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Performance Configurations Over Time: Implications for Growth- and Profit-Oriented Strategies

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Strategic entrepreneurship can be described as simultaneous opportunity seeking and advantage seeking. Younger firms are generally more flexible and therefore enjoy "discovery advantages," whereas established firms tend to be resource rich and more experienced and consequently enjoy "exploitation advantages." The resulting evolution of the two important performance dimensions, "growth" and "profitability," by firm age is not well understood. In this article we integrate several theoretical arguments concerning profit–growth relationships to develop a dynamic model of firm development, which suggests different development pathways for young firms. This leads to several unidirectional, competing hypotheses that we examine by studying the profitability-growth configurations of approximately 3,500 small firms and how these configurations evolve over time. We find that for both young and old firms a focus on achieving above-average profitability and then striving for growth is a more likely path toward achieving sustained above-average performance than is first pursuing strong growth in the hope of building profitability later. In line with our hypothesis we find that younger firms are over represented as "Stars" (high on both growth and profitability) and underrepresented as "Poor" (low on both growth and profitability). However, young firms in the "Star" category are also less likely than their older counterparts to maintain that position. Furthermore, our results indicate that young firms are overrepresented not only among "Stars," but also among growth-orientated firms, regardless of the level of profitability. The findings strongly caution against the blind pursuit of growth for young firms, in favor of a thoughtful analysis of how both growth and profitability might be developed by firms. The results also question whether simultaneous high performance in terms of growth and profitability among young firms usually reflects a successful entrepreneurial strategy. The results can also be interpreted as luck on the part of a subgroup of young firms who indiscriminately pursue growth opportunities with varying profit prospects, and in many cases, the high growth–profit performance will be short lived.

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Introduction

Entrepreneurship research and practice places emphasis on company growth as a measure of entrepreneurial success. In many cases, there has been a tendency to give growth a very central role, with some researchers even seeing growth as the very essence of entrepreneurship (Cole, 1949; Sexton, 1997; Stevenson & Gumpert, 1991). A large number of empirical studies of the performance of young and/or small firms use growth as the dependent variable (see reviews by Ardishvili, Cardozo, Harmon, & Vadakath, 1998; Delmar, 1997; Wiklund, 1998). By contrast, the two most prominent views of strategic management—strategic positioning (Porter, 1980) and the resource-based view (Barney, 1991; Wernerfelt, 1984)—are both concerned with achieving competitive advantage and regard achieving economic rents and profitability relative to other competitors as the central measures of firm performance. Strategic entrepreneurship integrates these two perspectives and is simultaneously concerned with opportunity seeking and advantage seeking (Hitt, Ireland, Camp, & Sexton, 2002; Ireland, Hitt, & Sirmon, 2003). Consequently, both company growth and relative profitability are together relevant measures of firm performance in the domain of strategic entrepreneurship.

Yet firms' growth and profitability interact and evolve in complex, multidimensional ways that are not well understood. Growth, whether measured as sales or employee growth, is not always good news for a firm. As originally proposed by Penrose (1959), growth is not just a change in size, but also a process that may lead to challenges during managerial transitions (Arbaugh & Camp, 2000). Moreover, despite several theories (and perhaps popular notions) suggesting that growth leads to higher profitability, a review of the empirical evidence (see Davidsson, Steffens, & Fitzsimmons, 2008, in press) demonstrates there is no substantial, universal, and positive intraindustry relationship of that nature. While these two dimensions of performance sometimes move together, there are frequent other instances where the growth–profit relationship is either neutral or negative.

Indeed it is argued that younger, smaller firms are relatively more effective in identifying opportunities than their larger, established counterparts, yet they are less effective in developing competitive advantages to an appropriate value from those opportunities (Ireland et al., 2003). As such, the character of the relationship between a firm's profitability and growth can be expected to change over time as the firm develops.

This paper extends earlier work by contextualizing the study of growth and profitability in two important ways. First, we use a configuration approach that simultaneously but separately considers both a firm's growth and profitability, rather than considering only one of them or lumping them together in a performance index. Second, we explore differences in growth-profitability dynamics across companies of different ages. We integrate multiple theoretical perspectives to suggest different ways the profitability–growth configuration of firms might evolve over time. To explore difference by company age we make one fundamental assumption, namely that younger firms tend to be stronger in "discovery ability" while older firms tend to have better "exploitation ability." This point will be elaborated further later. Despite our emphasis on configuration and development over time, we do not position ourselves in the "stages-of-development" tradition (e.g., Churchill & Lewis, 1983; Greiner, 1972; Kazanjian & Drazin, 1989). That literature tends to assume complex and often deterministic configurations of founder and firm characteristics that evolve and change along an unspecified timeline. By contrast, we focus on configurations of performance outcomes for companies in different, specified age groups and suggest or explore probabilistic rather than deterministic relationships between age and performance configurations.

In order to make the type of contributions that we intend, we employ a non-standard approach in this paper. We do not derive ideas from one theory about a few variables' effects on a single performance variable. Instead, we use input from multiple theories and perform empirical analyses in order to make sense of the dynamic interplay between two aspects of firm performance: growth and profitability. To help explain the lack of consistent findings in previous research, we first review the principal theoretical arguments concerning the growth–profit relationship and then integrate these insights into a model outlining alternative performance pathways by company age. This means that we provide a broader theoretical context for our analysis than what is strictly needed for a narrow interpretation of our results. Empirically, we examine the prevalence of companies proceeding along these possible pathways using a large, longitudinal data set of Australian firms. We classify firms into configurations based on their profitability and growth relative to other firms in their industry and examine changes over time. The analysis consists of hypothesis testing, where we find sufficient theoretical justification. Where competing theoretical arguments occur, we employ a strong inference approach (Balkundi & Harrison, 2006; Platt, 1964) to examine whether either of the two alternative hypotheses can be rejected. For the purposes of this article, we refer to sales growth as our measure of growth; in the empirical work, profitability refers to return on assets (ROA).

