Swinging a Double-Edged Sword: The Effect of Slack on Entrepreneurial Management and Growth

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Swinging a double-edged sword: The effect of slack on entrepreneurial management and growth

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ABSTRACT

Resource slack represents a double-edged sword, simultaneously fueling and hindering growth. Drawing on Penrose's growth theory and Stevenson's entrepreneurial management theory, we have developed and tested a conceptual model that provides a more nuanced account of the resource slack–growth relationship. Using a large dataset spanning six years, we have found that slack has a positive direct effect on growth but a negative effect on entrepreneurial management, and that entrepreneurial management has a positive effect on growth. Our empirical and conceptual findings are important to the development of firm growth theory and explicate causal mechanisms transforming slack into firm-level outcomes.

1. Executive summary

Resource slack represents a double-edged sword, simultaneously fueling and hindering growth. Penrose's growth theory states that resource slack can drive organizational growth because managers are eager to utilize idle resources. More recently, however, models have been presented making opposite claims, suggesting that resource shortage and absence of finance are associated with more innovation, entrepreneurship, and growth. In this paper we simultaneously consider positive and negative effects of slack within one consistent theoretical framework. Penrose's growth theory suggests that the utilization of idle resources and entrepreneurial recombination of resources represent two mechanisms of growth. We propose that these two mechanisms are closely interrelated, but counteract each other.

Organizational slack develops when a firm possesses resources in excess of resource demands from current business. Fundamental to Penrose's (1959) growth theory is that this slack creates an opportunity for firm growth and that it is the role of management to utilize those resources for expansion. According to Penrose, in addition to the application of idle resources, growth is also driven by the recombination of existing resources. Managers engage in entrepreneurial recombination of existing resources in response to perceived growth opportunities. Hence, opportunities for expansion exist to the extent to which the managers of a firm are entrepreneurial enough to perceive and act upon these opportunities (Penrose, 1959: 84). However, it is important to note that the willingness of management to behave entrepreneurially and act upon opportunities is a negative function of slack. Stevenson and colleagues address this issue in a series of papers on entrepreneurial management. Their argument suggests that

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resource slack entices managers to be administrative rather than entrepreneurial in their management approach. Managers with substantial access to resources become complacent, inward looking, and risk averse because they wish to protect current positions. Resource scarcity, on the other hand, stimulates managers to adopt entrepreneurial management practices, looking to the outside for new opportunities and to make do with the resources at hand. In line with Penrose's theory, entrepreneurial management has a positive effect on growth because such an approach focuses on taking advantage of new opportunities.

Combining the direct effect of slack on growth with the negative effect of slack on entrepreneurial management, and the positive effect of entrepreneurial management on growth, we developed a series of hypotheses regarding the relationship between slack and entrepreneurial management on the one hand and between entrepreneurial management and growth on the other.

A large dataset spanning six years covering over 900 firms including secondary and questionnaire data was used to test these hypotheses. Our regression results support the overall model with positive direct effect of slack on growth and negative mediation via entrepreneurial management.

The contribution to the literature is fourfold. First, we have fine tuned resource-oriented explanations of growth. Much previous growth research has examined the resource position of firms, arguing that greater resource endowments are associated with higher growth. This literature typically does not discriminate between resources that are tied up and utilized in current operations and resource slack. Growth is a dynamic process and during the growth process, slack becomes absorbed and released. Slack represents a more dynamic concept than resource position. Our model suggests positive and negative effects of resource slack on growth help provide a more nuanced perspective of the role of resources in the growth process. Thereby, it provides an explanation of growth that is better attuned to empirical realities.

Second, we show that resource slack has a dual effect on growth, fueling growth, but stifling entrepreneurship. Penrose stated that her theory applied to companies in which managers were always able and willing to take advantage of new growth opportunities. Thus she treated entrepreneurial management as a constant. As a consequence, the only limit to growth in Penrose's theory is the speed at which companies can develop the managerial capacity to handle each new increment of growth, and growth should be sustainable. We, instead view entrepreneurial management as a variable; a variable that is influenced by the resources available to management. In that sense, our model provides a theoretical explanation to the empirical observation that very few firms exhibit the sustained growth that would be predicted by Penrose's theory.

Third, the bulk of research on slack has focused on the role that cash and/or other excess resources have on performance. Some studies suggest an inverted U-shaped relationship. An implicit assumption in explanations of this curvilinear relationship is that *the level* of slack determines if the effect is positive or negative, but these positive and negative causal mechanisms have hitherto not been explicated and empirically tested. The novelty of our approach is that we explicate management practices that translate resource scarcity into growth while at the same time acknowledging the direct positive implications of slack. We build on the work in corporate entrepreneurship to identify the management practices that foster or hinder growth depending on the financial slack available.

Finally, recent research has acknowledged that resource constraints can trigger creative search processes, entrepreneurial thinking and/or behaviors. Consistent with this notion of resourcefulness we focus on the strategic management practices of firms and investigate their link to financial resources and their link to an important performance outcome — growth.

2. Introduction

Do more financial resources promote venture growth? Intuition suggests an unqualified 'yes,' but research findings examining this question have been more mixed. Some researchers following Penrose (e.g. Penrose, 1959) have suggested that resources and the capability for their effective mobilization are necessary to fuel organizational innovation (Damanpour, 1991; Levinthal and March, 1981; Pfeffer and Salancik, 1978; Singh, 1986) and firm expansion (Bamford et al., 2000; Reynolds and White, 1997; Taylor, 2001). Firms without necessary capital are more likely to experience stagnation (Holtz-Eakin et al., 1994; Taylor, 2001) and, at worst, failure (Bates, 1995, 1998; Brüderl and Preisendörfer, 1998; Cooper et al., 1988; Gimeno et al., 1997). However, other scholars have argued that the costs associated with larger resource endowments (e.g. core rigidities and reduced experimentation) may impinge on the entrepreneurial process (Mosakowski, 2002) with excess availability also leading to greater inefficiency (Leibenstein, 1969).

Recent efforts have sought to reconcile these conflicting viewpoints indicating that the effect of slack might be moderated by organizational environment (Katila and Shane, 2005), strategic choices (Mishina et al., 2004), or appropriate governance structures (Brush et al., 2000). An alternative reconciliation of these viewpoints suggests that at low levels, slack has a positive effect on performance, but this gradually diminishes with increasing slack and then becomes negative producing an inverse U-shape relationship between slack and performance (George, 2005; Tan and Peng, 2003).

We deviate substantively from both these approaches by simultaneously considering positive and negative effects of slack within one consistent theoretical framework. Penrose's growth theory suggests that the utilization of idle resources and entrepreneurial recombination of resources represent two mechanisms of growth. We propose that these two mechanisms are closely interrelated and counteract each other. Building on insights in the resource slack and entrepreneurial management literatures, we develop a model proposing that resource slack enhances growth but also reduces incentives for firms to act entrepreneurially by recombining resources, thus stifling an alternative path to growth.

This paper offers several valuable insights. First, we contribute to resource-oriented explanations of growth. Inspired by Penrose and the Resource-Based View, much previous growth research has examined the resource position of firms arguing that greater resource endowments are associated with higher growth (e.g. Chandler and Hanks, 1994; Cooper et al., 1994). This literature typically does not discriminate between resources that are tied up and utilized in current operations and resource slack. Growth is a dynamic process and during the growth process, slack becomes absorbed and released. Sustainable growth for

extended periods of time is very unusual (Shepherd and Wiklund, 2009), and initial resource position is poorly suited to explain such variation. Slack represents a more dynamic concept than resource position and our model suggesting positive and negative effects of resource slack on growth helps provide a more nuanced perspective of the role of resources in the growth process. Thereby, it provides an explanation of growth that is better attuned to empirical realities.

Second, we show that resource slack has a dual effect on growth, fueling growth but stifling entrepreneurship. Penrose stated that her theory applied to companies where managers were always able and willing to take advantage of new growth opportunities. Thus she treated entrepreneurial management as a constant. As a consequence, the only limit to growth in Penrose's theory is the speed at which companies can develop the managerial capacity to handle each new increment of growth, and growth should be sustainable. We instead view entrepreneurial management as a variable rather than a constant—a variable that is influenced by the resources available to management. In that sense, our theoretical model provides a theoretical explanation to the empirical observation that very few firms exhibit the sustained growth that would be predicted by Penrose's theory.

Third, the bulk of research on slack has focused on the role that cash (George, 2005; Voss et al., 2008) and/or other excess resources (Greenley and Oktemgil, 1998; Love and Nohria, 2005; Mishina et al., 2004) have on performance. Some studies suggest an inverted U-shaped relationship (George, 2005; Tan and Peng, 2003). An implicit assumption in explanations of this curvilinear relationship is that *the level* of slack determines if the effect is positive or negative, but these positive and negative causal mechanisms have hitherto not been explicated and empirically tested. The novelty of our approach is that we explicate management practices that translate resource scarcity into growth while at the same time acknowledging the direct positive implications of slack. We build on the work in corporate entrepreneurship to identify the management practices that foster or hinder growth depending on the financial slack available.

Finally, recent research has acknowledged that resource constraints can trigger creative search processes (Gibbert et al., 2007; Moreau and Dahl, 2005), entrepreneurial thinking (Sarasvathy, 2001) and/or behaviors (Baker and Nelson, 2005). Consistent with this notion of resourcefulness we focus on the strategic management practices of firms and investigate their link to financial resources and their link to an important performance outcome — growth.

