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ARE MORE RESOURCES ALWAYS BETTER FOR GROWTH? RESOURCE STICKINESS IN MARKET AND PRODUCT EXPANSION

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We examine how managerial growth logics combine with financial and human resource slack to influence the short-term revenue growth of a sample of 112 manufacturing firms drawn from a unique database provided by the Ewing Marion Kauffman Foundation. Our results provide evidence that firms pursuing product expansion logics generally grow more slowly than firms that are not expanding their product base, but that financial slack positively moderates this relationship. We also find that human resource slack enhances short-term market expansion, but slows down short-term product expansion. We discuss the implications of these results for resource-based views of growth. Copyright © 2004 John Wiley & Sons, Ltd.

Managers often cite growth as a desirable goal for their organization (e.g., Brush, Bromiley, and Hendrickx, 2000; Hall, 1967; Whetten, 1987). Growth brings increasing economies of scale and scope (e.g., Chandler, 1990) and other 'economies of growth' (Penrose, 1959). In addition, increased size has been associated with visibility, prestige, and the ability to withstand environmental shocks (e.g., Hannan and Freeman, 1984), as well as higher levels of executive compensation (Lambert, Larcker, and Weigelt, 1991; Tosi *et al*., 2000) and other managerial benefits (Morck, Shleifer, and Vishny, 1990). For these reasons, growth is often viewed as an important organizational outcome, and firms have a number of motivations to expand (e.g., Penrose, 1959). At the same time, it is well known that growth adds complexity to an organization, and that this complexity is sometimes difficult to manage (e.g., Covin and Slevin, 1997; Penrose, 1959). Thus, firms are often faced with strategic dilemmas regarding the rate and direction of their expansion. These countervailing considerations suggest that growth is a performance variable worth considering in research on business strategy.

Indeed, the premise that firms desire to grow underlies the popular 'resource-based view of the firm' (e.g., Barney, 1991; Mahoney and Pandian, 1992; Peteraf, 1993). Tracing the origins of their work to Penrose (1959), resource-based theorists have argued that a firm's unique portfolio of tangible and intangible resources influences the rate and direction of a firm's expansion. Underlying this argument is the assumption that the rate of growth is influenced by how the management team conceptualizes and uses a firm's resources. In Penrose's view, the key role of the management team is to use its knowledge of the firm and market to define and shape expansion paths that transform the firm's resources into profitable growth trajectories. These managerial beliefs, which we will

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call 'growth logics,' define what is perceived to be the set of feasible expansion paths for a firm. As Mahoney and Pandian (1992: 365) noted, 'A rich connection among the firm's resources, distinctive competencies and the mental models or "dominant logic" ... of the managerial team drives the diversification process' such that 'the services and rents that resources yield depend upon the dominant logic of the top management team.'

Given the popularity of resource-based arguments, several studies have explored the relationships among resources and growth strategies in explaining differences in firm growth rates (e.g., Bamford, Dean, and McDougall, 1997; Brush and Chaganti, 1999; Chandler and Hanks, 1994; Carter *et al*., 1994; Cooper, Gimeno-Gascon, and Woo, 1994; Covin, Slevin, and Heeley, 2000; McDougall and Robinson, 1990; Shrader and Simon, 1997). Although these studies offer many useful insights, they leave room for additional theorizing and empirical research. First, the conceptualizations of strategy used in prior studies vary considerably and do not consistently capture logics of growth per se (e.g., Chandler and Hanks, 1994; Carter *et al*., 1994; McDougall and Robinson, 1990). Second, prior research has implicitly assumed that more resources are usually better than fewer resources in promoting firm expansion (e.g., Chandler and Hanks, 1994; Cooper *et al*., 1994). This overlooks the possibility that holding too many resources may be inefficient (e.g., Penrose, 1959), and that entrepreneurial success may be derived from 'the pursuit of opportunity without regard to resources currently controlled' (Stevenson, Roberts, and Grousbeck, 1994: 5) and making 'the sparest allotment of resources' (Stevenson and Gumpert, 1985: 88) work to one's advantage.

The present study attempts to address these gaps in the literature. Utilizing a unique database of firms compiled by the Ewing Marion Kauffman Foundation, we examine how managerial growth logics combine with financial and human resource slack to influence the short-term revenue growth of a sample of 112 publicly traded manufacturing firms whose CEOs have been recognized as highly successful entrepreneurs. To overcome the problem of conceptualizing business strategies in a way that directly reflects a logic of growth, we confine our definition of growth to the fundamental activities of growing by extending the market for an existing set of products (market expansion) and growing by developing new products for existing markets (product expansion). We measure these two fundamental growth logics by analyzing the content of narratives written by CEOs to describe the growth plans for their firms. To conceptualize the role of resources in a way that recognizes that resources may inhibit as well as enable growth, we construct measures of short-term financial and human resource utilization, or slack, rather than the total amount of resources possessed by a firm at any given time. In the next section, we present a series of hypotheses that describe and account in more detail for the influence of resource slack and growth logics on firm expansion.

THEORY AND HYPOTHESES

Two fundamental growth logics

In examining the role that strategy and resources play in firm growth, researchers generally have either relied on variations of Porter's (1985) generic business strategies (e.g., Bamford *et al*., 1997; Brush and Chaganti, 1999; Chandler and Hanks, 1994; Ireland and Hitt, 1997; Romanelli, 1989; Shrader and Simon, 1997) or have employed idiosyncratic definitions of strategic dimensions such as 'degree of technical innovation' (e.g., Eisenhardt and Schoonhoven, 1990) to describe the strategies that firms use to expand their business. The problem with these definitions is that they tend to confuse the strategies that firms use to compete with rivals with the core spatial and temporal problem of expanding a business. Ansoff (1965) and Abell (1980), among others, have argued that at the heart of an economic enterprise is a combination of products and markets for those products. Growth must entail business expansion along one or both of these dimensions. As Levitt (1975: 35) once remarked, firms can be 'masters of certain technologies for which they seek markets, or masters of markets for which they seek customer satisfying products or services.' Competitive strategies such as 'low cost' or 'high quality' are deployed within the context of more fundamental managerial beliefs about the opportunities for growth along market and product dimensions.

Conceptualizing logics of growth in this way is consistent with the perspective on growth held by early resource-based theorists. Penrose (1959) viewed the growth of a firm as comprising the double-sided problem of diversifying into new

products and new markets within the constraints of a firm's current pool of available resources. Moreover, a product vs. market distinction concretizes the problem of growth in a way that other strategy dimensions (e.g., 'high quality' or 'differentiated' strategy) do not. Growth brings with it greater organizational complexity (e.g., Covin and Slevin, 1997), and the failure of high-growth firms is often due to the inability of managers to cope with the administrative demands this complexity entails. The difficulty of managing complexity is at the heart of the Penrosian growth engine since it is assumed that such complexity taxes available resources beyond their capacity, thus slowing firm expansion. By reducing the strategic problem of growth down to its most elemental product and market dimensions, the relative complexity of different forms of expansion and its effect on actual growth rates is made more apparent.