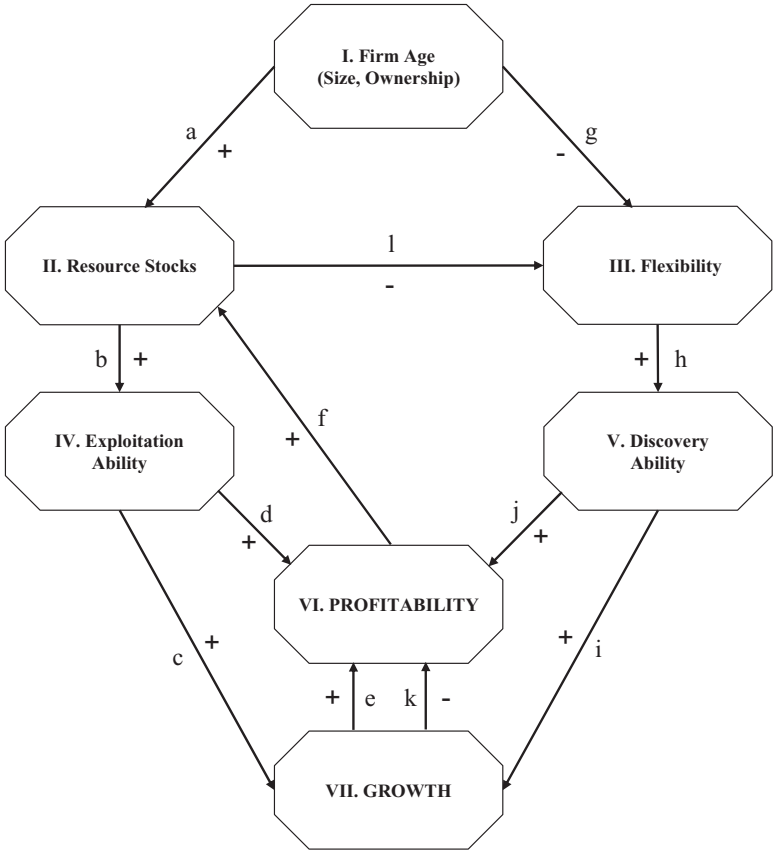
It is our hope that the reader will accept these deviations from standard approaches in order to reach the goal of achieving a fresh, new perspective—and possibly the opening up of a new type of research stream—toward research on the role of growth and profitability in business performance.

A Model of Growth-Profitability Dynamics by Firm Age

A number of theoretical perspectives provide insights into the development of growth and profitability by firm age. Figure 1 integrates many of these perspectives into a model of growth-profitability development. The model has five elements. First, there are the central performance variables—growth (VII) and profitability (VI). By the former we mean sales growth. Our preferred conceptualization of profitability would perhaps be surplus from operations above what is needed for maintaining operations on the same level; in the empirical analysis we will use the most suitable measure available, which is ROA. Second, we introduce our focal "moderator," firm age (I). While focusing on age, we note that company age is frequently correlated with size and ownership, and that empirical and theoretical works do not always distinguish between the three (cf. notions of "the entrepreneurial firm," often loosely referring to a young, small, and owner-managed entity). Third, we introduce four boxes denoting key company characteristics that are assumed to vary with age; characteristics that are also important elements of our theoretical analysis. Older firms tend to have larger resource stocks (II) leading to a superior "exploitation ability" (IV), whereas younger firms tend to have advantages in terms of flexibility (III) and superior "discovery ability" (V). We have adopted the terms "discovery" and "exploitation" from Shane and Venkataraman (2000). By "discovery ability" we mean the ability of principal decision makers to conceive and/or recognize new, innovative ideas and bring them to the market quickly and at low development cost. Exploitation ability refers to the ability to realize the full potential of given ideas. This entails scaling them up and maximizing margins by employing efficient processes. Sometimes exploitation refers to the ability to bring an idea to market even when development costs and/or process complexity present insurmountable barriers for inexperienced and resource-starved organizations (cf. Arrow, 1983).

Figure 1

An Integrated Model of Growth–Profitability Dynamics



Strategic entrepreneurship, which makes sustained high growth and profitability possible, requires both discovery and exploitation ability. Firms with discovery ability alone are likely to be able to generate (short-lived) growth (i) and possibly profitability (j), but they are unlikely to be able to sustain either in the face of competition without effective exploitation. Conversely, exploitation ability alone most directly leads to profitability (d) as firms efficiently exploit current opportunities in the market. It may also result in short-term growth (c) when firms imitate opportunities identified by other companies that are unable to fully exploit those opportunities. However, when the potential of current opportunities is already exhausted, excellent exploitation ability alone cannot sustain continued high growth.

An underlying, empirically informed and fundamental assumption of the model is that the age of firms (alongside size and ownership characteristics) influences their growth-profitability dynamics. In short, the model holds that young firms suffer from resource disadvantages (a) and may therefore need infusion of external resources (e.g., through debt funding or venture capital) in order to expand and realize the full potential of their business ideas (b → c). Alternatively, when their discovery ability yields low cost/high value innovation, they may—seemingly against the odds—be able to build such resources

themselves based on retained earnings (g → h → j → f). By contrast, old, large corporations are comparatively resource-rich, well-oiled machineries that are well suited for realizing the full commercial potential (a → b→ d) of given, competence-enhancing business opportunities. But, they may have a problem when it comes to fast and/or radical changes and therefore need infusion (e.g., through acquisition) of ideas developed elsewhere in order to make continued growth possible (g; l). Using this model as the basis, we can elaborate on its implications for a greater understanding of the dynamics of firm growth and profitability. In further discussion, we explicate the model's underpinnings in theories and previous empirical work.

Liabilities of Newness (and Smallness)—Limited Resource Stocks and Exploitation Ability

Young firms are associated with liabilities of newness (Aldrich & Auster, 1986; Stinchcombe, 1965). This is a fundamental reason why the virtuous sequence of growth leading to increased profitability, which in turn leads to further growth as indicated by the sequence e → f → b→ c in Figure 1, is not always realized. Many young companies lack the most fundamental resource of all: a product with some inherent potential for profitable growth. The vast majority of new entrants are imitators in mature industries (Aldrich, 1999; Reynolds & Miller, 1992; Storey, 1994). In that context, older and larger firms may enjoy prohibitive cost advantages based on more efficient routines (Nelson & Winter, 1982), as represented by the sequence a → b → d in Figure 1. Reviews of the relevant empirical literature suggest that young firms/entrants/"entrepreneurial firms," while often having a positive impact on industry efficiency through innovation, tend to have lower productivity with regard to the production of given products or services (Geroski, 1995; van Praag & Versloot, 2007). As a result, the majority of new firms never embark on a growth trajectory, nor do they reach any spectacular level of profitability.