We begin by developing our conceptual model. It considers first the direct effect of slack on growth. Next, we examine the direct effects of Stevenson's six dimensions of entrepreneurial management (Brown et al., 2001; Stevenson and Jarillo, 1990) on growth and the indirect effect of slack on each of the entrepreneurial management dimensions. We then describe our research sample and methods and conclude with a discussion of the implications of our conceptual model and empirical results for future research.

3. Conceptual model

3.1. Direct effect of slack on growth

In her development of a theory of firm growth, Penrose (1959) proposed that the size of a firm's productive opportunity set is positively related to the ability of the firm to grow. The productive opportunity set, in turn, is determined by the ways in which managers are able to combine resources at their disposal to generate productive services. At any given point of time, the productive services arising from the resource bundles of the firm are not fully exhausted. There is always the potential for firm expansion.

The productive opportunity set of the firm is influenced by two different resource-usage activities. The first way of achieving growth is by putting idle resources to use (Penrose, 1959; Tsang, 1998). All resources controlled by a firm are rarely ever fully utilized — there is always some resource slack. This resource slack creates both incentives and means for expansion. This expansion may come, at least in part, from expansion into new markets.[3] In order for these idle resources to generate productive services they must be combined with other available resources that are not occupied for other purposes. From an entrepreneurial and managerial standpoint, this type of growth is less demanding and is much like putting together a 'jig-saw puzzle' (see Penrose, 1959, pp. 68–78).

Thus, the amount of slack resources directly influences the growth rate of a firm. In principle, firms could instead opt to turn to the outside in order to secure the resources needed for expansion. This is however a less likely scenario because: (a) it is the availability of slack itself that pushes managers to expand because they are eager to put idle resources to use; and (b) if internal resources are available, managers prefer to utilize these before turning to outside sources because the cost of outside financing will be higher due to information asymmetry (e.g. Amit et al., 1990; Helwege and Liang, 1996). The above speaks to a *direct effect* of slack on growth. In line with Penrose's growth theory, we therefore posit:

Hypothesis 1. Slack has a positive effect on firm growth.

3.2. Entrepreneurial management and slack

According to Penrose's theory, growth can also be achieved absent resource slack. Resources tied up for productive purposes can be recombined into more productive bundles through the application of the entrepreneurial judgment of managers. Managers make subjective evaluations of market conditions which are influenced by their perceptions. Based on the discovery of changes in

[3] Whether these forms of growth lead to better firm performance have been debated extensively elsewhere in the literature (Brush, et al., 2000; Cyert and March, 1963; Jensen and Meckling, 1976).

customer preferences and innovation, managers choose to engage in the re-combination of existing resources to satisfy this perceived demand. Hence, opportunities for expansion are limited by the extent to which the managers of a firm perceive opportunities, are willing to act on them and are able to capitalize on them by using their own resources (Penrose, 1959: 84). Thus, this mode of growth involves discovering new market opportunities and changing and using existing resources to match these opportunities.

Importantly, however, the willingness of management to behave entrepreneurially and act upon opportunities is a negative function of slack. Firms with excess capacity have limited incentives to experiment (Sinclair et al., 2000). While this logic is present in several texts (e.g. Mishina et al., 2004; Mone et al., 1998; Scranton and Gibbert, 2006), the most complete treatment has been provided by Stevenson and colleagues in a series of papers on entrepreneurial management (Stevenson, 1983; Stevenson and Gumpert, 1985; Stevenson and Jarillo, 1986; Stevenson and Jarillo, 1990). In essence, their argument suggests that resource slack entices managers to be administrative rather than entrepreneurial in their management approach. Managers with substantial access to resources become complacent, inward looking and risk averse because they wish to protect current positions. Resource scarcity, on the other hand, stimulates managers to adopt entrepreneurial management practices, looking to the outside for new opportunities and to make do with the resources at hand. In line with Penrose's theory, entrepreneurial management has a positive effect on growth because such an approach focuses on taking advantage of new opportunities (Stevenson and Jarillo, 1986).

Combining the direct effect of slack on growth with the negative effect of slack on entrepreneurial management, and the positive effect of entrepreneurial management on growth, we arrive at the model presented in Fig. 1. Building on the work by Stevenson and colleagues, we developed a series of hypotheses regarding the relationship between slack and entrepreneurial management and between entrepreneurial management and growth.

Stevenson and colleagues conceptualize entrepreneurial management as a "mode" different from traditional management. There is a set of management practices that helps describe how firms operate. Stevenson (1984) conceptualized firms as more entrepreneurial to the extent in which this set of management practices reflected the "pursuit of opportunity without regard to the resources currently controlled" (Stevenson and Jarillo, 1990: 23). At the low end of the continuum, management practices are more administrative. These administrative management practices are driven by the purpose of making the most efficient use of its current resource pool. Based on this conceptual work (Stevenson, 1984; Stevenson and Gumpert, 1985; Stevenson and Jarillo, 1990; Stevenson et al., 1989), Brown et al. (2001) empirically validated six management practices that capture the extent to which a firm is more or less entrepreneurial (less or more administrative). We now examine these six dimensions.

3.3. Strategic orientation

The factors that drive the creation of strategy describe the strategic orientation of the firm. At one end of the strategic orientation continuum, firms are more entrepreneurial to the extent that managerial attention and strategic actions are driven by perceptions of opportunity. At the other end of this continuum are the firms that are considered to be less entrepreneurial (highly administrative) whose managerial attention and strategic actions are driven by maximizing the value of currently controlled resources (Brown et al., 2001). The firm's level of financial slack likely influences the extent to which the firm's strategic orientation is more or less entrepreneurial. Firms with financial resources below a target level become more accepting of risk as they attempt to reach this aspiration level (Bowman, 1982). That is, in their search to meet prior aspiration levels, managers focus less on downside risk and become open to innovative approaches with possibilities to improve their current position. These resource-constrained firms are forced to make do with their current limited resource positions and take on more entrepreneurial strategies to recombine existing resources or search externally for opportunities (Mosakowski, 2002).

In contrast, managers of firms with considerable financial slack will continue to direct the attention of their strategic decisions and actions towards the source of their past success. Financial slack will be used to optimize current processes and further develop current market positions while taking a more defensive posture towards new opportunities that generate greater uncertainty (Derickx and Cool, 1989). Managers of firms that have few financial slack resources are "pushed" to seek novel resource recombinations and/or external opportunities. That is, resource constraints encourage managers to have a more entrepreneurial strategic orientation.

A strategic orientation that is more entrepreneurial, i.e., driven by perceptions of opportunity, enhances the firm's ability to detect changes in the external environment that signal opportunities and act upon those opportunities to grow the firm. An entrepreneurial strategic orientation encourages individuals' tendency toward entrepreneurship and enhances their willingness to pursue growth (Stevenson and Gumpert, 1985). A strategic orientation driven by currently controlled resources focuses managerial attention on internal efficiencies rather than external growth (March, 1991; Miller, 1994). For example, Cheng and Kesner's (1997) study of deregulation in the airline industry indicated that firms with an external orientation used available

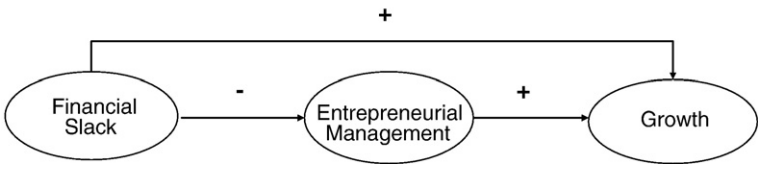

Fig. 1. Slack and entrepreneurial management conceptual model.

resources to offer new products and capture market share. In contrast, airline firms with an internal orientation used resources to buffer the firm by focusing on internal efficiencies. An entrepreneurial strategic orientation looks beyond the possible limits of currently available resources and assumes that needed resources can be recombined or found as opportunities develop. Such an entrepreneurial strategic orientation is more proactive towards pursuing perceived opportunities and contributes to firm growth. Thus,

Hypothesis 2a. Slack has a negative effect on an entrepreneurial strategic orientation.

Hypothesis 2b. An entrepreneurial strategic orientation has a positive effect on firm growth.

3.4. Resource orientation

Stevenson has described resource orientation along dimensions of commitment and control. A firm's resource orientation is more entrepreneurial to the extent that it attempts to minimize the firm's resources committed while attempting to maximize value creation. A firm's resource orientation is less entrepreneurial if it favors ownership control of resources that are irreversibly invested after thorough analysis (Brown et al., 2001). The firm's level of financial slack likely influences the extent to which the firm's resource orientation is more or less entrepreneurial (or less or more administrative).

If an entrepreneurial resource orientation emphasizes the co-optation of others' knowledge, skills, processes, and financial capital (Starr and MacMillian, 1990), what is the effect of greater discretionary resources on this practice? Firms with greater available discretionary resources feel obligated or compelled to use them. Rather than conducting opportunistic searches for external resources, resources are purchased for internal use often at full cost. Higher levels of financial slack reduce the perceived need for both creative resource recombination within the firm as well as cooperation with other actors that may have complementary resources that could fuel growth (Baker et al., 2003; Garud and Karnoe, 2003).

