (2003). 'Strategic decision speed and firm performance'. *Strategic Management Journal*, **24**, 1107–29.

Beck, N. and Katz, J. N. (1995). 'What to do (and not to do) with time series cross-section data'. *American Political Science Review*, **89**, 634–47.

Belsley, D. A., Kuh, E. and Welsch, R. E. (2004). *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. Hoboken: Wiley-Interscience.

Bhide, A. (2000). *The Origin and Evolution of New Businesses*. Oxford: Oxford University Press.

Bobbitt, H. R. Jr and Ford, J. D. (1980). 'Decision-maker choice as a determinant of organizational structure'. *Academy of Management Review*, **5**, 13–23.

Bourgeois, L. J. I. (1981). 'On the measurement of organizational slack'. *Academy of Management Review*, **6**, 29–39.

Bourgeois, L. J. and Singh, J. V. (1983). 'Organizational slack and political behavior within top management groups'. *Academy of Management Proceedings*, 43–9.
Bracker, J. S. and Pearson, J. N. (1986). 'Planning and financial performance of small, mature firms'. *Strategic Management Journal*, **7**, 503–22.
Brittan, J. W. and Freeman, J. (Eds) (1980). *Organizational Proliferation and Density Dependent Selection*. San Francisco, CA: Jossey-Bass.
Bromiley, P. (1991). 'Testing a causal model of corporate risk taking and performance'. *Academy of Management Journal*, **34**, 37–59.
Brown, C., Linden, G. and Yamaguchi, E. (2005). *The Role of Japanese Start-Ups in High-Tech Innovation*. ITEC Policy Brief. Kyoto: Doshisha University.
Brush, T. H., Bromiley, P. and Hendrickx, M. (2000). 'The free cash flow hypothesis for sales growth and firm performance'. *Strategic Management Journal*, **21**, 455–72.
Bygrave, W. D. and Hunt, S. A. (2005). *Global Entrepreneurship Monitor, 2004 Financing Report*. Babson Park, MA, and London: Babson College and London Business School.
Carroll, G. R. and Hannan, M. T. (2000). *The Demography of Corporations and Industries*. Princeton, NJ: Princeton University Press.
Castrogiovanni, G. J. (1991). 'Environmental munificence: a theoretical assessment'. *Academy of Management Review*, **16**, 542–65.
Caves, R. E. and Porter, M. E. (1977). 'From entry barriers to mobility barriers: conjectural decisions and continued deterrence to new competition'. *Quarterly Journal of Economics*, **91**, 241–61.
Cheng, J. and Kesner, I. (1997). 'Organizational slack and response to environmental shifts: the impact of resource allocation patterns'. *Journal of Management*, **23**, 1–18.
Clogg, C., Petkova, E. and Haritou, A. (1995). 'Statistical methods for comparing regression coefficients between models'. *American Journal of Sociology*, **100**, 1261–93.
Cohen, W. M. and Levinthal, D. A. (1990). 'Absorptive capacity: a new perspective on learning and innovation'. *Administrative Science Quarterly*, **35**, 128–52.