The growth-limiting potential of resource deficiencies (along path [a] in Figure 1) ensures that, in many cases, a process of resource-driven growth—sequence b → c—does not take place. Perhaps the most frequently discussed resource deficiency is lack of financial capital. Indeed, empirical research supports the notion that initial capitalization is important for early growth (Cooper, Gimeno-Gascon, & Woo, 1994; Dahlqvist, Davidsson, & Wiklund, 2000). While young and small entrants may have the capacity for the fast action needed to secure first-mover advantages, the growth deemed necessary may still not be achieved unless there is also an infusion of external venture capital (Manigart & Sapienza, 2000). Penrose (1959) pointed out the importance of managerial capacity. Thornhill and Amit (2003) identified that new companies were most likely to fail due to deficiencies in managerial knowledge and financial management. Transition and stages-of-development models typically discuss the importance of both managerial and financial resources (Arbaugh & Camp, 2000; Churchill & Lewis, 1983; Greiner, 1972; Hambrick & Crozier, 1985; Kazanjian & Drazin, 1989). Furthermore, liabilities of newness (and smallness) also imply a lack of other types of "resources" that are necessary for successful exploitation of the inherent potential in the firm's products. For example, ecological and institutional perspectives point out the lack of legitimacy, which makes it difficult for young firms to gain market acceptance (DiMaggio & Powell, 1983; Suchman, 1995). All in all, young firms suffer from an "exploitation ability" disadvantage, i.e., limitations to their ability to scale up effectively and efficiently, so as to generate as much of the inherent potential in a *given* idea as possible.

Company founders may also refrain from pursuing perceived growth opportunities (Davidsson, 1989; Wiklund, Davidsson, & Delmar, 2003). This may be because of a focus

on affordable loss rather than profit maximization (Sarasvathy, 2001). Such a lack of willingness to grow is, to a certain extent, related to the expected profitability of growth. For example, Davidsson found that 40% of the owner-managers in his sample did not expect a doubling in company size to lead to a greater personal income stream, thus effectively removing one of the most important reasons for pursuing expansion. The willingness-to-grow issue may also be related to resources. It is a well established fact that business owner-managers prefer financing through retained earnings to debt, and debt to external equity. This, which is referred to as (external) "control aversion" and "the pecking order hypothesis" in previous research (Cressy & Olofsson, 1996; Sapienza, Korsgaard, & Forbes, 2003), explains why the owners of young firms may forego growth opportunities.

Advantages of Newness (and Smallness)—Flexibility and Discovery Ability

When growth and profitability are positively associated it may sometimes be because profitability drives growth rather than the other way round. This is what Sexton, Pricer, and Nenide (2000; cited in Markman and Gartner, 2002) concluded based on their analysis of a very large sample of U.S. firms. In terms of Figure 1, the virtuous sequence in this case starts with profitability (retained earnings), which provides the firm with the necessary resources for successful further growth, i.e., the f $\rightarrow$ b $\rightarrow$ c $\rightarrow$ e sequence. But what leads to high profitability in the first place? From Schumpeter (1934) and onwards, a recurring theme in the literature has been that young, entrepreneurial firms—while burdened by liabilities of smallness and newness—also have specific advantages that make them flexible and allow them to bring innovations to the market faster and at lower cost than large, incumbent firms are able to. This has been discussed under various labels such as "incumbent inertia" (Lieberman & Montgomery, 1988), "core rigidities" (Leonard-Barton, 1992), "liabilities of obsolescence" (Henderson, 1999), and a range of other terms (Mosakowski, 2002; Tushman & Anderson, 1986). Thornhill and Amit (2003) found that while new firms were more likely to fail because of deficiencies in managerial knowledge and financial management, older firms were more likely to fail as a result of an inability to strategically adapt to changes in their external environment. Moreover, resources often bring with them resource dependencies that lock firms into particular directions (Pfeffer & Salancik, 1978).

Hence there may be a "pure" age effect that makes it harder to come up with new ideas the more organizations are familiar with their current routines (path [g] in Figure 1), as well as an indirect effect suggesting that the management of large resource stocks itself directs attention away from new opportunities (path [l]). Arrow (1983) shows through theoretical analysis why small organizations—with their simple structures, closeness between market and decision-making power, and speed of implementation—often outperform large organizations in innovative activity as long as development costs are not prohibitive. Empirical results reported by Acs and Audretsch (1990) largely confirm Arrow's observations. The importance of structural smallness is also emphasized by authors like Hambrick and Crozier (1985), Stevenson and Jarillo (1986) and Stevenson and Gumpert (1991) who all take the tendency towards inertia by older and larger firms as their starting point (path [l] in Figure 1). While these authors focus more on size than on age, the two dimensions tend to be highly correlated and at least parts of the effect are likely attributable to age rather than size. For example, young, small firms are likely to have more flexible routines than old firms of the same size. Hansen (1992) made an explicit attempt to separate age and size effects and found that both tended to be negatively associated with innovative output. Another empirical result that supports the notion that young firms excel in "discovery" whereas old firms specialize in "exploitation" is the

demonstration by Davidsson and Delmar (2006) that among "high-growth firms," the expansion of the young firms is almost entirely organic—i.e., presumably based on products developed in-house—whereas old firms grow predominantly through the acquisition of other firms.

While not all young firms are innovative or ever embark on a growth trajectory, some of them do come up with innovations that create much more value for the customers than what is needed to cover the costs of development, production, and distribution. This creates a potential for high profitability (g → h → j). The fact that a firm shows high profitability indicates that it has created a product that has a considerable value above cost for its customers, and that the firm has developed a business model that allows it to appropriate a substantial share of that value (cf. Alvarez & Barney, 2004; Amit & Zott, 2001). Subsequent growth can therefore be based on retained earnings, which coincides with widespread founder-owner preferences as discussed above. All in all, the economic effects would lead to a positive association between profitability and growth where—at least in the first instance—profitability drives growth rather than the other way around.

Reasons for Growth Leading to Profitability

This brings us to the lower part of the model in Figure 1. As indicated by arrow (e) several theories assume a positive effect of growth on profitability. Basic economic theory, assuming inverted U-shape cost curves, implies that firms grow until they have reached the size where average variable cost is at a minimum (Besanko, Dranove, & Shanley, 2004; Mansfield, 1979). Up to that point, increased size would, *ceteris paribus*, be associated with improved profitability; assuming rational behavior, the firm would refrain from expanding beyond that point. Applying the more realistic assumption of L-shaped cost curves (Mansfield, pp. 203–206), the same rationally behaving firm would grow to at least the size where the cost curve flattens out, which corresponds to the idea of *minimum efficient scale* in industrial economics (Gupta, 1981). In short, basic economic theory suggests that, at least up to a certain size, *economies of scale* ensure that growth is rewarded with increased profitability.