A firm that is more administrative in its resource orientation will engage in careful analysis and planning followed by heavy investment to gain greater market share and eventual returns. On the other hand, firms with a more entrepreneurial resource orientation have greater flexibility to change course when necessary, to pursue multiple high-variance opportunities, and minimize exposure at any one stage of a project by investing in a multi-step manner (McGrath, 1999). For example, in the dynamic biotechnology industry, Merck has a 'variety of thrusts into the future' by making smaller investments targeting a broad spectrum of medical problems through which they can benefit from both short and longer-term payoff projects (Brown and Eisenhardt, 1998: 134). Merck not only benefits from its internal research efforts but also from knowledge transfer through collaborative efforts with universities, biotechnology firms, and other corporations. Such an entrepreneurial resource orientation allows the firm to manage uncertainty by pursuing multiple opportunities with the help of others and ultimately growing the firm around those opportunities that reveal themselves as attractive. In sum, the nimbleness of entrepreneurial firms, their willingness to rapidly commit resources when a growth opportunity presents itself and their leveraging of own resources by the collaboration with others allow firms that pursue an entrepreneurial resource orientation to better capitalize on growth opportunities and grow faster (Stevenson and Gumpert, 1985). Thus,

Hypothesis 3a. Slack has a negative effect on an entrepreneurial resource orientation.

Hypothesis 3b. An entrepreneurial resource orientation has a positive effect on firm growth.

3.5. Management structure

A firm's management structure is more entrepreneurial to the extent that it is more organic providing a flexible organization where employees are free to create and seek opportunity. It is less entrepreneurial when its structure is more formalized with a clearly defined hierarchy, authority, responsibility, and systems to ensure efficiency (Brown et al., 2001; Burns and Stalker, 1961). The firm's level of financial slack likely influences the extent to which its organizational structure is more entrepreneurial or more administrative.

Management structures are created to enable firms to pursue common goals which require gathering resources from the environment, dispensing products or services, training and motivating employees to contribute to this effort, and providing a means to work with other organizations (Scott, 2003). Greater financial slack smoothes conflict among coalition members (March, 1994) by funding investments in members' projects. However, the assets acquired for these projects increase the planning and coordination necessary to efficiently use these assets. For example, studies have suggested that greater oversight from the corporate level is necessary to reduce the likelihood of inefficient investment from free cash flow (Brush et al., 2000; Rediker and Seth, 1995). In contrast, lower levels of slack require that a firm adhere closely to the external environment to achieve firm objectives (Litschert and Bonham, 1978). The ability to adjust the firm to the environment contingencies requires a flexible management structure that allows employees to creatively look for opportunities and resources external to the firm rather than a structure that provides careful oversight of current firm resources (Starr and MacMillian, 1990).

Firms can achieve growth by managing the addition of capacity to their current operations. To achieve growth from the addition of new products/services or new markets, firms must be flexible and open to change (Stevenson and Gumpert, 1985). This requires that information is captured, assimilated, and communicated quickly to others in the organization to adapt to the environment. Entrepreneurial management structures facilitate this adaptation because they are 'flatter', use less formal means of

communication, and cooperate through networks both inside and outside the organization. This allows them to rapidly respond and act when a growth opportunity presents itself. Firms with entrepreneurial management structures design "jobs with real-time market input" (Stevenson and Jarillo, 1986: 13). Supporting empirical evidence indicates that the diffused management structures of franchises (Shane, 1996) and innovative technology alliance partnerships (Stuart, 2000) facilitate greater growth. Thus,

Hypothesis 4a. Slack has a negative effect on an entrepreneurial management structure.

Hypothesis 4b. An entrepreneurial management structure has a positive effect on firm growth.

3.6. Reward philosophy

A firm's reward philosophy indicates "how score is kept" directing behaviors within the firm. A firm is more entrepreneurial when its reward philosophy reflects interest in creating and harvesting wealth by encouraging (rewarding) independent action and accountability and the pursuit of opportunity (Stevenson and Jarillo, 1986). A firm is less entrepreneurial if its reward philosophy reflects a focus on controlled resources and rewards those with responsibility for (control over) more of those resources (Brown et al., 2001). The firm's level of financial slack likely influences the extent to which the firm's reward philosophy is more entrepreneurial or more administrative.

If a firm has access to substantial slack, it can allow its managers to independently experiment with new initiatives. There is little need and incentives for managers to collaborate and pool scarce resources. Because little collaboration is needed, large amounts of slack creates incentives for managers to develop their own fiefdoms. This makes it possible to evaluate and compensate people based on their own individual responsibilities and performance. This is in line with reward systems that compensate people on the basis of individual responsibility and resource control so that "power, status, and financial reward will come from acquiring control over tangible assets" (Stevenson and Jarillo, 1986: 16). A firm that lacks slack but wants to pursue new opportunities needs to develop reward systems that encourage collaborative use of resources irrespectively of who is in charge of any specific project. Thus, compensation systems cannot be based solely on individual achievements but need to be devised so that employees can benefit from the increased value of the firm (Brown et al., 2001; Stevenson and Jarillo, 1986). For example stock options are a common way of compensating employees in entrepreneurial firms (e.g., Ittner et al., 2003).

A more entrepreneurial reward philosophy triggers behaviors that lead to firm growth. Under a more entrepreneurial reward philosophy, employees are rewarded for adding value to the firm, which increases the likelihood of "opportunity search" by a greater percentage of employees (Jones and Butler, 1992). Such a reward philosophy also develops higher levels of commitment and trust within the organization; particularly in start-up firms where compensation (i.e. stock options) may be based on the development of future value including firm growth (Ittner et al., 2003). Firms with a less entrepreneurial reward philosophy promote employees based on tenure in the firm with greater compensation given to those with more responsibility and resources under their command (Brown et al., 2001). Such a reward philosophy encourages a defensive posture as firms seek to protect resources and are less likely to deploy them for pursuit of an opportunity for growth bound in uncertainty. Thus,

Hypothesis 5a. Slack has a negative effect on an entrepreneurial reward philosophy.

Hypothesis 5b. An entrepreneurial reward philosophy has a positive effect on firm growth.

3.7. Growth orientation

Firms begin with different goals leading to differences in their orientation toward growth (Birch and Medoff, 1994). A firm is more entrepreneurial to the extent that it is motivated to achieve rapid growth (Wiklund and Shepherd, 2005). A firm is less entrepreneurial if its motivation is to grow at a slow, steady pace that does not unsettle the firm or overly risk its resources (Brown et al., 2001). The firm's level of financial slack influences the extent to which its growth orientation is more or less entrepreneurial. While slack resources may encourage experimentation (March, 1994), it does not necessarily encourage behavior in the pursuit of rapid growth (March and Simon, 1958). As Litschert and Bonham (1978: 217) noted, "When slack is relatively high, excess resources are available to pay the price of a structural design which may stray from the contingent requirements of contextual variables." Growth motivation and strategies, in this case, may be tied more to the interests of the dominant coalition than a tight fit with structure or assessments of the external environment. Furthermore, high slack reduces the need to take risk, reducing the likelihood of a growth-oriented focus (Miller and Leiblein, 1996).

Although less entrepreneurial firms may also seek growth, they tend to do so at a rate that does not jeopardize accumulated resources or create fluctuations in the management track record (Stevenson and Gumpert, 1985). Entrepreneurial firms are interested in generating high growth. By looking beyond current resources, entrepreneurial firms seek rapid growth pursuing and capturing a broad range of ideas generated within the firm (Brown et al., 2001). Although all attempts to achieve high growth may not be successful, there is evidence that those firms that have an aggressive growth orientation also achieve higher levels of growth (Wiklund and Shepherd, 2003). Thus,

Hypothesis 6a. Slack has a negative effect on an entrepreneurial growth orientation.

Hypothesis 6b. An entrepreneurial growth orientation has a positive effect on firm growth.

3.8. Entrepreneurial culture

Organizational culture is typically defined as a complex set of values, beliefs, assumptions, and symbols that define the way in which a firm conducts business (Barney, 1986). A firm is more entrepreneurial when its organizational culture encourages a broad array of new ideas, experimentation, and creativity. A firm is less entrepreneurial to the extent its culture encourages new ideas, experimentation, and creativity focused on, or bound by, the resources that the firm controls (Brown et al., 2001). The firm's level of financial slack likely influences the extent to which the firm's organizational culture is more or less entrepreneurial.

Firms with available resources feel compelled to use them and spend less time conducting opportunistic searches outside the firm (Miller, 1994). Furthermore, well endowed firms with available resources often look unfavorably on 'begging, borrowing, or scavenging', which is considered appropriate or even positive in cultures that are more entrepreneurial in nature (Starr and MacMillian, 1990). Such "entrepreneurial" cultures do not rely on surplus resources as a buffer from expensive mistakes; rather, the culture encourages its members to "spend creativity and imagination instead of funds" (McGrath and MacMillan, 2000: 341). Resource constraints drive the collective mindset of organizational members to accept and foster strategic experimentation, trial-by-error learning, and the "imaginative use of their limited resources" (Stevenson and Gumpert, 1985: 88).

More administratively focused firms create a culture whereby increasing the standardization of processes, systems, and job functions lead to improved productivity as the goal (March, 1991). New ideas are developed to match the current resources available for use. While beneficial, this culture encourages members' behavior that results in improvements in performance through efficiencies (e.g., profitability) rather than firm growth. A more entrepreneurial organizational culture reflects a tendency to support experimentation and creative processes often departing from established practices and technologies (Lumpkin and Dess, 1996). There is a collective belief that the environment is opportunity-rich (Brown et al., 2001), an encouragement of members to pursue a broader set of ideas (Kuratko et al., 1990), and a fostering of an internal environment that attempts to learn from failure (McGrath, 1999). While an entrepreneurial culture does not assure a positive outcome for any single product/service trial and may lead to greater variance in outcomes, the learning from such probes increases the overall odds of future new product success (Maidique and Zirger, 1985). Firms that are more administrative are certainly not precluded from growth. However, they typically generate sales from a more proven and narrow set of opportunities that that is associated with slower growth rates than entrepreneurial firms (Covin et al., 2006). Thus,

Hypothesis 7a. Slack has a negative effect on an entrepreneurial culture.