One useful way of framing the complexity of market and product expansion is to map these two logics onto a firm's underlying business routines. At least since March and Simon (1958), scholars have viewed organizations as bundles of behavioral routines that are enacted as 'programs' when triggered by internal and external stimuli. Nelson and Winter (1982) have extended this argument to organizational growth by conceptualizing growth as a change in an organization's existing routines. According to Nelson and Winter, even in a steady state the enactment of routines is not a completely programmable task. In their words, 'Just keeping an existing routine running smoothly can be difficult' (Nelson and Winter, 1982: 112), and managers spend a good part of every day struggling to keep an organization in conformance with its routinized standards. Since, in Nelson and Winter's view, growth entails the replication, addition, or recombination of existing routines, growing a firm is an order of magnitude more complex than merely operating the firm in a steady state. The added complexity is due to the disruption of the tacit coordinating mechanisms that have evolved to bind a firm's routines within the boundaries of its existing businesses. At the same time, however, this routine-based view of growth does not imply that all types of growth are equally difficult to manage. In particular, growth involving the replication or extension of existing routines is less disruptive to the normal order than growth that involves building new routines, or the creative recombination of old routines. This point was made clearly by Nelson and Winter (1982: 119), who noted that there are advantages 'that favor the going concern attempting to do more of the same, as contrasted with the difficulties that it would encounter in doing something else' and that 'a firm that is already successful in a given activity is a particularly good candidate for being successful with new capacity of the same sort.'

In the context of the distinction between market and product expansion, Nelson and Winter's routine-based view of growth suggests that, all other things being equal, market expansion will be easier and will lead to more rapid organizational growth than product expansion. Market growth draws on the past experience of the firm and replicates already running input–output routines in the current market or in new geographic and demographic contexts. Product expansion, on the other hand, requires the development of new routines, or the recombination of old routines, and thus involves greater levels of unpredictability as the expansion process plays out (e.g., Leonard-Barton, 1995; Winter and Szulanski, 2002). Because of this unpredictability, new product expansion requires more time in development, testing, and manufacturing than does the introduction of an existing product into a new market.[1] It thus taxes managerial resources more heavily, and may actually detract from the resources allocated to the firm's existing products in its current markets and slowing the firm's rate of growth. In a cross-section of firms seeking to expand in the short run, this reasoning suggests the following two baseline hypotheses:

> *Hypothesis 1: Following a market expansion logic will be positively related to the rate of short-term sales growth.*

[1] While it is possible that, at the margin, some product expansions, such as minor line extensions, could be less complex and uncertain than entering some new markets, such as unfamiliar international arenas, this theoretical perspective suggests that, on average, market expansion is a less complex endeavor than product expansion. This argument is not without precedent. Organizational ecologists have discussed the relative impact of 'core' vs. 'peripheral' change on organizations (e.g., Hannan and Freeman, 1989), and classic theories of organizational structure suggest that sales and marketing functions represent only a downstream subset of the entire input–output technical core involved in the production of a good or service (e.g., Daft, 2001). We discuss this issue in further detail later in the paper, and also test the boundaries of the argument with empirical data in an ex post analysis.

Hypothesis 2: Following a product expansion logic will be negatively related to the rate of short-term sales growth.

Resource slack and the influence of entrepreneurial ambition

While the relative complexity of market and product expansion may be associated with average differences in the rate of short-term growth, the key insight of resource-based theories of expansion is that the complexity of growth must be evaluated within the context of a firm's resources for managing such complexity. In this regard, existing studies exploring the relationships between resource availability, growth strategies, and growth rates has generated mixed results. Some researchers have reported that the resources controlled by a firm generally enhance growth (e.g., Bamford *et al*., 2000; Cooper *et al*., 1994), while others have found that resource differences are unrelated to growth (e.g., Shrader and Simon, 1997). Some have observed that it is the combination of resources with particular business strategies that influences expansion (e.g., Bamford *et al*., 1997), while still others have reported either inconsistent results regarding resource–strategy interactions (e.g., Chandler and Hanks, 1994) or that none of the resource–strategy contingencies that they examined had growth implications (e.g., Brush and Chaganti, 1999).

The lack of clear findings regarding the relationship between resources and growth may be partially attributable to two biases in the existing literature. First, classic resource-based conceptions stress the importance of resource slack as a driver of growth rather than the total quantity of resources possessed by a firm (e.g., Penrose, 1959). Slack is a dynamic quantity that represents the difference between the resources currently possessed by a firm and the resource demands of the current business. The notion of resource slack is important because two firms may possess the same level of resources but differ in the resource needs of their current business. Hence, the two firms would have different levels of resource slack and thus also differ in their growth potential. Without considering current resource demands, it is unclear why the quantity of resources possessed by a firm should relate to organizational growth except in quite general ways.

Reframing the resource/growth relationship as an issue of resource slack highlights a second bias in the current literature. Prior research has been based upon the assumption that more abundant firm resources will lead to faster growth. If, however, it is resource slack that drives growth, this general principle must be restated as implying that more abundant resource slack will lead to greater growth. In support of this view, Thompson (1967: 150) suggested that slack endows a firm with the ability 'to take advantage of opportunities afforded by the environment,' and several studies have found that slack appears to have a positive effect on various measures of performance (e.g., Greenley and Oktemgil, 1998; Miller and Leiblein, 1996; Waddock and Graves, 1997; Weinzimmer, 2000). Other research on resource slack, however, suggests that slack may not always be beneficial for a firm. Wiseman and Bromiley (1996), for example, found that slack negatively influenced performance, and both Simon (1957) and March and Simon (1958) suggested that slack may encourage suboptimal firm behavior.

These countervailing claims might stem from the fact that slack is contingent upon a firm's rate of resource utilization. Slack resources measured cross-sectionally at time $t-1$ will be associated with greater growth at time t only if it is used productively to fuel expansion. From a Penrosian perspective, 'Unused productive services available from existing resources are a "waste" ... but they are "free" services which, if they can be used profitably, may provide a competitive advantage for the firm possessing them' (Penrose, 1959: 68). This implies that if slack resources are to spur growth, they need to be returned to productive use as quickly as possible.

The motivation to transform slack resources quickly into growth is rooted in what Penrose called the 'entrepreneurial ambition' of the top management team: management's desire for growth and its propensity for taking risks to ensure that growth occurs. Highly ambitious managers will seek to extract growth from resources immediately, and thus will drive down slack to minimal levels, preferring instead to invest such resources to expand a firm's market or product position. For entrepreneurial managers, slack is 'waste,' and they are sometimes even willing to endure short-term deficits, or negative slack, in order to promote future growth (e.g., Bhide, 1992). As Stevenson and Gumpert (1985: 88) noted, 'Successful risk

takers have the confidence to assume that the missing elements of the pattern will take shape as they expect.' Such deficit-driven growth is obviously not sustainable in the long run, perhaps making it necessary for firms to alternate periods of resource 'sprinting' and 'pausing' (Mintzberg and Waters, 1982) to modulate the pace of their long-run expansion. Indeed, alternating rates of growth are fundamental to Penrosian growth theory and have come to be known as the 'Penrose effect' (e.g., Mahoney and Pandian, 1992). But in the short run, when measured cross-sectionally in a sample of firms, the relationship between resource slack and a firm's growth rate may actually be an inverse one, since high levels of slack indicate that the firm is not quickly turning over its unused resources into growth.

