### Title

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# Dynamic Capabilities and Entrepreneurial Management in Large Organizations: Toward a Theory of the (Entrepreneurial) Firm

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**Abstract**

Mainstream economic theory has generally excluded consideration of the role of managers, which has, in turn, impaired its ability to explain resource allocation by, and heterogeneity among, firms. In the real world, managers are called on to fill entrepreneurial and leadership roles: sensing opportunities, developing and implementing viable business models, building capabilities, and guiding the organization through transformations. These entrepreneurial management tasks are part of the organization's capabilities, which also encompass embedded organizational processes that can be slow to change. An understanding of entrepreneurial management and organizational capabilities will contribute to more realistic economic models and a better understanding by policy makers of industrial dynamics and the requirements of innovation.

Keywords: leadership. entrepreneurial management, dynamic capability

JEL classification: D230, M100

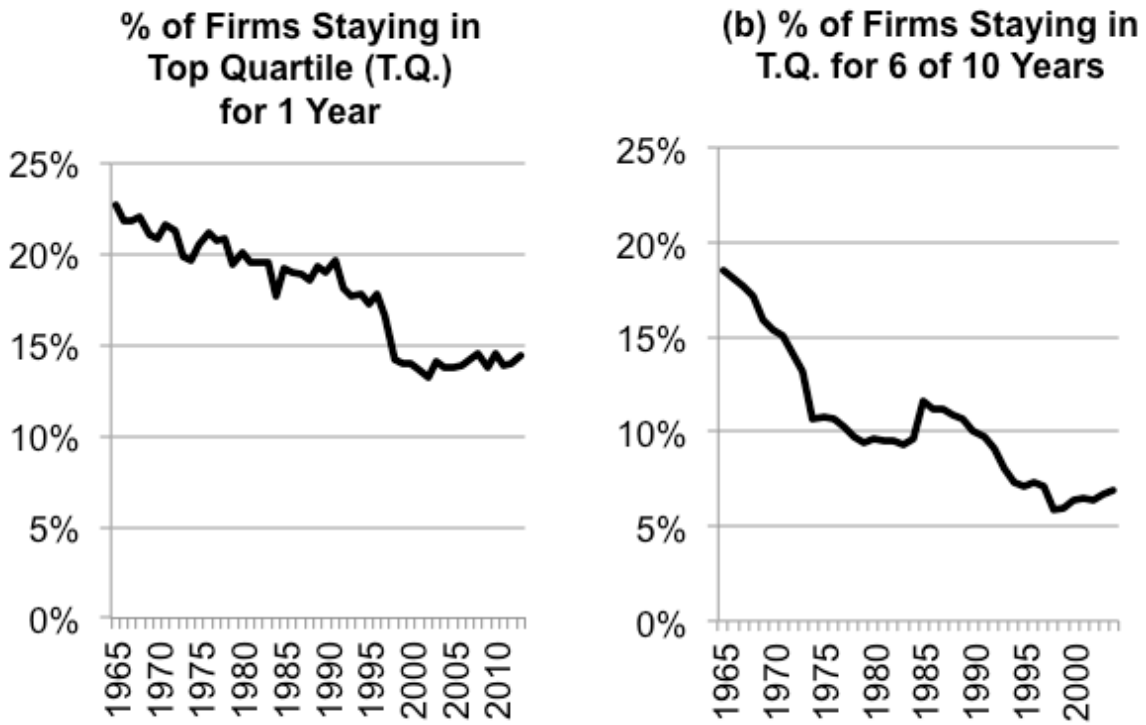
# Dynamic Capabilities and Entrepreneurial Management in Large Organizations: Toward a Theory of the (Entrepreneurial) Firm

## 1. Introduction

To some people, "entrepreneurial management" may sound like an oxymoron, especially with regard to large organizations. Entrepreneurship is typically characterized as a phenomenon of start-up firms pursuing a new idea or business concept. Increasingly, however, large organizations are confronted by such rapid change in the business environment that the survivors have had to learn to respond in ways more typical of entrepreneur-led start-ups, including the quick generation of software updates, rapid exploration of new product and service possibilities, and speedy abandonment of unsuccessful ideas.