Hypothesis 7b. An entrepreneurial culture has a positive effect on firm growth.

4. Research methods

4.1. Research design and sample

Empirical testing of the influence of slack on growth required data collected over time. Cross-sectional designs would show a negative relationship between slack and growth simply because growth occurs as slack resources are being put to use (Penrose, 1959). For the same reason, a lag between measuring slack and entrepreneurial management is needed. Further, resources differ in how fast they can be applied to alternative uses, i.e., some resource slack is more discretionary than others (Sharfman et al., 1988). Some resources are liquid and can find alternative uses relatively quickly, while other resources are sticky. For example, financial resource slack is liquid and can rapidly be invested for new purposes while it may take time to productively transfer human resource slack from one department to another. Consequently, we needed to ensure that we appropriately matched the time-lag between measuring slack and growth with a measure of slack of adequate discretion. We focused on financial slack, the most liquid form of slack, and measured its consequences on entrepreneurial management in the following year, and on growth in the four subsequent years. A major advantage of using financial slack is that it allows the study to be conducted over a relatively compressed time span. This reduces the risk of disturbance by intervening variables. Yet, extending the study over a six-year period should allow us to capture the full growth effect of financial slack.

The data collection effort was intended to be consistent with Stevenson's view of entrepreneurship as a style of management that applied to many different types of firms. Using both small and medium sized firms provided a greater likelihood of variance in the use of entrepreneurial and administrative management styles. The sample is drawn from two different data collection efforts. In the first, primary data were collected from a large stratified sample of Swedish firms. Sampling criteria were (a) four industrial sectors based on ISIC codes (manufacturing, professional services, wholesale/retail, and other services); (b) employment size class divided into two groups (10–49, 50–249); and (c) corporate governance (independent firms and members of business groups). The sampling population contained 2455 firms obtained from Statistics Sweden (the Bureau of Census). Data were collected using telephone and mail surveys targeting the CEOs of these firms. The firms were initially contacted by telephone with 2034 responses (82.9%). All firms interviewed received a mail survey, generating 1116 complete responses after two reminders, for a response rate of 45.4% of the original sample. The scale for measuring *Entrepreneurial Management* appeared in the mail portion of the survey. Table 1 provides descriptive statistics of the dataset by industry.

Financial and accounting measures necessary for the operationalization of slack and performance as well as the control variables were taken from a database containing information on all incorporated companies in Sweden for the year preceding the mail survey, the year of the mail survey, and years after the mail survey. The database was constructed by a leading credit rating

Table 1
Descriptive industry statistics.

Industry	Freq.	Percent	Cumulative
Mining and construction	5	0.46	0.46
Durable goods	131	12.17	12.64
Non-durable goods	90	8.36	21.00
Transport, communication, utilities	99	9.20	30.20
Wholesale and retail trade	220	20.45	68.01
Materials and manufacturing	201	18.68	69.33
Service	330	30.67	100.00
Total	1076		100

firm (KreditFakta) on the basis of various official data registers. By law, 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 final sample of 1076 firms provided substantial power (1.0) based on the degrees of freedom (329) and closeness-of-fit (MacCallum et al., 1996).

4.2. Measures

4.2.1. Dependent variable

The dependent variable was organizational growth. There has been substantial debate in the literature over the growth construct and its operationalization (Davidsson and Wiklund, 2006; Shepherd and Wiklund, 2009; Weinzimmer et al., 1998). Sales growth is the most commonly used measure in prior studies (Shepherd and Wiklund, 2008) and conforms most closely to the logic of Penrose (1959) and Stevenson (Stevenson and Jarillo, 1990) used in this study. The dependent variable was operationalized as absolute sales growth for four years following the survey year (survey $= t_1$) in which Entrepreneurial Management data was collected (growth based on t_{2-5}). A lagged dependent variable helps alleviate concerns over reverse causality but does not rule out its possibility. We further explore the issue of reverse causality in the discussion section. This measure of growth is methodologically reasonable for this dataset (Allison, 1990), is robust to a number of different measures of growth (see robustness checks in Results section) and is consistent with both recent and prominent studies of growth (Baum and Wally, 2003; Covin et al., 2006; Eisenhardt and Schoonhoven, 1990; Mishina et al., 2004).

4.2.2. Resource slack

As mentioned above, we relied on *financial slack* because it is highly discretionary and can be rapidly absorbed into new uses. Following prior work, this variable is measured in comparison to a target level as the difference between working capital available (cash, cash equivalents, inventory, accounts receivable) and working capital required (accounts payable and accrued expenses). It indicates whether a firm is keeping excess resources that are not put into productive use (positive financial slack) or fueling growth that may include short term deficits (negative financial slack) (Bhide, 1992; Mishina et al., 2004). Our measure is highly correlated (.99) with George's (2005) notion of transient slack. We measured slack in the year prior to measuring Entrepreneurial Management (financial slack $= t_0$).[4]

Slack is likely to be size dependent and it is important to control for this effect. However, dividing the slack variables by sales or assets would potentially confound the analysis through common denominators in the regression equations as well as with the sales growth dependent variable leading to biased estimates. We also preferred a general control for the effect of size on growth rather than just the slack variables through scaling. Therefore, we follow the approach of several recent papers regarding slack that have profits or growth as a DV by including an independent control for size (Mishina et al., 2004; Tan, 2003; Tan and Peng, 2003; George, 2005). Our comparison of results scaling slack to 3 digit ISIC industry slack averages was substantially the same.

4.2.3. Entrepreneurial management

Stevenson's particular conceptualization of *Entrepreneurial Management* was developed into a valid measure by Brown et al. (2001). These measures were carefully developed using two pre-tests and a full scale test on over 1200 firms of different size, industry, and governance structure. Their results in both pre- and full-scale testing indicate six sub-dimensions with high discriminant validity and moderate to high reliability. The instrument uses twenty items to capture the following six factor analyzed dimensions: strategic orientation, resource orientation, management structure, reward philosophy, growth orientation, and entrepreneurial culture. Each of the dimensions was measured on a 10-point scale (see Appendix A for measurement scales). These scales are not intended to capture various *kinds* of orientation. Rather, they examine differences in *degree* ranging from more administrative driven to more entrepreneurial driven firms along six dimensions. A more complete explanation of the validation of measures is found in Brown et al. (2001).

The validity of the scale was confirmed in our analyses. Confirmatory factor analysis (Anderson and Gerbing, 1988) showed excellent initial fit with $\chi 2 = 281.50$, $p < .001$ (136 *df*, $n = 948$), the Normed Fit Index (NFI) was .946, Comparative Fit Index (CFI)

[4] We also used financial slack as the average of two years prior to Entrepreneurial Management with similar results.

was .971, the Tucker Lewis Index (TLI) was .964, and Incremental Fit Index (IFI) was .971. All items significantly loaded on their respective latent construct ($p<.001$, with t values greater than 6.0) except for one item related to resource orientation that was dropped. Modification indexes which represent evidence of misfit were well below recommended levels (Byrne, 2001) confirming proper indicator specification in the model. Composite reliability (CR), which is conceptually similar to Cronbach alpha but does not assume equal item loadings, averaged .72 across all dimensions meeting recommended or minimum acceptable levels for initial scale development (Murphy and Davidshofer, 1988; Nunnally, 1967). *Strategic orientation* was measured with three items and describes the factors that drive strategy (CR = .84). *Resource orientation* was measured with four items and describes the commitment and control of resources (CR = .66). *Management structure* was measured with five items and describes the coordination and hierarchy in an organization (CR = .77). *Reward philosophy* has three items and describes the measures by which employees are evaluated (CR = .61). *Growth orientation* was measured with two items and describes whether a firm pursues rapid or steady growth (CR = .76). The *entrepreneurial culture* dimension was three items and describes whether ideas generated for new projects are generated from creativity and experimentation or from current resources (CR = .71). The indicator factor loadings ranged from .38 to .90 with most above .60 indicating the items share a high degree of variance with their respective constructs. We could have increased shared variance further by dropping additional items but chose to make use of the previously validated scales (Nunnally and Bernstein, 1994).

Evidence for discriminant validity was assessed by several means. First, we expected significant but relatively low correlations between the dimensions because of the formative nature of the Entrepreneurial Management construct. The intercorrelations between the latent constructs ranged from .03 to .34. Second, chi-squared difference tests were conducted between pairs of the six model dimensions. One model constrained the correlation between two construct dimensions (with multiple indicators) to unity (i.e., perfectly correlated), while the other model allowed the construct dimensions to correlate freely with each of these tests significant at $p<.01$. For example, in testing Resource Orientation and Strategic Orientation, the chi-square difference test between the two models ($p<.001$) affirmed the discriminant validity of the constructs. Third, the shared variance among any two constructs was less than the average variance explained by the items in a single construct (Fornell and Larcker, 1981). The shared variance between all possible latent construct dimensions ranged from 0 % to 14 % which is below the average variance extracted (range .34 to .63). Overall, the tests provide evidence of convergent and divergent validity for the measurement model. The entrepreneurial management variables used in the regression were the average scores of dimension items.