Resource stickiness and its growth implications

It is important to recognize, however, that slack in different types of resources is not equivalent. Different types of resources possess unique characteristics that can influence the flexibility with which they are deployed. One characteristic of resource slack that is particularly important in this regard is the degree of discretion associated with the resource. Resource discretion refers to the ability to convert slack to other uses should the need or opportunity arise (e.g., Sharfman *et al*., 1988). The more specific a resource is to a particular use, the less discretion management has in deploying excess amounts to alternative uses (e.g., Montgomery and Wernerfelt, 1988; Wernerfelt and Montgomery, 1988).

The concept of discretion parallels Penrose's (1959) notion of resource 'stickiness,' or the extent to which slack resources can be quickly and opportunistically utilized to fuel expansion. Stickiness is a function of a resource's divisibility and fungibility (Penrose, 1959). Divisibility pertains to how easy it is to vary the amount of a given resource according to the demands of the situation. Fungibility pertains to whether a given resource can be applied to multiple ends interchangeably. When compared to more 'liquid' resources, sticky resources are more difficult to manage because they often cannot be allocated in unit amounts that match the demands of the situation (e.g., a production machine might have a minimum capacity considerably greater than one's current need). Moreover, once allocated, their specialized nature makes them less useful if the task at hand changes (e.g., mechanical personnel are not easily adapted to electrical work if market demand shifts toward the latter type of product or service).

Two broad resource categories that have been discussed in the growth literature are financial and human resources (e.g., Cooper *et al*., 1994; Chandler and Hanks, 1994; Brush and Chaganti, 1999). What has not been considered thus far, however, is the fact that financial and human resources differ substantially in their degree of stickiness. Much of the value of human capital is context-dependent and is therefore more closely tied to the nature of existing organizational routines than is the value of financial resources. Because human knowledge and skill tend to be embedded in specific task and organizational contexts (e.g., Knorr-Cetina, 1999; Nonaka, 1994), task expertise is limited to narrow knowledge domains (e.g., Glaser, Chi, and Farr, 1988), and thus it is more difficult to transfer across task situations (e.g., Szulanski, 2003) than generic financial resources. Thus, slack in these two resources should be differentially useful to firms pursuing particular growth logics. This difference has implications for organizational growth by suggesting several possibilities concerning how human and financial resources combine with product and market logics to influence expansion. These are depicted in Figure 1.

Slack in liquid financial resources[2] (see the right column in Figure 1) is a general asset that is easily redeployed to varied uses. When following a relatively predictable market expansion path,

[2] The concept of financial slack bears some similarities to the concept of free cash flow. However, the theoretical constructs underlying financial slack and free cash flow, although related, are conceptually distinct. Free cash flow refers to 'undistributed cash flow in excess of what is needed for positive NPV projects' (Brush *et al*., 2000: 456). Thus, the concept of free cash flow suggests that if firms have free cash flow the only projects available in which to invest the free cash flow are by definition unprofitable (i.e., negative NPV) alternatives. The concept of financial slack, on the other hand, refers to resources in excess of what is needed for a firm to meet its current commitments and support current sales levels. Our measures of slack do not assume that excess resources exist because all profitable investment opportunities have been exhausted. Rather, they just assume that a firm has more resources than currently needed to meet its existing demands. Thus, while the two concepts are related, we focus on resource slack because there is no *a priori* assumption that the only projects that slack can be invested in are those with a negative NPV.

the presence of slack in financial resources indicates that management has not been utilizing such slack to expand the firm's current routines (March and Simon, 1958; Wiseman and Bromiley, 1996). Thus, financial slack should be negatively related to a firm's short-term market expansion, as measured cross-sectionally. On the other hand, financial slack may be beneficial when following a product expansion strategy. In the case of the less predictable and more complex product expansion logic, it is difficult to program the specific path and rate of new product routines *ex ante*. Slack in more fungible financial resources provides management with flexible unused resources to take advantage of emergent business opportunities and resolve unforeseen product complications. This flexibility, in turn, makes expansion into new and uncertain businesses less problematic and should quicken the rate of growth. These arguments lead to the following two hypotheses:

Hypothesis 3: The level of available financial slack when pursuing growth through market expansion will be negatively related to the rate of short-term sales growth.

Hypothesis 4: The level of available financial slack when pursuing growth through product expansion will be positively related to the rate of short-term sales growth.

For stickier human resources, the influence of slack on growth is reversed (see the left column in Figure 1). Because human capital has been acquired in the past while building existing routines, slack in such resources is consistent with the direction of the expansion currently being pursued. The path-dependent and firm-specific nature (e.g., Arthur, 1989; David, 1985) of human resources can be beneficial for a firm because it is difficult for competitors to obtain the same human resource configurations, and thus to copy the firm's strategies (e.g., Barney, 1991; Dierickx and Cool, 1989). Slack in human capital is a pool of expansion-consistent resources that can be drawn from when expanding into new markets, thus promoting short-term market growth. Conversely, for less predictable product expansion, it is difficult to plan for, and efficiently utilize, the specific human resources needed to fuel product diversification. Moreover, slack human resources might be associated with political and cognitive inertia that make expansion into new product domains risky or unpopular (e.g., Hannan and Freeman, 1989). Thus, another consequence of the path-dependent nature of human resources is that it constrains growth into new areas that require different skills or human resource configurations (Penrose, 1959), slowing the short-term rate of growth. These arguments lead to the following predictions:

Expansion uncertainty \ *Slack resources*	'Sticky' human	'Liquid' financial
Predictable market expansion	Human resource slack encourages growth because it is a pool of expansion-consistent talent that can be allocated in ways that build upon what an organization has already done	Liquid financial slack should not exist to any great extent; when it does, it is a sign that management is not utilizing such slack efficiently to fuel growth
Unpredictable product expansion	Human resource slack constrains growth because it cannot be flexibly allocated in opportunistic ways that are unrelated to prior organizational routines	Liquid financial slack encourages growth because it is a flexible pool of unused resources that can be allocated to unpredictable growth opportunities when needed and safeguards against the risks of unforeseen problems that are possible with expansion into new businesses

Figure 1. The relationship between expansion uncertainty and resource slack

Hypothesis 5: The level of available human resource slack when pursuing growth through market expansion will be positively related to the rate of short-term sales growth.

Hypothesis 6: The level of available human resource slack when pursuing growth through product expansion will be negatively related to the rate of short-term sales growth.