The strategy school emanating from the Boston Consulting Group (BCG) in the 1970s holds that *experience curve effects* (Amit, 1986; Stern & Stalk, 1998) pertaining to all aspects of the firm's operations can be the basis of cost advantages. According to this theory, the firm with the highest cumulative volume in any industry will have the lowest unit costs. This implies a positive relationship between market share and profitability (Buzzell, Gale, & Sultan, 1975). Based on evidence of a positive relationship also existing between industry market growth and profitability (Capon, Farley, & Hoenig, 1990), the recipe for profitable growth becomes to launch and secure large market shares for new products in high-growth markets. In a similar vein, and more closely related to the reality of young firms, literature on first-mover advantages (Lieberman & Montgomery, 1988) suggests that new entrants can create a lasting advantage by rapidly building a dominant position for themselves in the market. That is, size—and hence growth—is important for gaining high profitability.

Finally, in markets with substantial network externalities (Katz & Shapiro, 1985) the value of the offering is contingent on the number of users, so above-average growth should therefore lead to (a potential for) higher profitability. All in all, these theoretical perspectives demonstrate that a range of situations exist in which rational firms can gain profitability advantages from growth and hence enter a virtuous cycle where growth leads to resource accumulation that facilitates further, profitable growth (e → f → b → c, etc.).

Reasons Why Growth May Not Lead to Profitability

While there are strong, theoretical reasons to believe that firm growth can lead to profitability, a review of the empirical literature does not support a substantial, universal, and positive intra-industry relationship of that nature (Davidsson et al., 2008, in press). In part, this may be due to non-rational behavior. Economic theory suggests that growth beyond the minimum efficient scale is associated with unknown or reversed effects on profitability. Likewise, according to the BCG strategy school, pursuing a growth strategy in low-growth markets or attempting to increase sales for products with low initial market share is no guaranteed recipe for financial success. Thus, a low empirical correlation between growth and profitability is not that difficult to explain when actors do not have perfect foresight or are not perfectly rational for other reasons. Furthermore, assuming that the firm is not a powerless price-taker, one would, from a rationalistic theory-based view analogous to the monopolist model in microeconomics (Mansfield, 1979), expect the firm to first service the most profitable customers or market segments. It would then continue to expand into gradually less and less profitable segments. Thus, unless the expansion into less attractive segments is accompanied by scale and/or experience effects, the firm's level of profitability would eventually fall as a result of expansion, even if total profits continue to increase.

Moreover, contemporary strategy theory tends to be based on much less of a pro-growth ideology than the theories reviewed earlier. Theoretical arguments from the resource- and knowledge-based views of the firm (Barney, 1991; Kogut & Zander, 1992) clearly suggest that growth would only enhance profitability if the expansion is aligned with the firm's unique resources and competences. Empirical research on expansion through more and less related diversification (Christensen & Montgomery, 1981; Montgomery, 1982; Rumelt, 1974) and mergers and acquisitions (Jensen & Ruback, 1983; Ravenscraft & Scherer, 1987) also underlines that many forms of expansion have questionable influence on financial performance. Furthermore, as pointed out by Penrose (1959), growth is not just a change in size, but also a process. In this process, the company may encounter an array of managerial challenges that reduce or reverse any profitability-enhancing effects of increased size. This is recognized in the literature on stages-of-development and managerial transitions (e.g., Churchill & Lewis, 1983; Greiner, 1972; Hambrick & Crozier, 1985; Kazanjian & Drazin, 1989). Although the resulting, larger firm may eventually reach higher profitability than the original, smaller firm, this line of reasoning suggests that in the process of reaching this state, there may be a trade-off between growth and profitability (Cowling, 2004; Marris, 1967; Zahra, 1991). In short, the positive effect of growth on profitability depicted by arrow (e) in Figure 1 demonstrates the potential that is reachable for rational actors in particular situations. Actual outcomes may be neutral or even negative, as indicated by arrow (k).

Some theorists and empirical works have highlighted the possibility of a negative influence of growth on profitability. For example, it has been noted that firms that do not possess any particular advantages and operate in stable markets are unlikely to achieve growth without employing profitability-reducing tactics such as price cutting and/or costly promotion (Peteraf & Barney, 2003). Even when based on value-creating innovation, growth does not always lead to a positive profit-growth trajectory. This may be the case when firms grow rapidly and therefore are subjected to time compression diseconomies, as discussed by Dierickx and Cool (1989). This is in line with the negative correlation between growth and profit that Markman and Gartner (2002) found in their study of rapidly growing firms. Apart from increased costs of resources, it is a well-known fact that rapid growth sometimes goes haywire and ends in financial disaster (Hambrick & Crozier,

1985). This is indicated by arrows (i; k) in Figure 1. This is the case when a firm innovates and as a result faces drastically increased demand, but fails to turn this into high profitability. This suggests that, at least in some cases, rapid growth should be taken as a sign not of astonishing success, but as indication that while the firm is evidently creating value for its customers (hence the very high demand), it is failing to appropriate enough of that value in order to secure its own survival.

Performance Configurations and Age-Related Hypotheses Regarding Their Prevalence and Development

The previous section drew on multiple theoretical perspectives to develop a framework for exploring important differences in the growth-profitability trajectories between younger and older firms (Figure 1). In this section, we use the model to develop some hypotheses regarding differences expected between young and old firms.

Individual companies will navigate their course around this model in different ways. The different pathways traveled by the individual firms will depend on a range of factors, including their initial endowment of resources and discovery ability, their strategic behavior in terms of growth and profit orientation at any point in time, and industry conditions and trends. Since we are interested in strategic behavior of young firms as they develop, we investigate the impact on mid-term performance (3–5 years). Shorter-term performance (say 1 year) is likely to reflect outcomes of tactical decisions and fails to account for strategic investments for future performance gains, yet longer-term performance (>5 years) is likely to exceed the strategic horizon for young firms.

To assist in our understanding of these alternative pathways and develop some formal hypotheses based on the model, we introduce a profitability–growth configuration schema (Figure 2) adapted from Davidsson et al. (in press). The earlier model paints a picture of the relationship between growth and profitability that is theoretically complex and multifaceted. Clearly, if we are interested in the strategic development of young firms, both growth and profitability are important components of company performance. This also implies that a composite index that adds growth and profitability is in some way unsatisfactory for understanding the different profit–growth paths firms might undertake, along with their consequences. For example, high profitability at low growth is qualitatively very different from low profitability at high growth, or having medium performance in both dimensions.