Combs, J. G. and Ketchen, D. J. Jr (1999). 'Can capital scarcity help agency theory explain franchising? Revisiting the capital scarcity hypothesis'. *Academy of Management Journal*, **42**, 196–207.
Conner, K. R. (1991). 'A historical comparison of resource-based theory and five schools of thought within industrial organization economics: do we have a new theory of the firm?'. *Journal of Management*, **17**, 121.
Cook, T. D. and Campbell, D. T. (1979). *Quasi-Experimentation*. Boston, MA: Houghton-Mifflin.
Cyert, R. and March, J. (1963). *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.
Damanpour, F. (1991). 'Organizational innovation: a meta-analysis of effects of determinants and moderators'. *Academy of Management Journal*, **34**, 555–90.
Daniel, F., Lohrke, F. T., Fornaciari, C. J. and Turner, J. R. A. (2004). 'Slack resources and firm performance: a meta-analysis'. *Journal of Business Research*, **57**, 565.
Davidsson, P., Steffens, P. and Fitzsimmons, J. (2009). 'Growing profitable or growing from profits: putting the horse in front of the cart?'. *Journal of Business Venturing*, **24**, 388–406.
Dawson, J. F. and Richter, A. W. (2006). 'Probing three-way interactions in moderated multiple regression: development and application of a slope difference test'. *Journal of Applied Psychology*, **91**, 917–26.
Delacroix, J. and Swaminathan, A. (1991). 'Cosmetic, speculative, and adaptive organizational change in the wine industry'. *Administrative Science Quarterly*, **36**, 631–61.
Denrell, J., Fang, C. and Winter, S. G. (2003). 'The economics of strategic opportunity'. *Strategic Management Journal*, **24**, 977–90.
Dess, G. G. and Beard, D. W. (1984). 'Dimensions of organizational task environments'. *Administrative Science Quarterly*, **29**, 52–73.
Dierickx, I. and Cool, K. (1989). 'Asset stock accumulation and sustainability of competitive advantage'. *Management Science*, **35**, 1504–11.
Duncan, R. B. (1972). 'Characteristics of organizational environments and perceived environmental uncertainty'. *Administrative Science Quarterly*, **17**, 313–27.
Eisenhardt, K. M. (1989). 'Making fast strategic decisions in high-velocity environments'. *Academy of Management Journal*, **32**, 543–76.
Eisenhardt, K. M. and Martin, J. A. (2000). 'Dynamic capabilities: what are they?'. *Strategic Management Journal*, **21**, 1105–21.
Eisenhardt, K. M. and Schoonhoven, C. B. (1990). 'Organizational growth: linking founding team, strategy, environment, and growth among U.S. semiconductor ventures, 1978–1988'. *Administrative Science Quarterly*, **35**, 504–29.
Farr, J. L. and Ford, C. M. (1990). 'Individual innovation'. *Innovation and Creativity at Work*, 63–80.