METHOD

Data

Our sample consists of 112 publicly held manufacturing firms drawn from the Ewing Marion Kauffman Foundation's database of companies managed by successful entrepreneurs (e.g., Barringer, Jones, and Lewis, 1998; Ireland and Hitt, 1997; Porac, Mishina, and Pollock, 2002). This database contains information on firms being managed by regional finalists and winners in the annual Entrepreneur of the Year (EoY) competition sponsored by Ernst & Young, the Kauffman Foundation, and *Inc.* magazine for the period 1991–97. The application process for the Entrepreneur of the Year competition requires an applicant to write a detailed narrative outlining the history of his or her firm, its current business, and its future plans for growth. This narrative, together with basic financial information about the firm, is then checked for credibility by an auditor assigned to the firm by Ernst & Young at the time of the nomination. The Kauffman database contains information on approximately 2000 of the most well-known entrepreneurial firms in the United States as well as a host of lesser known enterprises. Most of these firms are privately held, thus making the collection of detailed financial and organizational information difficult. The firms in our sample were chosen from the Kauffman database within the constraints that they were publicly held manufacturing firms at the time their CEOs were nominated for the award and that complete data were available from COMPUSTAT on the variables of interest in the present study. We secured 3 years of COMPUSTAT data for each firm: data for the year prior to the CEO's nomination, the year in which the CEO was nominated, and the year after the nomination.

Firms in our sample averaged 73 percent growth in sales over the 2-year period we observed in our study. At the same time, our sample of firms evidenced substantial variation in actual growth rates, making regression analyses meaningful. Two-year cumulative sales growth rates ranged from −58 percent to 433 percent, with a standard deviation of 85 percent. The companies in our sample also varied substantially along other dimensions, helping to enhance the generalizability of our findings. The average firm in our sample was 23 years old and had been public for 6 years at the time of the CEO's nomination, but ages ranged from 2 to 140 years, and some firms had been public for as long as 35 years. The average number of employees per company was 879 in the year the CEO was nominated, although the number of employees ranged from 7 to 8900. Variance was also introduced into our sample by the time period over which the sample was collected. CEOs for three of the firms were nominated in 1991, three were nominated in 1992, six were nominated in 1993, 18 were nominated in 1994, 32 were nominated in 1995, 29 were nominated in 1996, and 21 were nominated in 1997.

Dependent variable

The dependent variable for this study was the 2-year cumulative percentage growth in sales during the year that the narrative was written and the year following the narrative year. The following equation was used to calculate growth in sales:

$$\text{Sales growth} = \frac{\text{Sales}_{t+1} - \text{Sales}_{t-1}}{\text{Sales}_{t-1}}$$

where $t - 1$ is the end of the year just prior to when applicant narratives for nomination were written and $t + 1$ is the end of the year following the narrative year. Because measurements were taken at the end of each year, the above growth measure encompasses a 2-year time period.

There is some debate in the literature regarding the appropriateness of using a change score as a dependent variable because some have suggested that such scores increase measurement error and create serially correlated error terms in the dependent variable across observed time periods (Allison, 1990; Cronbach and Furby, 1970; Edwards, 1994; Overall and Woodward, 1975). While these are valid concerns, neither issue is problematic in our study. Allison (1990) demonstrated that, rather than reducing measurement reliability, change scores actually increase statistical

power because they remove common sources of unmeasured variation that could be firm-specific (Allison, 1990; Henderson and Fredrickson, 2001). Second, our study does not contain multiple observations across time periods for a given firm. Thus, serial correlation in change scores is not an issue. Finally, although we use sales from two different time periods to calculate our growth measure, our analyses indicate that sales at time $t - 1$ are not significantly correlated with sales growth, and sales at time $t - 1$ are either uncorrelated or only weakly correlated with all of the independent variables other than financial slack.[3]

Independent variables

Growth logics

A unique feature of the Kauffman database is the fact that it contains narrative information written by the CEO or top management team describing both the company and the individual being nominated for the award. These narratives include background information on the nominee and his or her accomplishments, the company's history, its primary products and services, its business practices, and its plans for the future. The narratives are submitted with the nomination forms for the Entrepreneur of the Year contest, usually during the first quarter of the contest year, and then audited for accuracy and authenticity. We analyzed the content of these narratives to identify each firm's logics for growth.

The content analysis of text is a research technique that involves classifying textual units into conceptual categories that have particular meanings (Weber, 1990). These units may be words, phrases, sentences, or other lexical units that the researcher deems appropriate. Different units of analysis have been used by researchers for different purposes. In addition, some have used the frequency with which a conceptual category is discussed in narratives as an indicator of the concept's importance (e.g., Abrahamson and Park, 1994; Wade, Porac, and Pollock, 1997), while others have used the mere presence of a conceptual category as an indication of its salience (e.g., Westphal and Zajac, 1998). Since we were interested only in whether a firm intended to pursue a particular type of expansion, a simple binary code indicating whether or not a growth logic was mentioned in a narrative was sufficient for our research purposes. Thus, we coded the presence of market and/or product expansion logics by using two separate dummy variables. Market expansion was coded as a dichotomous variable, where '1' indicated the presence of a market expansion logic in a firm's narrative, while '0' indicated the absence of a market expansion logic. Likewise, product expansion was coded such that '1' indicated the presence of a product expansion logic in a narrative and '0' indicated its absence. Market expansion and product expansion are not mutually exclusive categories, so some firms may have pursued both growth logics concurrently.

Two coders performed the narrative content analysis using ATLAS/ti, a computer-assisted qualitative data analysis package. The coders first identified sentences that referred to future plans for growth on the basis of the tense of the sentence (e.g., 'We *will be* expanding into new geographic areas in the near future,' as opposed to 'Last year we expanded into new geographic areas'). Future tense sentences were then coded as either market or product expansion growth logics. Interrater reliability was determined using Cohen's kappa (Cohen, 1968), which adjusts for random chance in determining interrater agreement. Cohen's kappa for this stage of the content analysis, calculated on a 20 percent subsample, was 0.71. Any disagreements among the raters were resolved by discussion. Since values above 0.40 represent 'fair to good agreement beyond chance' (e.g., Banerjee *et al*., 1999: 6), a Cohen's kappa of 0.71 indicates excellent interrater agreement for our content codes. Examples of the phrases indicative of market and product expansion growth logics are listed in Table 1.

We cross-validated the growth logics coded in the narratives by comparing them with commentary in the 'Managerial Analysis and Discussion' section of a firm's annual 10K statement for the same year the narratives were written. These cross-validations were conducted for a 20 percent subsample of the firms in our database. We determined the degree to which the growth logics expressed in the Kauffman narratives corresponded to future oriented statements about product or market growth discussed in the 10K for that same year. From a pure matching perspective, 81 percent of the companies that mentioned future market and/or product expansion in their narratives also

[3] In analyses not reported here we reran our models excluding lagged sales. The pattern of results did not change.

Table 1. Sample growth logic phrases

Growth logic	Sample phrases
Market expansion	'[reaching] a broader segment of the [current] market' 'applying the company's technology to new markets' 'grow by expanding our customer base and increasing our sales to existing customers' 'increasing [the] market penetration in [our] existing market area' 'expand [our] market internationally'
Product expansion	'new product expansion into markets currently served' 'develop more new products' 'plans to introduce at least one new product in each of the next several fiscal years' 'continuous flow of new products'

mentioned the same in their concurrent 10K. This is a very conservative test of the validity of the Kauffman narratives because 10K statements and the Kauffman narratives serve quite different informational purposes. 10K statements are largely retrospective and focus on what the firm has accomplished during the past year, and do not contain much information about a firm's intended expansion paths.