Figure 2

Profitability-Growth Configurations

		Growth Tri-tile		
		1st	2nd	3rd
Profitability Tri-tile	1st	Poor	Low Profit	Growth Focus
	2nd	Low Growth	Middle	High Growth
	3rd	Profit Focus	High Profit	Star

Hence, firms were classified into a 3×3 configuration based on the two performance dimensions—sales growth and profitability. Specifically, firms were classified into three equal percentile groups (tri-tiles) for both sales growth and ROA. Since our focus is the behavior of individual firms, both dimensions are considered relative to other firms in their industry so as to eliminate the impact of external industry conditions. They were then divided into the nine growth–profitability configurations as shown in Figure 2. In preliminary work, we also used several other methods of categorizing firms to ensure our results were not an artifact of the categorization schema.

These nine profitability–growth configurations can also be considered to vary according to three levels of profitability–growth performance groups and three profit–growth orientations. We define the three upper-left configurations in Figure 2 (poor, low profit, and low growth) as Weak Performance; the three diagonal configurations (middle, profit focus, and growth focus) as Medium Performance, and the three lower-right configurations (star, high growth, and high profit) as strong performance.

Similarly, the configurations indicate whether the firm is orientated towards profitability or growth. We define high growth, growth focus, and low profit as growth-orientated firms; the diagonal configurations, poor, middle, and star as neutral orientations; and high profit, profit focus, and low growth as profit-orientated firms. Although this collapsing of performance categories is not optimal from the perspective of keeping growth and profitability separated, it simplifies the reporting of findings and is also necessitated by the need for statistical power.

A firm's initial endowment of resources and discovery ability will determine their initial performance with respect to growth and profitability. Subsequently, their performance will be determined by how they navigate pathways around Figure 1. We examine possible differences in development pathways for younger and older firms. In essence, our model suggests a tendency towards discovery advantages for young firms, and exploitation advantages for older firms.

We do not have data that allows us to test all implications of the theoretical model. However, in the following we will develop directional hypotheses concerning some aspects of the model where theory and data allow. For other features of the model, the theoretical input allows alternative predictions; we will then develop pairs of competing hypotheses that are tested using a strong inference approach.

First we consider young firms: as discussed in the previous section, there are sound theoretical reasons to suggest that, based on their strong discovery ability, young firms may be able to exploit the virtuous sequence of growth, represented by g $\rightarrow$ h $\rightarrow$ j $\rightarrow$ f $\rightarrow$ b $\rightarrow$ c $\rightarrow$ e in Figure 1, with potential for further f $\rightarrow$ b $\rightarrow$ c$\rightarrow$ e iterations if they operate in markets where there are significant scale or first-mover advantages, experience effects, or network externalities. In the latter situation the sequence g $\rightarrow$ h $\rightarrow$ i $\rightarrow$ e $\rightarrow$ f $\rightarrow$ b $\rightarrow$ c (and so on) is another possible—albeit riskier—route to simultaneous high performance in terms of profitability and growth. Older firms, while having become well-oiled machineries with respect to their original products should, according to our reasoning, have exploited their most profitable growth opportunities already. Further growth may not be unprofitable, but below the average profitability of the industry. In addition, at mature age they face a difficulty coming up with new, high margin opportunities (arrow i). Consequently, we argue that:

Hypothesis 1: A greater proportion of younger firms than older firms will belong to the Star profitability-growth configuration.

Using similar arguments, even if young firms do not have a sufficiently high discovery ability that enables them to simultaneously achieve above-average growth and profitability,

we expect most would have at least sufficient discovery ability to avoid the lowest performance category (Poor). Moreover, due to their shorter existence, they have, on average, been subject to fewer external shocks that may lead to poor performance. This leads to the mirroring hypothesis:

Hypothesis 2a: A smaller proportion of younger firms than older firms will belong to the Poor profitability-growth configuration.

However, despite young firms as a category being over represented as innovators, research suggests that a majority of all start-ups are imitative ventures in mature industries (Aldrich, 1999). Such firms would likely struggle with scale and legitimacy disadvantages, suggesting they perform comparatively poorly. In addition, it may be argued that while the resources and experience of older firms may not help them excel simultaneously on both performance dimensions, these resources should give them some protection against performing poorly on both at the same time. This alternative reasoning suggests the opposite to hypothesis 2a:

Hypothesis 2b: A smaller proportion of older firms than younger firms will belong to the poor profitability-growth configuration.

We have noted that in spite of strong theoretical arguments for growth leading to profitability (among rational actors), the empirical evidence is mixed at best. This suggests that many firms may be pursuing misguided growth, i.e., expanding in the absence of any real advantage by price cutting and/or incurring above-average marketing costs ($c \rightarrow k$); that includes expansion based on expensive external capital, or associated by managerial and organizational cost increases in excess of what the market opportunities can pay for (other variants of $c \rightarrow k$), or growth based on value-creating innovations while failing to appropriate a large enough share of the value created ($i \rightarrow k$). It seems logical that because of their relative inexperience, young firms with limited exploitation ability would be more likely to pursue such dubious growth strategies, e.g., indiscriminately pursue growth opportunities whether they are very profitable or not. This would also concur with psychological research on expertise, which suggests that increased experience is accompanied by an improved ability to adapt the decision making to the characteristics of the task at hand (see Gustafsson [2004] for an application to a somewhat analogous entrepreneurship problem). Hence, we expect young firms to be overrepresented not only as Stars (hypothesis 1), but to be overrepresented among growth-orientated firms regardless of the level of profitability. Based on this we suggest the following hypothesis:

Hypothesis 3: Relative to older firms, a higher proportion of younger firms will belong to the high growth and growth focus configurations.

We now turn our attention to how firms maintain or improve their performance over time. The model proposes that older firms are better placed to utilize their exploitation advantages in order to initiate the virtuous sequence of growth and profitability represented by $e \rightarrow f \rightarrow b \rightarrow c$ in Figure 1. If we first consider the top-performing Stars, the model suggests these firms are successfully enacting this virtuous sequence. This is in contrast to young Star firms who are more likely to have yielded short-term profitability and growth through discovery advantages. We propose that older Star firms already enacting this virtuous sequence of growth and profitability are more likely to stay above average on both performance dimensions simultaneously than are younger Star firms who would first need to enter this virtuous sequence of growth and profitability. This line of thought is also supported by (unexpected) results reported by Durand and Coeurderoy

(2001). They found that the pioneers that were able to sustain high performance (in their analysis of an index combining growth and profitability) were those aiming for cost leadership rather than innovative differentiation. Arguably, the former is indicative of superior exploitation ability while the latter indicates superior discovery ability. The overall implication is that "Stardom" may be difficult to sustain based on discovery ability alone. Hence:

Hypothesis 4: Older firms with a Star configuration are more likely than their younger counterparts to maintain their Star profitability-growth configuration over time.