Fichman, M. and Levinthal, D. A. (1991). 'Honeymoons and the liability of adolescence: a new perspective on duration dependence in social and organizational relationships'. *Academy of Management Review*, **16**, 442–68.
Finkelstein, S. and Hambrick, D. C. (1990). 'Top-management-team tenure and organizational outcomes: the moderating role of managerial discretion'. *Administrative Science Quarterly*, **35**, 484–503.
Ganzach, M. (1997). 'Misleading interaction and curvilinear terms'. *Psychological Methods*, **2**, 235–47.
Garud, R. and Karnoe, P. (2003). 'Bricolage versus breakthrough: distributed and embedded agency in technology entrepreneurship'. *Research Policy*, **32**, 277–300.
George, G. (2005). 'Slack resources and the performance of privately held firms'. *Academy of Management Journal*, **48**, 661–76.
Goll, I. and Rasheed, A. M. A. (1997). 'Rational decision-making and firm performance: the moderating role of environment'. *Strategic Management Journal*, **18**, 583–91.
Gompers, P. and Lerner, J. (2001). 'The venture capital revolution'. *Journal of Economic Perspectives*, **15**, 145–68.
Gort, M. and Klepper, S. (1982). 'Time paths in the diffusion of product innovations'. *Economic Journal*, **92**, 630–53.
Hambrick, D. C. and D'Aveni, R. A. (1988). 'Large corporate failures as downward spirals'. *Administrative Science Quarterly*, **33**, 1–23.
Hambrick, D. C. and Finkelstein, S. (Eds) (1987). *Managerial Discretion: A Bridge between Polar Views Organizations*. Greenwich, CT: JAI Press.
Hambrick, D. C., MacMillan, I. and Day, D. (1982). 'Strategic attributes and performance in the BCG matrix – a PIMS-based analysis of industrial product businesses'. *Academy of Management Journal*, **25**, 510–31.
Hambrick, D. C., Cho, T. S. and Chen, M. J. (1996). 'The influence of top management team heterogeneity on firms' competitive moves'. *Administrative Science Quarterly*, **41**, 659–84.
Heckman, J. J. (1979). 'Sample selection bias as a specification error'. *Econometrica*, **47**, 153–61.
Ireland, R. D., Hitt, M. A. and Sirmon, D. G. (2003). 'A model of strategic entrepreneurship: the construct and its dimensions'. *Journal of Management*, **29**, 963–89.
Jensen, M. C. (1986). 'Agency costs of free cash flow, corporate finance, and takeovers'. *American Economic Review*, **76**, 323–9.
Jensen, M. C. and Meckling, W. H. (1976). 'Theory of the firm: managerial behavior, agency costs, and ownership structure'. *Journal of Financial Economics*, **3**, 305–60.
Keats, B. W. and Hitt, M. A. (1988). 'A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance'. *Academy of Management Journal*, **31**, 570–98.
Khandwalla, P. N. (1973). 'Effect of competition on the structure of top management control'. *Academy of Management Journal*, **16**, 285–95.
King, A. W. and Zeithaml, C. P. (2001). 'Competencies and firm performance: examining the causal ambiguity paradox'. *Strategic Management Journal*, **22**, 75–99.
Kirzner, I. (1997). 'Entrepreneurial discovery and the competitive market process: an Austrian approach'. *Journal of Economic Literature*, **35**, 60–85.
Koberg, C. S. (1987). 'Resource scarcity, environmental uncertainty, and adaptive organizational behavior'. *Academy of Management Journal*, **30**, 798–807.
Kutner, M. H., Nachtsheim, C. J. and Neter, J. (2004). *Applied Linear Regression Models*. New York: Irwin/McGraw-Hill.
Lee, L. F. (1983). 'Generalized econometric models with selectivity'. *Econometrica: Journal of the Econometric Society*, **51**, 507–12.
Leibenstein, H. (1969). 'Organizational or frictional equilibria, X-efficiency, and the rate of innovation'. *Quarterly Journal of Economics*, **83**, 600–23.
Lerner, J. (1994). 'The syndication of venture capital investments'. *Financial Management*, 16–27.
Levi-Strauss, C. (1966). *The Savage Mind*. Chicago, IL: University of Chicago Press.
Li, M. and Simerly, R. L. (1998). 'The moderating effect of environmental dynamism on the ownership and performance relationship'. *Strategic Management Journal*, **19**, 169–79.
Litschert, R. J. and Bonham, T. W. (1978). 'A conceptual model of strategy formation'. *Academy of Management Review*, **3**, 211–9.
Love, E. G. and Nitin, N. (2005). 'Reducing slack: the performance consequences of downsizing by large industrial firms, 1977–93'. *Strategic Management Journal*, **26**, 1087–108.
MacCrimmon, K. R. and Taylor, R. N. (1976). 'Decision making and problem solving'. In Dunnette, M. D. (Ed.), *Handbook of Industrial and Organizational Psychology*. Chicago, IL: Rand McNally, 1397–453.