Resource slack

Numerous measures of slack have been suggested by researchers, and the choice of the most appropriate operationalization is a hotly debated subject. Therefore, we considered the insights of previous researchers in constructing the slack measures we used in our study. First, several authors (e.g., Bromiley, 1991; March and Shapira, 1987; Miller and Leiblein, 1996) have argued that slack is a quantity that is relative to a target resource level, not an absolute amount of resources, so both of our slack measures are based on resource levels relative to appropriate targets. Second, there has been debate in the existing literature about measuring changes in slack over time vs. assessing the level of slack at a given moment in time (e.g., Bourgeois and Singh, 1983; Marino and Lange, 1983; Moses, 1992). We use measures of slack taken at a specific moment because (a) changes in slack are only appropriate when the dynamics of slack over time is of interest, and (b) static measures are more appropriate where the concern is with the deployment of slack resources in the short term, such as in product or market expansion over a 2-year time period (Marino and Lange, 1983).

Moses (1992) suggested that possessing the appropriate level of working capital to meet current needs is the most useful indicator of financial slack. Therefore, we calculated financial slack as the difference between working capital available and working capital required (e.g., Brealey and Myers, 1996). Working capital available was defined as a firm's current assets (e.g., cash and cash equivalents, accounts receivable, inventory, marketable securities) and working capital required was defined as a firm's current liabilities (e.g., accounts payable and accrued expenses). The difference between working capital available and working capital required is a measure of short-term financial resource utilization (e.g., Bromiley, 1991; March and Shapira, 1987; Miller and Leiblein, 1996). Positive financial slack implies that the firm has excess resources that are not being used for productive purposes, and is instead keeping cash and other current assets at a higher level than is necessary. Negative financial slack, on the other hand, implies that a firm is stretching its resources further than expected. Data on firms' current assets and current liabilities were obtained from the COMPUSTAT database.

We calculated *human resource slack* using the following equation:

$$\text{Human resource slack} = \frac{\text{Firm employees}}{\text{Firm sales}} - \frac{\text{Industry employees}}{\text{Industry sales}}$$

While prior studies have discussed different types of slack, the measures used to actually operationalize slack have tended to be strictly financial ratios. Quantitative measures of human resource slack are thus almost nonexistent, although there have been qualitative studies (e.g., Meyer, 1982) and studies that used perceptual measures (e.g., Nohria and Gulati, 1996, 1997). One exception is Welbourne, Neck, and Meyer's (1999) study, which suggests that one way of measuring human resource slack may be to examine the number of employees relative to sales. Indeed, this may be a good place to start, since several authors have

used sales/total employees as a measure of productivity, or 'generated' slack (e.g., Chakravarthy, 1986; Greenley and Oktemgil, 1998). We have inverted this ratio, however, so that larger values indicate greater levels of slack. In addition, as with financial slack, we also felt it was important to follow the recommendation of prior authors that slack be measured relative to a target level. Unfortunately, there is no easily definable human resource analog to working capital required. As an alternative, we calculated the total employees/sales ratio for a company's industry as our comparative target. Although a crude approximation of the 'appropriate' level of human resource slack, this measure takes industry-level differences in human resource requirements and utilization into account, and provides an indicator of whether a firm possesses above- or below-average amounts of slack in human resources relative to industry norms. The data used to calculate the industry averages were obtained from the COMPUSTAT database for all firms within a company's four-digit SIC code.

Control variables

Environmental conditions

The amount of resources available in the external environment could influence a firm's need to maintain slack resources internally. We therefore controlled for two environmental factors that reflect external resource availability. Following previous studies (e.g., Bamford *et al*., 2000; Dean, 1995; Dess and Beard, 1984), we measured *environmental munificence* as the regression slope coefficient divided by the mean value for the regression of time against the value of shipments for the firm's industry. As with human resource slack, industry membership was defined based on four-digit SIC codes. The data on the value of shipments were obtained from the Annual Survey of Manufacturers by the U.S. Census Bureau. The munificence measure was based upon the data for the 5 years preceding the nomination year. We also controlled for the level of environmental dynamism (e.g., Bamford *et al*., 2000; Dean, 1995; Dess and Beard, 1984). Environmental dynamism was operationalized as the standard error of the regression slope divided by the mean value of shipments using the same regression models as were used in calculating environmental munificence.

Year indicators

Since the narratives in this study were drawn from Entrepreneur of the Year nominees throughout the period from 1991 through 1997, we included six indicator variables for 1992 through 1997 to control for any systematic differences across these years that could influence a firm's sales growth. We used 1991 as the excluded category. An indicator variable was coded '1' if the narrative was written during a given year and '0' otherwise.

Industry controls

Three dummy variables were constructed to control for broad industry effects on sales growth. There were 15 different industries represented in our sample, based on two-digit SIC classifications. Given our sample size of 112, including this many industry control variables would use up too many degrees of freedom. We therefore collapsed industry membership across SIC codes into three broad industry categories—chemical, metal, and electronics—and constructed indicator variables for each. An industry indicator was coded '1' if a company fell into a given industry category and '0' otherwise. These three categories capture approximately 80 percent of the companies in our sample. The remaining 20 percent of the companies fell into the excluded category 'other industries.' This approach is consistent with prior research (e.g., Certo *et al*., 2001) that has attempted to define a parsimonious set of industry controls that still accurately reflect the industry composition of the sample.

Firm age

Since older companies have had greater opportunities to develop their resource base and may pursue different growth strategies than younger firms, we also controlled for the number of years since the company was founded. The resulting number was transformed into its natural logarithm to reduce the effects of extreme values. Firm age was obtained by searching company websites, the *Directory of Corporate Affiliations, Corptech Directory of Technology Companies, Dun & Bradstreet's Million Dollar Directory*, and 10K statements.

Firm size

Because larger firms can be expected to have higher levels of resources and more developed market positions, it is important to control for the size of the company. Firm size was operationalized as total sales at the end of the year prior to the nomination year.[4] To assess the effect of possible extreme values on our results we compared regression models using raw sales with those using the natural log of sales to control for size. Since the results of the two sets of models were the same, we report only the raw sales models given that their interpretation is more straightforward.

All independent variables were calculated as the values at the end of the calendar year prior to the nomination year. Since narratives accompanying a CEO's nomination were written and submitted between January and March of a given year, the resource level at the end of the prior year was the most current information available to the firms when writing their narrative statements and developing their growth plans.

Method of analysis

Not all firms' CEOs had equal probabilities of being named a regional finalist or winner in the Entrepreneur of the Year competition. Sample selection bias could exist to the extent that factors that influence a firm's inclusion in our sample, including the firm's prior growth rate, also affect its rate of growth over our 2-year time window (e.g., Vella, 1998). In order to address this problem we used Heckman's method for correcting selection bias (see Heckman, 1979, and Vella, 1998, for detailed discussions of this approach). We first used a probit regression to predict the likelihood that a firm was selected into our sample. This regression was then used to create a selectivity instrument that we included in the OLS regressions predicting 2-year sales growth. The instrumental variable controlled for possible biases associated with a CEO's selection as a regional finalist in the EoY competition.