A further important distinction is the sequence in which firms develop profitability and growth. As argued above, companies might either (1) first develop growth as a mechanism to generate future profitability (e.g., economies of scale, first-mover advantages), or (2) first develop profitability as a mechanism to generate future growth (resource building). Furthermore, we know that too-rapid growth may lead to performance problems. Indeed, Davidsson et al. (in press) suggest that first developing profitability as a mechanism to generate future growth is more likely to result in more preferable future growth–profitability configurations. This said, our model suggests variations by firm age are likely to exist for each of the above mechanisms of growth–profitability dynamics. As we have already discussed, as companies get older there is a tendency for their discovery ability to decrease (g; l $\rightarrow$ h) and their exploitation ability to improve (a $\rightarrow$ b). Hence, we might expect younger firms to create initial first-mover advantages, yet older firms to be better placed to exploit these fully. Younger firms are likely to have a greater potential to improve profitability through economies of scale not yet utilized, yet older firms are more likely to be able to effectively exploit scale economies where they exist. Older firms are also more likely to be able to achieve growth through the exploitation of resources they already possess; i.e., at low marginal cost. Finally, the influence of age on the possible negative outcomes of rapid growth is unclear. In summary, while we expect age to have an impact on the likely profitability-growth dynamics of firms, the overall nature of this impact is unclear. Consequently, we present the following competing hypotheses:

Hypothesis 5a: Younger firms adopting a profit orientation are more likely to have stronger future profitability–growth performance than older firms with the same orientation.
Hypothesis 5b: Older firms adopting a profit orientation are more likely to have stronger future profitability-growth performance than younger firms with the same orientation.

Hypothesis 6a: Younger firms adopting a growth orientation are more likely to have stronger future profitability-growth performance than older firms with the same orientation.
Hypothesis 6b: Older firms adopting a growth orientation are more likely to have stronger future profitability–growth performance than younger firms with the same orientation.

In addition to testing the directional and competitive hypotheses we will also explore other patterns for which we found the theoretical input a priori too weak to suggest hypotheses in either direction.

Method

Data Source

We use a large, longitudinal secondary data source to test our hypotheses. The data is sourced from the Business Longitudinal Survey (BLS) conducted by the Australian Bureau of Statistics (ABS) from 1995 to 1998. This refers to financial years ending in July of the nominated year. The sampling frame was all employing businesses on the ABS business register employing fewer than 200 employees, excluding primary industries other than mining, government enterprises, utilities, and public services (education, health, libraries, museums, parks, etc.). The survey was designed to provide information on the growth and financial performance of Australian employing businesses and to identify selected economic and structural characteristics of these firms. A large cross-sectional survey of businesses was conducted in 1995. These businesses were randomly sampled from industry stratifications. Surveys were sent to approximately 13,000 businesses resulting in 8,375 responses (a response rate of 63.7%). Of these, 1,949 firms reported no sales in either 1994 or 1995, resulting in a sample of 6,426 companies for our cross-sectional analyses. A subset of approximately half of these firms (4,508) was selected to be included in an ongoing panel. Completed responses were collected from between 84% and 90% of the panel for the surveys in 1996 to 1998. Of the 3,488 businesses that completed all years of the survey, 826 businesses exited. This resulted in a final sample size of 2,662 for our longitudinal analyses. Exiting businesses are an ambiguous category including not only financial failures but also voluntary closures and lucrative outright sales of firms to new owners (Gimeno, Folta, Cooper, & Woo, 1997; Headd, 2003). Consequently, we could not interpret these firms as a pure failure category. We note that failure to be able to classify this category correctly introduces a potential for survivor bias in our results; preliminary analysis revealed that the percentage of exits from the nine profit–growth configurations did not vary in a systematic way that indicates either higher or lower performing firms are more likely to exit. As such, it is highly unlikely that survivor bias has a substantial impact on our results.

Measures

The performance measures used in this paper are sales growth and pretax ROA. Sales growth was preferred over employment growth, based on the emerging consensus that for most purposes, sales is the more relevant growth indicator (Davidsson & Wiklund, 2000; Delmar, 1997; Delmar, Davidsson, & Gartner, 2003; Hoy, McDougall, & Dsouza, 1992; Weinzimmer, Nystrom, & Freeman, 1998). The specific formula used was the change in sales from the previous year as a percentage of the sales in the previous year. Sales data for 2 years prior to the first survey year were reported. Hence, sales growth could be calculated in the first year (1995).

ROA was calculated as the net profit (operating profit or loss before tax and extraordinary items) as a percentage of total assets in each year. ROA was the preferred measure because it measures economic rents before accounting for taxes and extraordinary items. As such, it is the purest singular measure of the operational performance of the firm. Also, it is normalized relative to the capital employed.

We are concerned with how companies shape their performance with respect to growth and profitability and not external or industry effects on performance. It is well established that firm performance along these dimensions varies according to both firm-specific and industry effects (McGahan & Porter, 1997, 2002; Rumelt, 1991). To reduce the confounding influence of both industry effects and annual fluctuations, we use

performance measures relative to other firms within the same industry for that year. Both growth and profitability measures were adjusted for industry variations by subtracting the industry median. Although some previous research suggests to subtract industry means (Waring, 1996), we chose to use industry medians in order not to give undue weight to a few extreme cases that are not typical of firms in that industry. The ANZSIC industry divisions were used as the basis for industry groupings. In preliminary work, we also used the subdivisions (two-digit code). The substantive results of the paper were not affected.

Analyses

Hypotheses 1–3 are tested using cross-sectional analyses, allowing the use of the larger first-year data set ($N = 6,426$). We compare the frequencies of young ($\leq$8 years) and old ($\geq$9 years) firms in the nine profitability–growth configurations.

Hypotheses 4–6 are tested using a longitudinal analysis of firm profitability–growth configurations over time. We examine the likelihood of transitions from one profitability–growth configuration to others over the four years of our longitudinal data set ($N = 2,662$). For hypothesis 4 we use a probit analysis to test whether young or old Star firms in year 1 are more likely to remain Star firms in year 4. To test hypotheses 5 and 6 we use an ordered probit analysis (Borooah, 2002) to examine the likelihood that a company will have weak, medium, or strong profitability–growth performance (as defined above based on Figure 2). Specifically, we examine the differences between young and old firms with a growth orientation or profit orientation (again defined above; based on Figure 2). We control for firm size and industry.