March, J. G. and Shapira, Z. (1987). 'Managerial perspectives on risk and risk taking'. *Management Science*, **33**, 1404–18.
Mason, C. and Harrison, R. (2003). 'Closing the regional equity gap? A critique of the department of trade and industry's regional venture capital funds initiative'. *Regional Studies*, **37**, 855–68.
McArthur, A. W. and Nystrom, P. C. (1991). 'Environmental dynamism, complexity, and munificence as moderators of strategy-performance relationships'. *Journal of Business Research*, **23**, 349–61.
McGrath, R. G. (1997). 'A real options logic for initiating technology positioning investments'. *Academy of Management Review*, **22**, 974–96.
McGuigan, K. A., Ellickson, P. L., Hays, R. D. and Bell, R. M. (1995). 'Tracking, weighting, and sample selection modeling to correct for attrition'. *Proceedings of the Section on Survey Research Methods, American Statistical Association*, **1**, 402–7.
McMullen, J. S. and Shepherd, D. A. (2006). 'Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur'. *Academy of Management Review*, **31**, 132–52.
Meyer, A. D. (1982). 'Adapting to environmental jolts'. *Administrative Science Quarterly*, **27**, 515–37.
Miller, D. (1988). 'Relating Porter's business strategies to environment and structure: analysis and performance implications'. *Academy of Management Journal*, **31**, 280–308.
Miller, D. and Friesen, P. H. (1983). 'Strategy making and environment: the third link'. *Strategic Management Journal*, **4**, 221–35.
Miller, K. D. and Leiblein, M. J. (1996). 'Corporate risk-return relations: returns variability versus downside risk'. *Academy of Management Journal*, **39**, 91–122.
Milliken, F. J. (1987). 'Three types of perceived uncertainty about the environment: state, effect, and response uncertainty'. *Academy of Management Review*, **12**, 133.
Mishina, Y., Pollock, T. G. and Porac, J. F. (2004). 'Are more resources always better for growth? Resource stickiness in market and product expansion'. *Strategic Management Journal*, **25**, 1179–97.
Mosakowski, E. (2002). 'Overcoming resource disadvantages in entrepreneurial firms: when less is more'. In Hitt, M. A., Ireland, D., Sexton, D. and Camp, M. (Eds), *Strategic Entrepreneurship: Creating an Integrated Mindset*. Oxford: Blackwell, 106–26.
Nohria, N. and Gulati, R. (1996). 'Is slack good or bad for innovation?'. *Academy of Management Journal*, **39**, 1245–64.
Ocasio, W. (1997). 'Towards an attention-based view of the firm'. *Strategic Management Journal*, **18**, 187–206.
Pacheco-De-Almeida, G. and Zemsky, P. (2007). 'The timing of resource development and sustainable competitive advantage'. *Management Science*, **53**, 651–66.
Patzelt, H., Shepherd, D. A., Deeds, D. and Bradley, S. W. (2008). 'To ally or not to ally that is the question: an analysis of venture managers' decisions to seek a new alliance'. *Journal of Business Venturing*, **23**, 465–81.
Penrose, E. (1959). *The Theory of the Growth of the Firm*. New York: Wiley.
Pfeffer, J. and Salancik, G. R. (1978). *The External Control of Organizations: A Resource Dependence Perspective*. New York: Harper & Row.
Porter, M. E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Free Press.
Reed, R. and DeFillippi, R. J. (1990). 'Causal ambiguity, barriers to imitation, and sustainable competitive advantage'. *Academy of Management Review*, **15**, 88–102.
Sarasvathy, S. D. (2001). 'Causation and effectuation: toward a theoretical shift from economic inevitability to entrepreneurial contingency'. *Academy of Management Review*, **26**, 243–88.
Sarasvathy, S. D., Dew, N., Velamuri, R. and Venkataraman, S. (2003). 'Three views of entrepreneurial opportunity'. In Acs, Z. J. and Audretsch, D. B. (Eds), *The International Handbook of Entrepreneurship*. Dordrecht: Kluwer Academic Publishers, 141–60.
Saville, D. J. and Wood, G. R. (1991). *Statistical Methods: The Geometric Approach*. New York: Springer.
Scott, W. R. (2003). *Organizations: Rational, Natural, and Open Systems*. Upper Saddle River, NJ: Prentice Hall.
Shane, S. (2003). *A General Theory of Entrepreneurship*. Northampton, MA: Edward Elgar.
Shane, S. and Stuart, T. (2002). 'Organizational endowments and the performance of university start-ups'. *Management Science*, **48**, 154–70.
Sharfman, M. P., Wolf, G., Chase, R. B. and Tansik, D. A. (1988). 'Antecedents of organizational slack'. *Academy of Management Review*, **13**, 601–14.
Shepherd, D., McMullen, J. S. and Jennings, P. D. (2007). 'The formation of opportunity beliefs: overcoming ignorance and reducing doubt'. *Strategic Entrepreneurship Journal*, **1**, 75–95.
Sine, W. D., Haveman, H. A. and Tolbert, P. S. (2005). 'Risky business? Entrepreneurship in the new independent-power sector'. *Administrative Science Quarterly*, **50**, 200–32.
Sine, W. D., Mitsuhashi, H. and Kirsch, D. A. (2006). 'Revisiting burns and stalker: formal structure and new venture performance in emerging economic sectors'. *Academy of Management Journal*, **49**, 121–32.