4.2.4. Control variables

We controlled for other forms of slack that might influence entrepreneurial management and growth. *Potential slack* represents the remaining borrowing capacity of a firm or resources not yet put into operations. Potential slack was operationalized as 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). *Absorbed slack* has been described as excess costs in an organization (Singh, 1986; Williamson, 1964). Absorbed slack as a measure of efficient resource use has been operationalized as the ratio of selling, general, and administrative expenses to sales (Singh, 1986). Our data did not allow us to separate general and administrative expenses. Therefore, we measured absorbed slack as the ratio of salaries to sales for a firm divided by the firm industry's average salary to average sales ratio. We control for firm *age*, as older firms typically have greater access to resources which allow them to pursue different growth strategies than younger firms (Venkataraman et al., 1990). We also control for *size* as larger firms can be expected to maintain greater levels of resources and control greater market share than smaller firms. Size was operationalized using fixed assets. We compared models with and without logarithm of fixed assets as well as logarithm of employees. Based on similar results, we utilize the more straightforward non-logarithmic size. A company's *past performance* may have a strong influence in following years and will also influence the accumulation of slack resources. Therefore, we control for past performance using profits from the year immediately preceding the measurement of Entrepreneurial Management (past performance = t_0). We conducted our study on a broad group of industries to establish the generalizability of the hypothesized relationships. We used *industry controls* to capture specific industry effects that might influence firm growth. The categories used include: mining, materials, construction, durable and non-durable goods, transportation/ communication/utilities, wholesale and retail trade, and service industries. We used "service" as the reference industry.

4.3. Analyses

In Table 2 we summarize the measurement model variables, number of measurement items, and composite reliability (CR). While the testing of mediated models is common in the behavioral sciences (Baron and Kenny, 1986; Sobel, 1986), methods for testing multiple mediators have been limited because the analytical methods are somewhat obtuse. We used an approach recently offered by Preacher and Hayes (2008) that allows for simultaneous examination of multiple mediators in a single model. The advantages of specifying and testing a single multiple mediation model in lieu of separate simple mediation models include: the ability to determine if the overall effect of a mediation exists, to what extent each of the mediating variables intervene between the IV and DV in the presence of other potential mediators, limiting missing parameter bias, and the ability to determine relative magnitudes of specific indirect effects (Preacher and Hayes, 2008). Robust standard error estimates were used to address potential violations of OLS assumptions. To eliminate possible effects of multicollinearity among the entrepreneurial management dimensions, we orthogonalized the latent variables using a modified Gram–Schmidt procedure following recent studies (Sine et al., 2005; Sine et al., 2003). Orthogonalization of correlated variables simplifies independent tests of significance because it partials out common variance creating transformed variables that are uncorrelated with one another.

Table 2
Means, standard deviations, reliabilities and correlations.

	Mean	SD	# items	CR [c]	1	2	3	4	5	6	7	8	9
1. Sales growth [a]	0.206	2.603	1	–									
2. Mining	0.002	0.042	1	1	−0.004								
3. Construction	0.003	0.052	1	1	0.000	−0.002							
4. Durable goods	0.117	0.322	1	1	−0.014	−0.016	−0.020						
5. Non-durable goods	0.081	0.272	1	1	−0.018	−0.013	−0.016	−0.110					
6. Transportation, comm. and util.	0.089	0.284	1	1	−0.018	−0.014	−0.017	−0.117	−0.095				
7. Wholesale and retail trade	0.197	0.398	1	1	−0.006	−0.021	−0.026	−0.182	−0.147	−0.156			
8. Materials	0.035	0.184	1	1	0.000	−0.008	−0.010	−0.072	−0.058	−0.061	−0.096		
9. Past performance [a]	0.41	5.14	1	1	0.162	−0.003	−0.003	0.029	−0.023	−0.036	−0.034	0.008	
10. Age	23.54	20.261	1	1	0.065	0.033	0.022	0.083	0.116	0.043	−0.051	0.058	0.106
11. Size [a]	0.041	0.44	1	1	−0.031	−0.003	−0.002	−0.021	−0.015	0.006	−0.037	−0.002	0.146
12. Potential slack	16.711	90.182	1	1	0.007	−0.008	−0.008	−0.058	−0.017	0.049	−0.015	−0.033	−0.012
13. Absorbed slack	1.621	2.624	1	1	0.005	0.020	−0.021	−0.057	−0.072	0.060	−0.128	−0.050	0.164
14. Financial slack [a]	0.176	3.73	1	1	0.693	−0.001	−0.002	−0.011	−0.009	−0.009	−0.015	−0.005	0.335
15. Strategic orientation [b]	6.343	1.815	3	0.84	−0.041	−0.021	0.023	0.031	−0.015	0.031	−0.082	0.013	0.059
16. Resource orientation [b]	5.702	1.482	4	0.66	0.010	−0.014	−0.026	0.043	−0.057	−0.023	−0.095	−0.036	0.020
17. Management structure [b]	6.71	1.598	5	0.76	−0.086	0.020	−0.087	−0.034	0.006	−0.001	−0.008	0.010	−0.034
18. Reward philosophy [b]	6.361	1.457	3	0.61	0.064	−0.007	0.005	0.010	−0.029	−0.088	0.012	−0.013	0.017
19. Growth orientation [b]	3.729	1.836	2	0.76	0.080	−0.008	0.018	0.029	−0.074	−0.034	0.072	−0.004	0.103
20. Entrepreneurial culture [b]	6.519	1.643	3	0.71	0.018	−0.069	−0.025	−0.112	−0.050	−0.114	0.056	−0.013	−0.001

	10	11	12	13	14	15	16	17	18	19
10. Age										
11. Size [a]	0.076									
12. Potential slack	−0.071	0.003								
13. Absorbed slack	0.003	0.063	0.147							
14. Financial slack [a]	0.115	0.003	0.002	0.004						
15. Strategic orientation [b]	0.056	0.061	0.038	0.026	−0.031					
16. Resource orientation [b]	−0.027	−0.006	0.034	0.035	0.031	−0.006				
17. Management structure [b]	−0.023	−0.003	−0.040	−0.030	−0.075	−0.009	−0.016			
18. Reward philosophy [b]	−0.027	0.015	−0.022	−0.006	−0.008	−0.015	−0.011	−0.018		
19. Growth or ientation [b]	0.019	0.005	0.094	0.032	0.018	−0.002	0.020	0.005	0.004	
20. Entrepreneurial culture [b]	−0.111	−0.034	−0.052	−0.016	−0.038	0.000	−0.001	−0.018	0.007	−0.006

$n = 1076$; corr > .06 sig ($p < .05$); Growth variable is absolute sales growth from 1997 to 2000.
[a] Sales growth/10^5; Financial slack/10^6; Size/10^6; Performance/10^4.
[b] Orthogonalized variables. Means and SD shown are prior to orthogonalization. Pairwise correlations are orthogonalized variables as used in analysis.
[c] CR, composite reliability, an indication of internal consistency, is the sum of the square roots of the item squared multiple correlations, squared, and divided by the same quantity plus the sum of the error variances (Fornell and Larcker, 1981).

5. Results

Results of the regression analyses are presented in Table 3. Model 3.1 introduces the control variables of the study as a baseline model. The baseline model explains only three percent of the variance in growth rates. In Model 3.2 we test our first hypothesis — the direct influence of financial slack on firm growth. The introduction of slack substantially improves model fit ($\Delta R^2 = .452$) and the coefficient is positive and statistically significant ($ß = 0.597, p < .001$). These results support Hypothesis 1. The full model tested (3.3) is essentially a mediation model containing direct as well as indirect effects of slack on growth. Therefore an approach was followed similar to Baron and Kenny (1986) for testing mediation by using Preacher and Hayes' (2008) simultaneous mediated model macro. The results are detailed in Fig. 2.

We found that the addition of the Entrepreneurial Management variables provided a statistically significant improvement over and above the previous model ($\Delta R^2 = .014$, $p < .001$). In line with our hypotheses, financial slack had a statistically significant negative effect on five of the six dimensions of Entrepreneurial Management. Three of the six dimensions of Entrepreneurial Management had positive and statistically significant effects as hypothesized. The specific results are reported for each dimension of Entrepreneurial Management and detailed below.

Strategic Orientation: Financial slack had a negative relationship with strategic orientation ($ß = -.020, p < .001$), indicating that greater financial slack is associated with a less entrepreneurial strategic orientation. This finding provides support for H2a. However, there was a non-significant relationship between strategic orientation and firm growth ($ß = -.029$, $p > .10$), and therefore H2b is not supported.

Resource Orientation: Financial slack had a positive relationship with resource orientation ($ß = .008$, $p < .01$), indicating that greater financial resources is associated with a more entrepreneurial resource orientation. This significant finding is the opposite of the hypothesized direction and therefore does not provide support for H3a. Resource orientation had a non-significant relationship with firm growth ($ß = -.036$, $p < .10$), thus not supporting H3b.

Management Structure: Financial slack had a negative relationship with management structure ($ß = -.024$, $p < .001$), which indicates that greater financial slack is associated with a less entrepreneurial management structure. This finding provides support

Table 3
Results for the direct effects of entrepreneurial management and indirect effects of financial slack on firm growth.