For those hypotheses where we have competing theoretical arguments (hypothesis 2, hypothesis 5, and hypothesis 6), we adopt a strong inference approach (Balkundi & Harrison, 2006; Platt, 1964) to examine whether either of the two alternative hypotheses can be statistically rejected.

Results

Static Analysis of Profitability–Growth Configurations

Table 1 indicates the proportion of firms in each of our nine profitability–growth configurations for young ($\leq$8 years) and old ($\geq$9 years) firms. Tests of the differences in proportions of young and old firms belonging to each configuration are reported. Although our formal hypotheses 1–3 only refer to some of the differences, we report all significance tests as a heuristic device in order to avoid over-interpretation of explorative results that have a high probability of being the result of random sampling error.

We find support for hypothesis 1, that a greater proportion of younger firms will belong to the Star configuration. The proportion of young firms that are in the Star configuration (16.6%) is substantially higher than the proportion of old firms (11.2%). The results support hypothesis 2a, that a smaller proportion of younger firms are found in the poor configuration, and thus do not support hypothesis 2b. The 12.5% of young firms that are in the poor configuration is significantly lower than the proportion of poor old firms (14.1%) in that configuration, although the difference is not impressively large in magnitude.

Some caution is advisable in interpreting this result because of potential survivor bias. Previous research suggests that young firms are less likely to survive than are older firms (Geroski, 1995), and are therefore more likely to exit the population and escape analysis. Therefore, the underrepresentation in the Poor configuration does not necessarily reflect a

Table 1

Proportion of Firms in Each Growth-Profitability Configuration: Variation by Firm Age

Performance configuration	Firm age† ≤8 years (%) (N = 2,883)	Firm age† ≥9 years (%) (N = 3,543)
Poor	12.5	14.1*
Low profit	9.1	9.3
Low growth	8.0	12.5***
Growth focus	11.5***	7.2
Profit focus	9.9	8.7
Middle	9.7	15.2***
High growth	11.4	10.5
High profit	11.3	11.3
Star	16.6%***	11.2%
Total	100.0%	100.0%

† For each age category, percentage of firms in each performance group is reported.
* $p < .05$; ** $p < .01$; *** $p < .001$ based on 1-tailed z test of column (age categories) proportions.

positive characteristic of young firms. Although preliminary analysis reveals no clear tendency in our data for young firms (and especially the low performers among them) to exit the population more frequently than older firms, the ambiguity of the exit category leaves room for alternative interpretations.

The results provide mixed support for hypothesis 3 that as a result of their combination of high-discovery ability and low exploitation ability young firms should be overrepresented in high-growth configurations regardless of the level of profitability. We have already commented on the overrepresentation among Stars (16.6% vs. 11.2%). The difference in representation is more marked in the Growth Focus configuration (highest tri-tile in growth; lowest tri-tile in profitability). With 11.5% in that configuration, the young firms have a representation that approaches twice that of old firms (7.2%). However, while the proportion of young high-growth firms is slightly higher than old high-growth firms (11.4% vs. 10.5%) the difference is not statistically significant.

Longitudinal Analyses of Profitability–Growth Configuration Transitions

Table 2 displays the results of a probit analysis predicting the likelihood that firms with Star profitability–growth configuration in year 1 remain in that configuration in year 4. We find support for hypothesis 4 that older firms are more likely to remain in the Star category than younger firms.

The results of an ordered probit analysis to predict the likelihood of profitability-growth performance (weak, medium or strong) in year 4 are shown in Table 3. We see that

Table 2

Probit Model of Year-4 Star Configuration for Firms Having Star Configuration in Year 1

Variable	Coefficient (Std. Error)	
Asymmetric age effect		
Young firm	−.241*	(.118)
Old firm	0†	
Intercepts		
Year 4 not Star	.939***	(.174)
Year 4 Star	0†	
Control variables		
Sales year 1	−1.03E−5*	(.6E−5)
Manufacturing	.256	(.183)
Other	.031	(.211)
Property & business services	.335	(.215)
Retail	−.291	(.282)
Wholesale	0†	
Model statistics		
Chi-squared (d.f. = 6)	19.1**	
Nagelkerke *R*-squared	.047	

† Redundant dummy variable.
* $p < .05$; ** $p < .01$;*** $p < .001$; 1-tailed tests.

for both young and old firms, the performance of firms that have a profit orientation in year 1 is higher than for both neutral and growth-orientated firms. In terms of our two sets of competing hypotheses, we find support for hypothesis 6a in favor of hypothesis 6b that younger firms with a growth orientation are more likely than older firms with the same orientation to have stronger future performance. However, we found no evidence in favor of either hypothesis 5a or hypothesis 5b—both young and old firms with a profit orientation appear to have equally strong future performance.

The Early Years

Having examined our hypotheses, we now turn to a holistic examination of all results by age class, including explorative examination of nonhypothesized relationships. In regards to the prevalence of profit–growth configurations (Table 1), a conventional analysis and interpretation indicates that young firms perform well. They are overrepresented as Stars and among firms showing above-average growth in general, and underrepresented among those showing low performance on both dimensions. However, other aspects of our results for performance configurations over time give reason to question whether the high performance of most of these young "Stars" really reflect successful, strategic entrepreneurship. The results for hypothesis 4 demonstrate that young Star firms are less likely than their older counterparts to maintain that status. Furthermore, the results for hypothesis 3 indicate that young firms' overrepresentation among Stars reflects an overrepresentation among growth-orientated firms in general. In our dynamic analysis

Table 3

Ordered Probit Model of Year 4 Profitability-Growth Performance

Variable	Coefficient	(Std. Error)
Asymmetric age effect of profit-growth orientation		
Growth orientation—young firm	−.306***	(.079)
Neutral orientation—young firm	−.234**	(.078)
Profit orientation—young firm	−.004	(.091)
Growth orientation—old firm	−.473***	(.074)
Neutral orientation—old firm	−.201**	(.068)
Profit orientation—old firm	0†	
Year 1 profitability-growth performance		
Weak performance	−.469***	(.055)
Medium performance	−.259***	(.053)
Strong performance	0†	
Intercepts		
Year 4 weak performance	−.788***	(.080)
Year 4 medium performance	−.019	(.079)
Year 4 strong performance	0†	
Control variables		
Sales year 1	−1.6E−7	(1.0E−6)
Manufacturing	.020	(.065)
Other	−.034	(.076)
Property & business services	−.032	(.082)
Retail	−.012	(.088)
Wholesale	0†	
Tests of asymmetric age effects		
Growth orientation: young vs. old firm	.166*	(.079)
Neutral orientation: young vs. old firm	−.033	(.073)
Profit orientation: young vs. old firm	−.004	(.091)
Model statistics		
Chi-squared (d.f. = 18)	120.4***	
Nagelkerke R-squared	.050	

† Redundant dummy variable
* $p < .05$; ** $p < .01$; *** $p < .001$; 1-tailed tests.

for young firms, those with a Profit or Neutral orientation perform better over time than those with a growth orientation. This all suggests that "Star" status among young firms is often indicative not of competent management, but of luck (that will be short lived) on the part of some firms who show the same—perhaps indiscriminate—heightened tendency among inexperienced firms to go for growth opportunities regardless of whether they will be highly profitable or not. That is, young firms' overrepresentation among high-growth firms suggests that many of them may be pursuing misguided growth. Regarding young firms' underrepresentation among the Poor, it cannot be ruled out that their under representation is due, in part, to a higher instance of (negative) exits from the population.