Singh, J. V. (1986). 'Performance, slack, and risk taking in organizational decision making'. *Academy of Management Journal*, **29**, 562.
Sirmon, D. G., Hitt, M. A. and Ireland, R. D. (2007). 'Managing firm resources in dynamic environments to create value: looking inside the black box'. *Academy of Management Review*, **32**, 273–92.
Starbuck, W. H. (Ed.) (1976). *Organizations and Their Environments*. Chicago, IL: Rand McNally.
Starr, J. A. and MacMillian, I. C. (1990). 'Resource co-optation via social contracting: resource acquisition strategies for new ventures'. *Strategic Management Journal*, **11**, 79–92.
Steensma, H. K. and Corley, K. G. (2001). 'Organizational context as a moderator of theories on firm boundaries'. *Academy of Management Journal*, **44**, 271–91.
Stevenson, H. H. and Jarillo, J. C. (1990). 'A paradigm of entrepreneurship: entrepreneurial management'. *Strategic Management Journal*, **11**, Summer Special Issue, 17–27.
Stinchcombe, A. (1965). 'Social structure and organizations'. In March, J. G. (Ed.), *Handbook of Organizations*. Chicago, IL: Rand McNally, 153–93.
Stolzenberg, R. M. and Relles, D. A. (1990). 'Theory testing in a world of constrained research design: the significance of Heckman's censored sampling bias correction for nonexperimental research'. *Sociological Methods and Research*, **18**, 395–415.
Tan, J. (2003). 'Curvilinear relationship between organizational slack and firm performance: evidence from Chinese state enterprises'. *European Management Journal*, **21**, 740–9.
Tan, J. and Peng, M. W. (2003). 'Organizational slack and firm performance during economic transitions: two studies from an emerging economy'. *Strategic Management Journal*, **24**, 1249–63.
Thompson, J. (1967). *Organizations in Action*. New York: McGraw-Hill.
Tushman, M. L. and Anderson, P. (1986). 'Technological discontinuities and organizational environments'. *Administrative Science Quarterly*, **31**, 439–65.
Tushman, M. L. and Nelson, R. R. (1990). 'Introduction: technology, organizations and innovation'. *Administrative Science Quarterly*, **35**, 1–8.
Varon, E. (2003). 'The resourceful 100'. *CIO*, **16**, 30–7.
Voss, G. B., Sirdeshmukh, D. and Voss, Z. G. (2008). 'The effects of slack resources and environmental threat on product exploration and exploitation'. *Academy of Management Journal*, **51**, 147–64.
Weick, K. E. (1979). *The Social Psychology of Organizing*, 2nd edition. Reading, MA: Addison-Wesley.
Weick, K. E. (1993). 'The collapse of sensemaking in organizations: the Mann Gulch disaster'. *Administrative Science Quarterly*, **38**, 628–52.
Wiklund, J. and Shepherd, D. (2005). 'Entrepreneurial orientation and small business performance: a configurational approach'. *Journal of Business Venturing*, **20**, 71–91.
Wiklund, J., Baker, T. and Shepherd, D. (2010). 'The age-effect of financial indicators as buffers against the liability of newness'. *Journal of Business Venturing*, in press. doi:10.1016/j.jbusvent.2008.10.011.
Woodman, R. W., Sawyer, J. E. and Griffin, R. W. (1993). 'Toward a theory of organizational creativity'. *Academy of Management Review*, **18**, 293–321.
Wu, S. (1989). *Production, Entrepreneurship, and Profits*. New York: Blackwell.
Yasai-Ardekani, M. (1986). 'Structural adaptations to environments'. *Academy of Management Review*, **11**, 9–21.
Zahra, S. A. (1993). 'Environment, corporate entrepreneurship, and financial performance: a taxonomic approach'. *Journal of Business Venturing*, **8**, 319–40.
Zott, C. (2003). 'Dynamic capabilities and the emergence of intraindustry differential firm performance: insights from a simulation study'. *Strategic Management Journal*, **24**, 97–125.