Since the 18th century work of early economists such as Richard Cantillon (credited with the first use of "entrepreneur") and Adam Smith (who used it in translation as "undertaker"), economists have understood the entrepreneur as someone who bears capital risk to bring factors of production together to implement a money-making idea (Pesciarelli, 1988).

**Figure 1: Percentage of high-profit medium and large firms remaining in the high-profitability group for short and long-term durations, 1965-2014**




Source: Calculated from Compustat North America data

Notes:

[1] The charts show the fraction of firms that are in the 75th percentile of profit margin in a given year and in either (a) the following year or (b) at least 6 of the following 10 years. Profit margin is defined as EBIT divided by revenue.

[2] The denominator of the fraction is either the number of firms with non−missing profit margin data in the current year or the number of such firms in the 1 or 10 following years, whichever is less. Revenue data was considered missing whenever it was zero or negative.

[3] The sample includes all firms in the Compustat North America database with $100 million in revenue in at least one of the years between 1965 and 2014.

In this classical view, the work of managers who do not also bear risk is "reduced to a routine function" (Knight, 1921: 297). Schumpeter, who associated entrepreneurs with innovation and disruption, recognized that, in the era of managerial capitalism, anyone involved with implementing new combinations of resources to satisfy consumer desires is fulfilling the role of entrepreneur "even if they are, as is becoming the rule, 'dependent' employees of a company, like managers" (Schumpeter, 1934: 74).[1]

It is not universally accepted that established firms can effectively respond to new opportunities or challenges, and clearly some—perhaps many—fail to do so. Figure 1 shows how quickly firms today can fall from grace. Over the last fifty years, the probability that a firm in the top quartile of profitability in any given year would remain in that quartile for the following year has declined more than a third, from 22% to about 14%. And this is all the more true for the ability to maintain profitability over time. The share of top-quartile firms that stayed in the high-performing group for at least six of the following ten years declined nearly two thirds, from more than 18% to less than 7%.

Increased competition and a faster pace of technological change over the past fifty years may be driving these results by decreasing the amount of time that firms have to adapt

[1] Whereas Schumpeter characterized an entrepreneur as a source of economic disequilibrium, Nobel laureate Theodore Schultz (1975) took a complementary view, defining entrepreneurship as "reallocating resources to regain equilibrium" -- a role played at various times, in his view, by all agents in the economy (1975: 833). This definition is worth noting because of its similarity to the asset orchestration function of managers in the dynamic capabilities framework, discussed below.

(Teece, 2012b). And researchers in organizational ecology have assembled evidence showing that organizational adaptation is less common than inertia. They attribute the inertia to inflexibilities within companies that grow worse as firms increase in size (Hannan and Freeman, 1984). As a result, before firms can adapt, they give way to younger, better-adapted rivals. When change is attempted, it can bring about unintended negative consequences inside the organization (Hannan et al., 2003) and trigger ruinous competitive responses from rivals (Barnett and Sorenson, 2002).

The reality, though, is that many large- and medium-size enterprises have lasted for decades by adapting (or leading) successfully as their markets have shifted. In fact, between 1992 and 2011, the share of U.S. private sector employment by firms older than sixteen years grew from 60% to 72% as the quickening pace of competition claims younger firms rather than their seasoned elders (Hathaway and Litan, 2014: 3).

The ability of established firms to pursue new businesses while not undermining their existing advantages (and revenue sources) has been called ambidexterity (O'Reilly and Tushman, 2004). Ambidexterity, in turn, is encompassed within a larger framework known as dynamic capabilities that emphasizes the flexibility and adaptability of organizations and their efforts to act strategically, embrace new opportunities, and even shape the business environment (O'Reilly and Tushman, 2008; Teece, 2014).