To conduct the selection analysis we had to define the relevant population from which our sample of firms was drawn. Since our sample consisted of manufacturing firms that are publicly traded and listed in COMPUSTAT, we defined the relevant population as all firms in the COMPUSTAT database in the 15 two-digit SIC codes represented in our sample for the years 1991–97 for which there were complete data. This yielded a sample of 18,844 companies. This population definition allowed us to estimate an equation that accounts for the selection into our sample of publicly traded manufacturing firms whose CEOs were EoY finalists. The following variables were used to predict whether a firm from this group would be included in our sample: year indicators for the years encompassed in the above range, using 1991 as the excluded year, industry indicators, sales, 1-year sales growth using the prior year as the base, and return on sales. All of the variables other than the indicator variables were lagged 1 year so that they reflected data on the firms at the end of the year prior to the year the CEO was nominated for the award. These measures controlled for: (1) the fact that firms from the latter years of the study period are over-represented in our sample; (2) any potential effects industry membership could have on the selection process; (3) the effects of firm size on selection; and (4) the selection effects of firm performance, including prior sales growth. The results of the selection model indicated that the firms in our sample were biased toward the later years in our sampling time window, and also biased in favor of smaller manufacturing firms. The results also indicated that a firm's prior rate of sales growth was unrelated to the probability of the firm being chosen as an EoY finalist.

RESULTS

Table 2 provides pairwise correlations and descriptive statistics for each of the variables in our study. Table 3 presents the results of our regression analyses predicting sales growth using our resource slack, growth logic, and control variables. Five different models were specified. Model 1 tested only the effects of the control variables on a firm's percentage sales growth. Model 2 tested for the main effect of the growth logics (Hypotheses 1 and 2). Model 3 tested interaction effects of the growth logics with financial slack (Hypotheses 3 and 4). Model 4 tested the interaction effects of the growth logics with human resource slack (Hypotheses 5 and 6). Finally, Model 5 is the fully

[4] In analyses not reported here we used total assets instead of sales as the proxy for size and re-estimated the models. The results of our analyses did not change.

Table 2. Correlations and descriptive statistics

Variable	I.D.	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2-year sales growth	1	0.73	0.85	1.00																		
Dum92	2	0.03	0.16	0.03	1.00																	
Dum93	3	0.05	0.23	0.07	−0.04	1.00																
Dum94	4	0.16	0.37	0.06	−0.07	−0.10	1.00															
Dum95	5	0.29	0.45	−0.20	−0.10	−0.15	−0.28	1.00														
Dum96	6	0.26	0.44	−0.03	−0.10	−0.14	−0.26	−0.37	1.00													
Dum97	7	0.19	0.39	0.11	−0.08	−0.11	−0.21	−0.30	−0.28	1.00												
Chemical	8	0.13	0.34	0.09	0.10	−0.09	0.18	−0.13	−0.05	0.01	1.00											
Metal	9	0.24	0.43	0.06	0.04	−0.04	0.09	−0.03	0.05	−0.06	−0.22	1.00										
Electronic	10	0.40	0.49	0.00	−0.02	−0.03	−0.16	0.09	0.10	−0.02	−0.32	−0.46	1.00									
Lagged sales	11	128.69	138.85	−0.02	−0.01	−0.03	0.06	0.08	−0.03	−0.07	−0.20	0.24	−0.08	1.00								
Age (logged)	12	2.78	0.79	−0.17	−0.03	−0.09	−0.09	0.01	0.05	0.11	−0.14	0.10	−0.08	0.15	1.00							
Munificence	13	7.46	6.00	−0.10	0.04	−0.19	−0.26	−0.08	0.17	0.17	−0.05	0.02	0.18	0.13	0.03	1.00						
Dynamism	14	0.00	0.00	0.06	0.33	0.03	−0.06	−0.06	0.21	−0.23	−0.01	0.13	−0.12	0.16	−0.12	0.00	1.00					
Financial slack	15	47.43	46.32	−0.06	0.09	−0.09	0.03	0.06	−0.10	0.03	−0.02	0.20	0.02	0.58	−0.03	0.19	0.12	1.00				
Human resource slack	16	0.00	0.01	0.31	−0.03	0.03	0.13	−0.17	−0.05	0.13	0.18	−0.08	0.00	−0.07	−0.03	−0.05	0.00	−0.06	1.00			
Market expansion	17	0.79	0.41	−0.03	−0.05	−0.07	−0.07	−0.01	0.11	0.08	0.01	0.19	−0.06	0.00	0.16	0.16	0.00	−0.02	0.00	1.00		
Product expansion	18	0.76	0.43	−0.12	−0.04	−0.14	−0.04	−0.01	0.05	0.16	0.16	0.02	0.16	−0.21	−0.01	0.14	−0.04	−0.04	0.05	0.32	1.00	
Selection instrument	19	0.01	0.00	0.21	−0.34	−0.40	−0.29	−0.55	−0.30	−0.19	−0.28	−0.20	0.32	−0.31	0.03	−0.02	−0.09	−0.26	−0.15	0.10	0.13	1.00

$p < 0.05$ for $r > 0.18$ and $p < 0.01$ for $r > 0.24$

specified model that included all main and interaction effects. The selection variable was not significant in any of these models, suggesting that the factors influencing the selection of publicly traded manufacturing firms into our sample were not significantly associated with 2-year sales growth over and above the other variables in our model.

Hypotheses 1 and 2 predict that market expansion logics would be positively associated with short-term sales growth, and that product expansion logics would be negatively associated with short-term sales growth. The results presented in Models 2 through 4 provide little support for Hypothesis 1 regarding the main effects of market expansion. However, the effect of pursuing product expansion is negative and significant in all models. Hypothesis 2 is therefore strongly supported. Firms in our sample that pursued product expansion grew more slowly than those that did not.

Hypotheses 3 and 4 predict that financial slack would negatively moderate the relationship between market expansion and sales growth, and positively moderate the relationship between product expansion and sales growth. The results in Table 3 reveal that the financial slack × market expansion interaction, although negative, was not significant in any of the models. Hypothesis 3 is therefore not supported. Although the financial slack × product expansion interaction is not significant in Model 3, the effect of the interaction is positive and significant in Model 5, providing support for Hypothesis 4 in the fully specified model.

Hypotheses 5 and 6 predict that human resource slack would positively moderate the relationship between market expansion and sales growth, and negatively moderate the relationship between product expansion and sales growth. The results in Table 3 show that both the human resource slack × market expansion and human resource slack × product expansion interactions are significant and in the predicted directions. Thus, both Hypotheses 5 and 6 are strongly supported.