Variables	Model 3.1		Model 3.2		Model 3.3	
	Coefficient	Robust SE	Coefficient	Robust SE	Coefficient	Robust SE
DV – Sales growth (1997–2000) [a]						
Control variables						
Mining	−0.401*	(0.202)	−0.231+	(0.139)	0.025	(0.110)
Construction	−0.185	(0.346)	0.026	(0.210)	−0.145	(0.433)
Durable goods	−0.292	(0.263)	−0.058	(0.129)	−0.037	(0.131)
Nondurable goods	−0.313	(0.211)	−0.134	(0.134)	−0.051	(0.128)
Transport/comm/utilities	−0.222	(0.253)	−0.156	(0.231)	−0.040	(0.207)
Wholesale and retail	−0.128	(0.159)	−0.019	(0.125)	−0.069	(0.169)
Materials manuf.	−0.185	(0.307)	0.042	(0.204)	0.071	(0.212)
Past performance [a]	0.086	(0.127)	−0.040+	(0.022)	−0.045*	(0.023)
Firm age	0.007	(0.007)	−0.001	(0.002)	0.000	(0.002)
Firm size [a]	−0.342	(0.437)	−0.128	(0.275)	−0.119	(0.271)
Potential slack	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)
Absorbed slack	−0.046	(0.081)	0.027	(0.038)	0.026	(0.037)
Independent variables						
Financial slack [a]			0.597***	(0.013)	0.599***	(0.013)
Independent to intervening variables						
Financial slack → strategic orientation					−0.020***	(0.003)
Financial slack → resource orientation					0.008**	(0.003)
Financial slack → management structure					−0.024***	(0.002)
Financial slack → reward philosophy					−0.005*	(0.002)
Financial slack → growth orientation					−0.007*	(0.003)
Financial slack → entre. culture					−0.014***	(0.002)
Direct effect of intervening variables on DV						
Strategic orientation → growth					−0.029	(0.057)
Resource orientation → growth					−0.036	(0.078)
Management structure → growth					−0.085	(0.120)
Reward philosophy → growth					0.178*	(0.089)
Growth orientation → growth					0.196*	(0.087)
Entre. culture → growth					0.112*	(0.051)
Constant	0.195+	(0.118)	0.187	(0.110)	0.178	(0.113)
Model						
Log likelihood	−2500.51		−2160.43		−2135.05	
R^2	0.035		0.487		0.501	
Change in R^2			0.452***		0.014***	

Unstandardized regression coefficients with robust standard errors are reported in the table.
Entrepreneurial management dimensions are orthogonalized.
+$p<.10$; *$p<.05$; **$p<.01$; ***$p<.001$ ($n=1076$).
[a] Sales growth/10^5; Financial slack measures/10^6; Size measures/10^6; Performance measures/10^4.

for H4a. But management structure did not demonstrate a significant relationship with firm growth ($ß=-.085$, $p<.10$), and thus does not support H4b.

Reward Philosophy: Financial slack had a negative relationship with a reward philosophy ($ß=-0.005$, $p<.05$), which indicates that greater financial slack is associated with a less entrepreneurial reward philosophy. This finding provides support for H5a. And reward philosophy had a positive relationship with firm growth ($ß=.178$, $p<.05$) — more entrepreneurial reward philosophies were associated with higher firm growth. This finding provides support for H5b.

Growth Orientation: Financial slack had a negative relationship with growth orientation ($ß=-.007$, $p<.05$), which indicates that greater financial slack is associated with a less entrepreneurial growth orientation. This finding provides support for H6a. And the firm's growth orientation had a positive relationship with growth ($ß=.196$, $p<.05$) — more entrepreneurial growth orientations were associated with higher levels of growth. This finding provides support for H6b.

Culture: Financial slack had a negative relationship with culture ($ß=-.014$, $p<.001$), which indicates that greater financial slack is associated with a less entrepreneurial culture. This finding provides support for H7a. And culture had a positive relationship with firm growth ($ß=.112$, $p<.05$) — more entrepreneurial cultures were associated with higher levels of growth. This finding supports H7b.

5.1. Tests for robustness

We conducted robustness checks by further examining firm growth, financial slack, and control measures as well as our analytical technique. Growth could be an artifact of the time period in which there was general growth in the economy (late 1990s). We conducted a comparison of growth rates across industry categories and found they were significantly different ($p<.001$). An examination of variance within each industry through distributional plots also indicated that growth varied substantially within industry. We also examined whether the growth was specifically tied to domestic or international sales. The

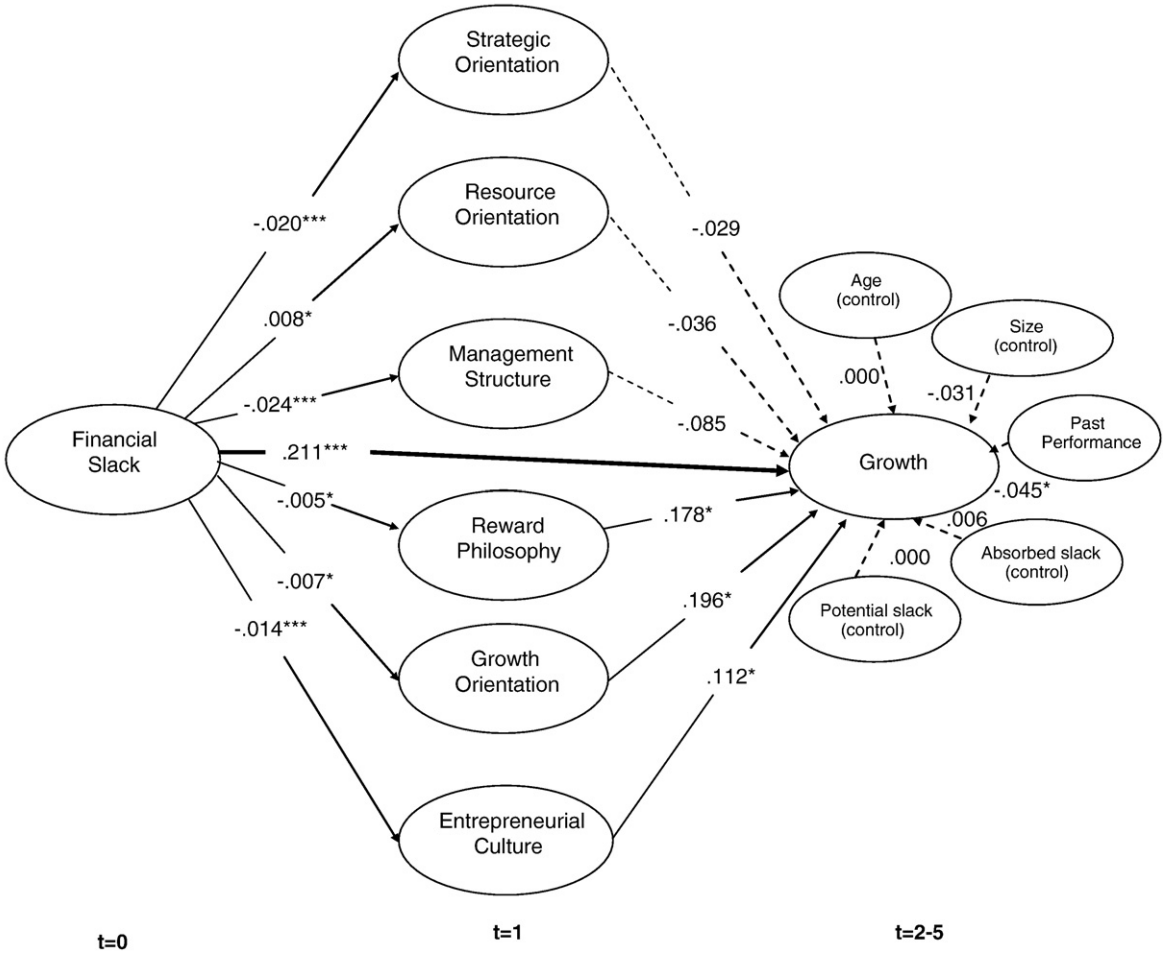

Fig. 2. Slack, Entrepreneurial Management, and growth simultaneous mediated regression results. Unstandardized regression coefficients. Industry control variables were included but not shown. $^{*}p$ .05; $^{**}p<.01$; $^{***}p<.001$; dashed lines indicate non-significant findings. The bold line indicates the direct effect of financial slack on growth.

relationship between "direct exports," and "sales to new customers abroad" and sales growth were not significant ($p>.05$) suggesting that growth was not specific to foreign or domestic sales across industries studied. We examined the dependent variable as a combination of annual sales and employee growth for four years after the survey year (survey $= t_1$) in which Entrepreneurial Management data was collected (growth based on t_{2-5}).[5] This approach address concerns of whether dimensions of growth (e.g. employees, assets, capacity, and sales) are conceptually or empirically similar by incorporating a broader view of firm growth (Kimberly, 1976). On the other hand, employee growth might also be considered as an indicator of slack if employees are not fully utilized leading us to report the more straightforward sales growth (Mishina et al., 2004). The results showed similar magnitude and significance to our reported results. We further examined firm growth using Weinzimmer et al.'s (1998) approach that involves a beta estimate (β) from an OLS model to estimate growth. Firm growth was regressed over a four-year period (1997–2000) and a three-year period (1998–2000) to obtain a beta coefficient for growth. The advantage of regressing growth by year is that it captures intermediate sales years and the effects of prior strategy and resources as they influence growth over time. With the exception that resource orientation became non-significant, results were similar to those reported above, indicating stability in the findings of the study.

Financial slack has been referenced to industry through division by the average financial slack for a 3-digit ISIC industry. As a robustness check we also used this slack measure, which produced substantially identical results. We also used the average of financial slack for the two-year period (t_{-1} and t_0) prior to the survey which produced similar findings in the strength and directions of the hypothesized relationships.