So, we see that young firms have a heightened tendency to be high-growth firms. However, unless these high-growth firms have above-average profitability, three years later they tend to perform poorly compared to other firms. With the possible exception of

those already in the Star configuration, the best future performers among younger firms are those with high profit, but only low or medium growth. Overall, the results suggest high growth early on is associated with considerable risk.

Older Firms

With respect to the pattern of profitability–growth configurations amongst older firms, Table 1 illustrates they are more likely to have the medium or weak performance configurations of low growth and poor. This is not necessarily a sign of underperformance; it may also be a result of the ability to survive longer at low levels of performance than younger firms are capable of.

Like for young firms, the dynamic analysis (Table 3) indicates that the strong performance configurations in year 1 unsurprisingly perform better than those in the medium performance configurations, who in turn perform better than those in weak performance configurations. If we compare the three orientations for old firms, profit orientation performs stronger than neutral orientation, which in turn performs stronger than a growth orientation.

In all, old firms are overrepresented in low-performance configurations; however, to some extent this may be because of a superior ability to survive in such a state. Older firms with a Star configuration are more likely to sustain simultaneous high performance on both growth and profitability than younger firms in the Star category are. Other than Stars, the best future performing older firms are those with a profit orientation.

Discussion and Conclusions

Strategic entrepreneurship has been conceived as simultaneous opportunity and advantage seeking. Successful firms will achieve high performance both in sales growth and profitability. In this paper we investigated the growth and profitability dynamics of younger versus older firms. First, we integrated numerous theoretical perspectives into a model of growth–profitability evolution, and used this to develop several hypotheses. We then tested these hypotheses and provided a further exploratory empirical examination of the dynamics of young firms using profitability–growth configurations to simultaneously examine their profitability and growth performance over time. Where we had competing hypotheses, we adopted a strong inference approach.

We now offer an interpretation of these results in light of the theoretical model developed in Figure 1. While many of them never really take off in the medium term, a substantial number of young firms are able to convert discovery ability advantages into short-lived high growth. There is, however, considerable diversity of young firms with respect to converting this discovery ability into profitability. Those firms that are more successful at initially generating growth than profitability on average tend to perform relatively poorly in the medium term. Thus, there appears to be a high prevalence of *misguided growth* among young firms. As a consequence, negative performance outcomes are common. This may indicate that liabilities of newness are particularly strong for firms that pursue a growth orientation.

For older firms, we again saw that a profit orientation, rather than growth orientation, was more likely to lead to future success. This we interpret as two phenomena jointly impacting a large proportion of firms. The virtuous sequence of growth leading to profits that build resources that in turn facilitate the pursuit of further growth remains

an important factor. But for older firms, the inflexibility associated with age and resources (g; l) becomes more prevalent. If such firms try to "force" further growth without newness, it is likely to occur in less profitable geographical markets or market segments than those originally served, or the growth is achieved via price cuts or increased marketing expenditure. In either case, growth would not be associated with high profitability. Other research suggests older firms are likely to turn to acquisitions if they want to continue to grow at all (Davidsson & Delmar, 2006). This would allow them to introduce innovations they now find difficult to develop in-house. Because we cannot distinguish between organic and acquisitive growth in our empirical analysis, we cannot be certain that this is the case in our sample. However, we can speculate that a substantial proportion of older firms that strive for growth suffer the negative consequences of growth because of the type of unforeseen integration costs that are highlighted in research on mergers and acquisitions among large corporations (e.g., Ravenscraft & Scherer, 1987).

For researchers of strategic entrepreneurship, the paper highlights that growth-profitability of young firms remains a fertile area for research if one moves away from the simplistic analysis of factors assumed to universally lead to growth, and the assumption that growth unambiguously reflects good company performance. Because of the complexity of the phenomenon, a more contextualized and critical approach is advisable. For example, a conventional analysis on our data would likely lead to the conclusion that young firms generally perform well. Our analysis led to a more nuanced interpretation. Although young firms seem to find growth opportunities—something we ascribe to superior discovery ability—they do not seem very good at selecting among them and/or realizing/appropriating their full inherent value. Our theoretical model illustrates that many theoretical perspectives inform our understanding. While our empirical work provides some evidence of development pathways that can be interpreted with this model, the empirical work presented here remains just a first step. We hope this paper will inspire other researchers to both investigate the scope of generalizability of our empirical findings, and to test other elements of the theoretical model that we did not directly examine. Specifically, research that simultaneously measures resource stocks and exploitation ability together with flexibility and discovery ability, how these change as firms develop, and how they affect performance outcomes over time would contribute substantially to the domain of strategic entrepreneurship.

For practitioners and educators, we hope that our findings will be useful in helping chart pathways that will maximize chances of longer-term success for young firms. Overall, we suggest that some caution is warranted before embarking on a high-growth strategy if starting from a state of low profitability. For young firms in particular, we suggest that inexperience may lead to over-optimistic growth expectations in the face of liabilities of newness. This has a clear implication for policy makers. Many policy initiatives are geared towards helping or incentivizing firms to grow, presumably in the hope that they will generate more employment and tax revenue. Especially when geared toward young firms, our results indicate that such policies can backfire, and that policies aimed at increasing the profitability of young firms are more advisable.

We also suggest older firms may find it hard to grow profitably because the most profitable growth opportunities for their original offering have already been utilized, and new opportunities may have to be gained through acquisitions that may be associated with costly integration processes. Regardless of age, however, we would recommend firms considering embarking on substantial growth pathways to carefully consider the negative impact such growth may bring, and carefully articulate the mechanisms by which they expect growth to lead to future success.

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