DISCUSSION

Our data reveal an interesting pattern of relationships among managerial growth logics, the nature and availability of slack resources, and a firm's rate of short-term sales growth. We hypothesized that market and product expansion logics would have opposite main effects on sales growth. While we found clear support for the growth inhibiting effect of product expansion, we found no significant facilitating effect for market expansion. While only partially supporting our baseline hypotheses, this finding is consistent with other studies reporting that strategies alone are often not directly related to growth (e.g., Chandler and Hanks, 1994; Brush and Chaganti, 1999). In this regard, our results suggest that the effect of market and product expansion logics on growth rates differed according to the type of resource slack available to firms in our sample. Our data suggest that pursuing product expansion was facilitated by financial slack but inhibited by human resource slack, and that pursuing market expansion was facilitated by human resource slack. We argued that market expansion and product expansion imply different degrees of complexity and uncertainty, and that this difference is important for how each type of expansion utilizes human and financial resources. Our results support the facilitating effects of both types of resource slack, but support only the inhibiting effect of human resource slack on product expansion.

Theoretical contributions

These findings contribute to the resource-based growth literature in a number of ways. First, they begin to reconcile the concept of 'growth strategy' with the classic literature on growth by distilling such strategies down to fundamental market and product expansion logics. Reducing growth strategies to product and market logics allows for a clearer understanding of the spatial and temporal problems entailed in organizational expansion. This conceptual move also has the benefit of making the analysis of any interactions between growth logics and resources more tractable and interpretable.

Second, our study recognizes both supply and demand characteristics of organizational resources. While researchers in the resource-based literature have examined the growth implications of possessing resources in varying amounts, the total amount of resources is not equivalent to the pool of resources a firm has at its disposal to fuel growth, a fact recognized by Penrose (1959). By exploring the relationship between resource slack, growth logics, and the rate of firm growth, our study returns to this basic argument in the resource-based literature. Third, we disaggregate different

Table 3. Regressions predicting cumulative 2-year growth

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
1992 dummy	−1.04	−0.96	−0.95	−1.25*	−1.35*
	(0.72)	(0.72)	(0.72)	(0.70)	(0.70)
1993 dummy	−1.02*	−0.91	−0.93	−1.24**	−1.41**
	(0.62)	(0.62)	(0.62)	(0.63)	(0.63)
1994 dummy	−2.27**	−2.00*	−2.14*	−1.65	−1.72
	(1.10)	(1.11)	(1.12)	(1.08)	(1.07)
1995 dummy	−3.35*	−2.98*	−3.34*	−2.45	−2.69
	(1.79)	(1.81)	(1.84)	(1.77)	(1.77)
1996 dummy	−2.92*	−2.59	−2.88*	−2.17	−2.36
	(1.60)	(1.61)	(1.63)	(1.57)	(1.57)
1997 dummy	−1.89*	−1.57	−1.75	−1.33	−1.48
	(1.09)	(1.10)	(1.11)	(1.07)	(1.06)
Chemical dummy	0.92*	1.01*	1.16**	0.89	0.98*
	(0.55)	(0.57)	(0.58)	(0.56)	(0.57)
Metal dummy	0.81**	0.88**	0.99**	0.83**	0.91**
	(0.36)	(0.37)	(0.39)	(0.36)	(0.37)
Electronic dummy	0.36*	0.48**	0.54**	0.60***	0.72***
	(0.22)	(0.23)	(0.23)	(0.23)	(0.23)
Ln sales (lagged)	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ln firm age	−0.16	−0.16	−0.15	−0.16	−0.15
	(0.10)	(0.10)	(0.11)	(0.10)	(0.10)
Munificence	−0.02	−0.02	−0.02	−0.02	−0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Dynamism	35.40	41.61	24.61	85.90	68.25
	(55.90)	(55.69)	(57.30)	(55.38)	(55.91)
Financial slack	−0.00	−0.00	−0.00	−0.00	−0.01
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
HR slack	25.03***	24.63***	25.55***	115.37**	142.42***
	(8.13)	(8.10)	(8.14)	(46.35)	(48.07)
Selection instrument	169.88	152.91	179.10	93.93	99.24
	(132.75)	(134.70)	(137.01)	(134.80)	(135.07)
Market expansion		0.07	0.25	0.05	0.20
		(0.21)	(0.30)	(0.20)	(0.29)
Product expansion		−0.37*	−0.66**	−0.40*	−0.88***
		(0.21)	(0.32)	(0.20)	(0.32)
Market expansion × Financial slack			−0.00		−0.00
			(0.00)		(0.00)
Market expansion × HR slack				43.28**	41.98**
				(20.81)	(20.80)
Product expansion × Financial slack			0.01		0.01**
			(0.00)		(0.00)
Product expansion × HR slack				−133.41***	−159.53***
				(48.77)	(50.49)
Constant	1.29	1.35*	1.28	1.75**	2.06**
	(0.80)	(0.80)	(0.88)	(0.81)	(0.89)
R^2	0.24	0.26	0.27	0.33	0.36
Adj. R^2	0.11	0.12	0.12	0.19	0.20
F-ratio	1.84**	1.83**	1.73**	2.27***	2.28***

$N = 112$ in all models. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

types of slack based on their stickiness. Our study thus adds the insight that more resource slack is not necessarily better for growth. The stickiness of a resource is an important determinant of how easily it can be converted to expand a business (e.g., Penrose, 1959). Indeed, while asset specificity is a key concept in the resource-based literature, prior studies have tended to focus on the

transferability of resources across firms, not across different uses within firms. By defining resources in terms of their degree of internal stickiness, we have suggested that the relationship between slack and growth is dependent not only upon the amount of slack, but also on the characteristics of the resources in use.

Our results refine our initial argument that stickiness has a negative effect on growth in that we did not find that maintaining high levels of financial slack is overly conservative when pursuing market expansion. One explanation for this result could be the possibility that the inefficiencies of retaining stickier human resources are greater and/or accumulate more quickly than those of less sticky financial slack. Given that our study measured sales growth over a 2-year time frame, the cumulative negative effects of financial slack inefficiencies may have been more difficult to detect. It is interesting to note, in this regard, that the direction of the coefficient for the financial slack × market expansion interaction, though not significant, is in the predicted negative direction.

This qualification aside, our research does strongly support the key theoretical proposition that slack resources do not always promote growth, and, at least in the case of human resources, sometimes can inhibit it. This conclusion is of particular theoretical importance because it adds yet another set of complications to the strategic problem of growing a firm. Nelson and Winter's (1982) argument that expanding a firm's routines is more difficult than keeping routines operating in a steady state is reinforced by much management research suggesting that, especially for young firms, high rates of growth are risky and failure rates are high (e.g., Aldrich, 1999; Hannan and Freeman, 1989). Some scholars have argued that growing firms require increasing amounts of resource inputs, and that the quality and quantity of such inputs become problematic as their supply gets stretched to meet the demands of the growing enterprise (e.g., Penrose, 1959). Others have suggested that growth brings with it increasing administrative complexity, and that the failure of growing firms is often a result of the inability of managers to implement coordinating mechanisms that are effective in keeping the growing enterprise under control (e.g., Covin and Slevin, 1997; Greiner, 1972). Our results add yet a third explanation for the difficulty of managing growth in that they imply that even with adequate resource inputs and effective administrative controls, growing firms are confronted with a trade-off between driving resource slack down to minimum levels for the sake of efficiency and accumulating slack reserves as a hedge against the uncertainties of expansion. Our data suggest that this trade-off is a function of combinatorial interactions between the kind of growth that is being pursued and the nature of the resources involved.