[5] This formative approach standardizing and adding sales and employee growth together could also include additional growth indicators (Baum and Locke, 2004). We focused on employee and sales growth as these were the key measures used in 74 of 82 prior studies and are considered more appropriate to be studied concurrently (Shepherd and Wiklund, 2009).

Research indicates that while there may be positive effects of slack on performance, returns may diminish at higher levels of slack (George, 2005; Tan and Peng, 2003). Therefore, we checked for a potentially inverse U-shaped relationship between financial slack and firm growth by adding to our equation financial slack squared. We also examined the squared term orthogonalized to correct for potential collinearity effects (Kutner et al., 2004). In neither case did we find support for an inverse U-shaped relationship between slack and growth. Results with and without the squared term remained substantially the same, therefore we report the more straightforward result without the squared term. We also examined results with size as logarithm of employees showing similar magnitude of coefficients and the same significance as reported results. Finally, we ran our analysis using a weighted least squares regression that is based on the median rather than the mean which reduces susceptibility to outliers. The results were again similar in term of significance.

Our results showed a strong direct effect of financial slack on growth — the utilization of idle resources. We argued that this expansion may come, at least in part, from entry into new markets. To further detail this direct effect of financial slack on growth, we conducted a supplemental analysis using additional survey data of the same firms. Following Ruef (2002), we use an ordered response model which recognizes the indexed nature of various response variables. We used Stata's oprobit function with maximum likelihood estimation to analyze McKelvey and Zavoina's (1975) ordered probit model. We modeled two firm strategies as the DV and financial slack as an IV. Firms were asked, "Compared to the industry, my company places an emphasis (from 1 to 5) on: Sales to new customers abroad (Model 4.1) and combining existing resources to upgrade existing products (Model 4.2)." The estimates are shown in Table 4. Model 4.1 shows that firms with higher level of financial slack were more likely than firms with lower financial slack to expand markets by generating sales to new customers abroad ($\beta = 0.504$, $p < .001$). Consistent with our arguments from Penrose, Model 4.2 shows firms with higher levels of financial slack were less likely to look at recombining existing resources in unique ways than firms with lower financial slack ($\beta = -0.376$, $p < .05$).

6. Discussion and conclusions

According to Penrose's (1959) growth theory, there are two mechanisms underlying the growth of a firm. First, growth is driven by the utilization of idle resources. Resource slack creates an opportunity for firm growth because such resources can be directed towards new ends (cf. Mishina et al., 2004). Second, growth is driven by the recombination of existing resources. Based on the entrepreneurial judgment of managers, firms discover changes in customer preferences and ways to recombine existing resources to meet these demands. Building on recent insights in the resource slack and entrepreneurial management literatures, we have suggested that these two mechanisms of growth counteract each other. To a large extent, we received empirical support for this logic. We believe that this is a valuable contribution to the growth literature. We show that resource slack has a dual effect on growth, fueling growth through traditional means like market expansion, but stifling entrepreneurship in the resource recombination sense described by Penrose.

Table 4
Supplemental analysis using ordered probit models to predict the likelihood of market and resource utilization decisions from high and low levels of financial slack.

Variables	Model 4.1		Model 4.2	
Dependent variable	New inter. sales		Recomb. exist. resources	
	Coeff.	Robust SE	Coeff.	Robust SE
Mining	−8.129***	(0.211)	−1.383***	(0.170)
Construction	0.195	(0.275)	−1.186***	(0.272)
Durable goods	0.470**	(0.179)	−0.199	(0.193)
Nondurable goods	0.515*	(0.228)	0.010	(0.252)
Transport/comm/utilities	0.087	(0.273)	−0.036	(0.333)
Wholesale and retail	−0.128	(0.276)	−0.218	(0.194)
Materials manuf.	0.032	(0.294)	0.025	(0.308)
Past performance [a]	0.012*	(0.006)	0.003	(0.013)
Firm age	0.007*	(0.004)	0.004	(0.004)
Firm size [a]	−0.391	(0.301)	0.138	(0.120)
Potential slack	−0.003	(0.002)	−0.002	(0.002)
Absorbed slack	−0.011	(0.059)	0.156+	(0.091)
Financial slack [b]	0.504***	(0.156)	−0.376*	(0.153)
Model				
N	15		15	
Log likelihood	−313.18		−456.84	

Unstandardized regression coefficients with robust standard errors are reported in the table.
Alternative DVs (International Sales, Recombine) included as controls in other models but not shown.
+$p<.10$; *$p<.05$; **$p<.01$; ***$p<.001$.
Notes: Firms were asked, "Compared to the industry, my company places an emphasis (from 1 to 5) on: Sales to new customers abroad (Model 4.1). Combining existing resources to upgrade existing products (Model 4.2).
[a] Size measures/10^6; Performance measures/10^4.
[b] High financial slack = 1, low financial slack = 0.

Penrose stated that her theory applied to companies in which managers were always able and willing to take advantage of new growth opportunities, thus she treated entrepreneurial management as a constant. As a consequence, the only limit to growth in Penrose's theory is the speed at which companies can develop the managerial capacity to handle each new increment of growth, and growth should be sustainable. We view entrepreneurial management as a variable rather than a constant; a variable that is influenced by the resources available to management. In that sense, our theoretical model provides a theoretical explanation to the empirical observation that very few firms exhibit the sustained growth that would be predicted by Penrose's theory.

This study also contributes to the literature on financial slack. Prior research has broadly identified both positive and negative effects of slack on performance also recognizing the importance of context and strategy on the nature of this relationship (George, 2005; Mishina et al., 2004; Tan and Peng, 2003). This literature has, however, not explained how slack operates with specific firm-level practices to drive firm growth. In this study, we complement prior research that has addressed when slack is positive (or negative) for performance by drawing attention to the relationships that financial slack has with subsequent firm-level actions. Our results suggest that while financial slack plays a positive role in generating resources for growth, it concurrently weakens incentives for entrepreneurial action.

We found that greater financial slack leads to exploitation of current resources (consistent with administrative management) rather than exploration of new opportunities (consistent with entrepreneurial management). March (1994) also suggested that slack acts as an inducement reducing friction among coalition members. Thus, slack may be used for pay raises, bonuses to individuals, or funding for particular division projects. Our findings indicated that slack reduces the likelihood of growth oriented incentives typical of more entrepreneurial management. In contrast, our findings lend support to greater resourcefulness in firms with less financial slack. We found that lower slack was related to firms that have a flatter management structure. Firms with less specialized routines and structures have an opportunity to improvise and create alternative uses for resources (Baker et al., 2003). Lower slack was also associated with a more entrepreneurial culture where new ideas often outpace resources. This result finds similar support in Katila and Shane's (2005) study where innovation for new firms was greater in resource-poor environments with less venture capital availability. Our theoretical arguments and findings also differ from agency and resource constraint approaches indicating that it is not just waste that leads to diminishing returns to slack. Instead, or in addition, it may be the reduced stimulation of entrepreneurial management that also leads to the diminishing returns of slack on firm performance.

We also contribute to the resourcefulness literature. For example, for bricolage to result in positive performance outcomes, it needs to be engaged within a coherent strategic framework (Baker and Nelson, 2005). In this study we offered such a framework. Specifically, using Stevenson's (1983) framework of entrepreneurial management and Brown et al.'s (2001) validated measures, we captured the extent to which a firm's strategic purpose was "the pursuit of opportunity without regard to resources currently controlled" (Stevenson et al., 1989: 5). Consistent with the logic of the resourcefulness literature — but hitherto untested, we found that resource scarcity was associated with entrepreneurial management in terms of strategic orientation, management structure, reward philosophy, growth orientation, and entrepreneurial culture. In short, a scarce resource position of the firm drives it to be more entrepreneurial. As noted in the cases studied by Baker and Nelson (2005), simultaneous behaviors (stimulated by resource scarcity) across all the firms' activities was not likely to generate growth; instead, more focused behaviors were more successful. Our research adds to this literature by identifying three specific management practices (reward philosophy, growth orientation, culture) where an entrepreneurial approach was associated with growth.

The interesting exception to the relationship between resource scarcity and entrepreneurial management practice is resource orientation; firms with more financial slack had a more entrepreneurial resource orientation. This relationship was in the opposite direction of that hypothesized. A likely explanation for this finding could be that while firms tend towards management practices that are more entrepreneurial in strategy and structure when resources are scarce, financial slack allows firms to "go it alone" in pursuing opportunity rather than using others' resources. Recent research offers evidence of this effect in decisions to form alliances (Patzelt et al., 2008), but future research might further parse out differences that financial slack has on managerial practices. Further, resource-based approaches have conceptually highlighted the importance of combining and recombining current resources into unique bundles, which creates opportunities for firm growth (e.g., Lichtenstein and Brush, 2001). We capture at least some of the firm's practices that are oriented towards the pursuit of opportunity that are, indeed, associated with firm growth.

Although we did not provide a fine-grained analysis of the process of combining and recombining resources, this study represents an important step in offering an explanation for why some firms are more likely than others to behave in ways unconstrained by their current resource set to grow their firms. Future research can investigate the nature of mechanisms that combine and recombine resources to discover/create and/or exploit opportunities for growth and how they are triggered or fostered by a more entrepreneurial reward philosophy, growth orientation, and culture. In this paper, we do have an indication of the resource context that appears to stimulate more entrepreneurial management — lower levels of financial slack. Although financial slack has been a primary explanatory variable in growth studies (e.g. Mishina et al., 2004), future research can extend the current study to investigate resource scarcity in terms of other types of resources.