Future research directions

In addition to the above theoretical contributions, this study suggests several potentially fruitful directions for future research. First, additional studies are needed to explore the generality of our results over longer periods of time. The possible difference between short-term and long-term patterns of growth is a complicated issue, both conceptually and methodologically. On the one hand, it is tempting to argue that growth strategies and their interactions with slack resources can only be evaluated in the long run, as the pattern of growth unfolds over time. This would imply that our focus on 2-year sales growth truncates the growth trajectory of the firms in our sample in an undesirable way. On the other hand, growth is an ongoing and instantaneous phenomenon, and resource deployments are made in real time according to short-term feedback from the market and immediate business needs. This suggests that patterns of long-term growth are primarily aggregations and reflections of short-term decisions, and that our focus on short-term strategy and slack interactions is not only appropriate but preferred. Adjudicating between these two interpretations of our results will be possible only with the collection of cognitive, financial, and human resource data over a longer time period than the 3-year observational window that we used in the present study.

Second, while our arguments assume that, on average, product expansion is somewhat more difficult than market expansion, *ceteris paribus*, variations in difficulty and complexity may serve to collapse this difference in certain cases depending upon the types of product or market expansions that a firm pursues. For example, minor product line extensions might entail adding fewer new routines than entering varied international markets for the first time. Situations of this sort set boundary conditions on our results by suggesting that

a binary product vs. market distinction may only imperfectly map the complexity implications of short-term growth.

To explore this issue further, in an *ex post* analysis we recoded our product expansion measure into two finer-grained categories—product line extensions and new product development—and we recoded market expansion into four new categories—increasing share of existing markets, expanding into new domestic demographic markets with current products; domestic geographic expansion, and international market expansion. We then re-estimated our regression models using this more refined coding scheme. The results of this analysis revealed that international market expansion, what might be considered the most complex market expansion available to a firm, yielded a pattern of results similar to that for new product development, which would arguably involve the most complex set of routines. Both of these growth logics had significant negative interactions with human resource slack. In contrast, demographic market expansion, which involves less uncertain market activities, had a significant positive interaction with human resource slack. Although these findings should be viewed with caution because the Kauffman narratives do not always contain many details of planned product or market growth, they do provide some corroborating support for our core argument that it is the complexity of growth activities that interacts with resource slack to influence firm growth rates. We used the single distinction between product and market expansion as a general proxy for the complexity implications of particular kinds of growth, but a logical extension of our arguments would be to probe more deeply into organizational routines and measure growth complexity directly. Recent work by Szulanski and his colleagues (e.g., Szulanski, 2003; Winter and Szulanski, 2002; Szulanski and Jensen, 2001) is a good start in this direction, and may permit the testing of much more specific growth × slack interactions.

Third, future research might also delve more deeply into different types of human resource slack. While human resources tend to be less liquid than financial resources in general, there may be subtle differences across jobs, firms, or industries in the transferability of human capital across task contexts. Variations in such factors as the amount of training or education required, and the generality of an individual's skills and knowledge, may make it relatively easy to transfer some people across certain kinds of jobs. In this paper, we have focused on average differences in stickiness between financial and human slack, and not on variations in stickiness within each type of resource. Future research might explore the implications of within-category variations more explicitly.

Fourth, additional research is needed to track more thoroughly the relationship between managerial narratives of growth and strategic implementation. A limitation of this study is that it is not clear when or if firms actually implemented the strategies they discussed in their narratives. In order to at least partially address this issue *ex post*, we collected data from 10Ks filed at the end of the year the narratives were written for 15 companies in our sample. Since 10K commentary is a report on a firm's activities during the prior year, one might expect some correspondence between what was stated as a plan at the beginning of the year and what was perceived as accomplished at the end of the year. From a pure matching perspective, 76 percent of the companies that mentioned a market and/or product expansion logic in their narratives also mentioned the same logic in their subsequent 10K when reporting on the year's accomplishments. This provides at least some evidence that the strategies discussed in the narratives were still salient at year's end. Nevertheless, future research using other sources of tracking data would be desirable.

Finally, it would be useful if future research examined the interactions among growth logics, slack resources, growth rates, and standard measures of firm profitability. The relationship between growth and profitability has been conceptualized in different ways in the literature. Penrose (1959: 30) offered one perspective by arguing that, at the limit, 'growth and profits become equivalent as the criteria for the selection of investment programmes.' In this view, rational managers pursue growth only when they believe that such growth will lead to higher profits in the future. Brush *et al.* (2000), for example, found that growth rates in a sample of firms from various industries were positively related to standard accounting measures of subsequent profitability. Complicating this argument, however, is the intuition that growth sometimes stretches a firm beyond its current resource position and necessitates short-run deficits as revenues and profits require time to materialize and

pay back investments in expansion. Indeed, Penrose (1959) qualified her growth = profits argument by suggesting that boundedly rational managers may actually exceed their current resource position in the short run, thus reducing their firm's current profitability, by focusing upon long-term growth and profit maximization. This view is consistent with arguments in the financial 'bootstrapping' literature suggesting that firms can choose to 'run on empty' (Bhide, 1992) in the short run to expand their business. Complicating the matter even further is the finding by Gimeno *et al*. (1997) that firms evaluate their performance against internal profitability targets, and that firms with lower targets can actually survive without high levels of profitability over time as long as their target level of profits is met. These considerations suggest that the relationship between growth and profits is indeed a complex one, driven by the growth ambitions and profitability targets of the management team, the current resource levels of the firm, and the time perspective used to evaluate the payoffs from growth investments.[5] More research is needed to untangle these relationships.

CONCLUSION

In her treatise offering a theory of the growth of the firm, Penrose (1959) identified a number of fundamental issues that illuminate the relationship between organizational resources, managerial perceptions and intent, and firm growth. In this study we have attempted to test and extend these arguments by exploring how the nature and availability of resources influence the effectiveness of growth strategies pursued by management. In doing so, we have focused on resource slack, rather than the absolute amount of resources, and have demonstrated that more resource slack is not always better for enhancing growth. We have also demonstrated that financial and human slack resources interact with growth strategies in different ways to influence growth. It is our hope that future resource-based research will continue to consider the complex interactions among managerial belief systems, resources, and the growth of organizations over time.

[5] We explored this issue a bit further by using our models to predict net income, earnings before interest and taxes (EBIT), return on sales, and return on assets. The results of these analyses were largely non-significant. Market expansion demonstrated a positive relationship with EBIT and product expansion demonstrated a negative relationship with EBIT, but only in the main effects model. The market expansion × financial slack interaction was positively related to EBIT in the fully specified model. All other relationships, including all relationships predicting net income, ROE and ROA, were not significant. This pattern of results highlights the complexity of exploring the relationship between profitability, growth logics, slack, and growth rates, and suggests that the topic is outside the scope of the present paper.

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