Finally, we make a contribution to the entrepreneurial management or corporate entrepreneurship literature. We have built on the notion of management practices being more or less entrepreneurial and developed and tested a model that incorporates an important antecedent (financial slack), an important performance outcome (firm growth), and demonstrated that without this mediating construct we would likely arrive at different conclusions about the role of financial slack for expanding a firm. As hypothesized, we found that a firm's management practices partially mediated the relationship between financial slack and firm growth. In other words, our results suggest that while financial slack plays a direct positive role in contributing to firm growth, it concurrently diminishes the extent to which the firm's management practices are entrepreneurial, which in turn diminishes firm

growth. Interestingly, we found that the level of slack influenced all six dimensions of Entrepreneurial Management (albeit one in the opposite direction of that anticipated). This suggests that Entrepreneurial Management is not a fixed characteristic of organizations, but can be adjusted depending of their context. We also find that Entrepreneurial Management influences growth in ways consistent with Stevenson's original conceptual formulations. This offers validation of this theory and supports the empirical relevance of Brown et al.'s (2001) measurement scale. It also provides additional evidence that venturing into the unknown – although uncertain and risky – has performance benefits. Specifically, using Stevenson and Jarillo's (1990) framework of entrepreneurial management.

We believe that future research can build on the notion of entrepreneurial management using Brown et al.'s (2001) validated scale of the construct and extend our study to investigate other antecedents and outcomes that would make additional contributions to the resource, entrepreneurship, and growth literatures. We have examined how levels of slack influence levels of Entrepreneurial Management. It would be interesting to examine how changes in conditions potentially lead firms to adapt their degree of Entrepreneurial Management. For example, if a firm is highly successful it might lead to rapid buildup of financial slack. This should affect its emphasis on Entrepreneurial Management, but it might affect strategic orientation and growth orientation faster than its management structure.

6.1. Limitations and future research directions

In addition to the theoretical contributions discussed, this study suggests several interesting avenues for further inquiry. First, our empirics test whether entrepreneurial or administrative behaviors lead to higher growth rates. However, they do not account for alternative performance measures that might capture the benefits of exploiting current resources and opportunities (March, 1991). It may be that a profit measure like ROA would indicate where administrative behaviors utilizing current routines might have advantages. Our results also indicated that not all dimensions of entrepreneurial management lead to higher growth. This indicates it is not an either/or proposition between entrepreneurial and administrative behaviors — at least for growth. Rather, the firm needs to be selective in its management approach to growth along the dimensions outlined by Stevenson and colleagues. Second, in this study we focused on the working capital required to meet current needs as a resource measure. While we believe this measure of liquid resources provides the strongest measure of managerial discretion (Sharfman et al., 1988), it is one of a number of resources that may influence both management practices and performance outcomes. Future research might include several available slack resources in concert when examining effects on managerial decisions and behaviors. Third, our examination revealed significant relationships between prior levels of resource slack and intervening managerial practices with their concomitant and complex role in firm growth. There was still substantial unexplained variance in the model inviting further inquiry. It is quite possible that other models would provide additional valuable insights. For example, how do current slack levels moderate the direction of entrepreneurial management characteristics? Do other internal factors such as top management team characteristics (Certo, 2003) or organizational routines (Nelson and Winter, 1982) influence choices regarding slack and ultimately firm growth? How much does managerial capacity, as Penrose (1959) suggested, limit growth rates? In this study, we focused on the average effects of financial slack on management practices and controlled for industry effects. Variation may exist across competitive contexts that may provide even greater insight into resource effects on firm-level practices and the effect of firm-level practices on growth outcomes.

Finally, as with many studies of firm performance, there is a possibility of reverse causality. We attempted to limit this possibility using a design where the antecedent slack variable, intervening entrepreneurial management dimensions, and firm growth were lagged over time. Furthermore, we conducted robustness checks extending the lag times and time periods for our measures. While our ordering of variables for the model are consistent with prior theory for a chosen time period (Baker and Nelson, 2005; Sharfman et al., 1988), it is possible that different time periods might have generated other results. The different time frames that we could test in this study were limited by data availability. In particular, over a longer time frame prior growth and behaviors will influence subsequent slack levels as well. That is, it is possible that management practices may influence the level of financial slack, which in turn influences firm growth. To address “causality” issues further, future research will need to rely more heavily on panel data and/or experiments beyond the five-year time window used in this study. Both will make important contributions to our understanding of the role of slack and entrepreneurial practices in explaining variance in firm growth.

7. Conclusion

In offering a theory of the growth of the firm, Penrose (1959) made the critical distinction between resources and the many possible combination sets for which these resources can be put into use. Resources can certainly ‘buy growth’ by expanding markets for existing products, for example. In this study, we extend these arguments by explaining why resource constrained positions can encourage a firm to act more entrepreneurially in handling available resources and detailing how specific managerial practices can lead to firm growth in this regard. We focused on the discretionary resources available or financial slack, and have shown that slack financial resources lead to management practices that were less entrepreneurial on five of six dimensions proposed by Stevenson and colleagues. We have also shown that entrepreneurial management was positively related to firm growth on three of these dimensions. By providing detail to indirect effects of managerial practices in the financial slack–growth relationship, we hope that this study encourages others to continue addressing the role of resource levels on firm-level behaviors and more specifically what firms do with resources in converting them to firm outcomes.

Appendix A. Brown et al.'s (2001) operationalization of management behaviors

Strategic orientation		
1. As we define our strategies, our major concern is how to best utilize the resources we control.	1 2 3 4 5 6 7 8 9 10	As we define our strategies, we are driven by our perception of opportunity. We are not constrained by the resources at (or not at) hand.
2. We limit the opportunities we pursue on the basis of our current resources.	1 2 3 4 5 6 7 8 9 10	Our fundamental task is to pursue opportunities we perceive as valuable and then to acquire the resources to exploit them.
3. The resources we have significantly influence our business strategies.	1 2 3 4 5 6 7 8 9 10	Opportunities control our business strategies.
Resource orientation		
1. Since we do not need resources to commence the pursuit of an opportunity, our commitment of resources may be in stages.	1 2 3 4 5 6 7 8 9 10	Since our objective is to use our resources, we will usually invest heavily and rapidly. (R)
2. All we need from resources is the ability to use it.	1 2 3 4 5 6 7 8 9 10	We prefer to totally control and own the resources we use. (R)
5. We like to employ resources that we borrow or rent.	1 2 3 4 5 6 7 8 9 10	We prefer to only use our own resources in our ventures. (R)
6. In exploiting opportunities, having the idea is more important than just having the money.	1 2 3 4 5 6 7 8 9 10	In exploiting opportunities, access to money is more important than just having the idea. (R)
Management structure		
1. We prefer tight control of funds and operations by means of sophisticated control and information systems.	1 2 3 4 5 6 7 8 9 10	We prefer loose, informal control. There is a dependence on informal relations.
2. We strongly emphasize getting things done by following formal processes and procedures.	1 2 3 4 5 6 7 8 9 10	We strongly emphasize getting things done even if this means disregarding formal procedure.
3. We strongly emphasize holding to tried and true management principles and industry norms.	1 2 3 4 5 6 7 8 9 10	We strongly emphasize adapting freely to changing circumstances without much concern for past practices.
4. There is a strong insistence on a uniform management style throughout the firm.	1 2 3 4 5 6 7 8 9 10	Managers' operating styles are allowed to range freely rom very formal to very informal.
5. There is a strong emphasis on getting line and staff personnel to adhere closely to their formal job descriptions.	1 2 3 4 5 6 7 8 9 10	There is strong tendency to let the requirements of the situation and the personality of the individual dictate proper job behavior.
Reward philosophy		
1. Our employees are evaluated and compensated based on their responsibilities.	1 2 3 4 5 6 7 8 9 10	Our employees are evaluated and compensated based on the value they add to the firm.
2. Our employees are usually rewarded by promotion and annual raises.	1 2 3 4 5 6 7 8 9 10	We try to compensate our employees by devising ways so they can benefit from the increased value of the firm.
3. An employee's standing is based on the amount of responsibility s/he has.	1 2 3 4 5 6 7 8 9 10	An employee's standing is based on the value s/he adds.
Growth orientation		
4. It is generally know throughout the firm that growth is our top objective.	1 2 3 4 5 6 7 8 9 10	Growth is not necessarily our top objective. Long term survival may be at least as important. (R)
5. It is generally known throughout the firm that our intention is to grow as big and as fast as possible.	1 2 3 4 5 6 7 8 9 10	It is generally known throughout the firm that steady and sure growth is the best way to expand. (R)
Entrepreneurial culture		
1. We have many more promising ideas than we have time and the resources to pursue.	1 2 3 4 5 6 7 8 9 10	We find it difficult to find a sufficient number of promising ideas to utilize all of our resources. (R)
2. Changes in the society-at-large often give us ideas for new products and services.	1 2 3 4 5 6 7 8 9 10	Changes in the society-at-large seldom lead to commercially promising ideas for our firm. (R)
3. We never experience a lack of ideas that we can convert into profitable products/services.	1 2 3 4 5 6 7 8 9 10	It is difficult for our firm to find ideas that can be converted into profitable products/services. (R)

Items marked (R) are reversed; i.e., a higher value suggests less entrepreneurial management practices.

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