The dynamic capabilities framework sees senior managers as the core actors in an organization, responsible for, among other things, recognizing the need for and bringing

about change in business environments where there is deep uncertainty (Augier and Teece, 2009). Lower-level managers also have important roles to play (Lee and Teece, 2013). Yet economic theory has surprisingly little to say about managers in their roles as the key decision makers with respect to how firms compete and how a large share of resources in the economy are allocated. Where managers do appear in the economics literature, it is as a source of firm-level productivity or in opposition to the interests of shareholders. The discipline has been largely silent about the variety of means by which managers are able to differentiate one firm from its rivals. This is in part because microeconomics ignores the managerial challenges associated with environments characterized by deep uncertainty, i.e., contexts that involve too much complexity to model or forecast with any useful level of confidence.

It is time for economists to delve further into the black box of the firm and recognize management as an idiosyncratic factor of production, playing a central role in the allocation of resources where there is deep uncertainty. There are vast literatures on managerial characteristics, behavior, and impact in other fields that economists can use as a basis for extending existing theories of investment and production. In particular, the strategic management field offers proto-models, such as the dynamic capabilities framework, that can guide future theory development in economics.

This paper starts from a consideration of the economic role of managers, then explores in greater detail their roles as entrepreneurs and leaders. This is followed by a discussion that ties these activities together under the rubric of entrepreneurial management. Next,

the dynamic capabilities framework is presented as a useful model for understanding the role of entrepreneurial managers in the context of ongoing dynamic competition. This is followed by a discussion of the specific roles of entrepreneurial managers within the dynamic capabilities framework. A final section offers some reflection on the possible contributions of concepts such as entrepreneurial management and dynamic capabilities to economic theory.

## 2. Economic Theory and the "Absentee" Manager

Although much of economics is concerned with the behavior and output of firms, economic theory is strangely divorced from the actual activities that take place inside firms to produce the outcomes on which the economy depends. In fact, most economic theory fails to recognize—much less account for—what makes one firm different from others.[2]

[2] Transaction cost economics, with the firm-level concept of asset-specificity, offers the possibility of idiosyncratic differences between firms within an industry. However, the concept is applied in static models of transaction cost minimization, not dynamic total profit maximization. Economic models of trade, starting with Melitz (2003), have begun to include heterogeneous firms. In much of this work, firms are depicted as investing and competing in markets with known demand characteristics. In so doing, these models assume away, for the most part, any role for managers who make strategic decisions in the face of uncertainty. These decisions, which differ among firms, create distinctive firm-level histories that are the wellspring of interfirm heterogeneity.

One leading economic "theory of the firm" (or at least of its existence and range of activities) can be found in transaction cost economics, which holds that the inclusion of activities within a firm is to be preferred over market contracts when business requires large investment in capital that is dedicated to the firm's activities (Williamson, 1975, 1985). In the transaction cost framework, however, markets, technologies and prices are assumed to exist already (Boudreaux and Holcombe, 1989). The existence and shape of the firm is attributed solely to management's desire to minimize transaction costs, including a need to guard against opportunistic behavior. The role of individuals in cutting through deep uncertainty to recognize and pursue opportunities is neglected. Yet these entrepreneurial activities must occur before any market activity can take place, an observation that dates back to at least the work of Frank Knight (1921).

Moreover, with the exception of the entrepreneurial elements of Austrian economics, most economic models avoid the disequilibrium that characterize the environment in which firms and their managers actually operate.[3] Equilibrium implies a stability that requires only a steady hand on the tiller; disequilibrium necessitates foresight, creativity and risk-taking.

Managers navigating waves of disequilibrium by pursuing idiosyncratic strategies are a major source of interfirm heterogeneity. This human element has been acknowledged by economists to some extent through adoption of "bounded rationality" (Simon, 1957) and

[3] Schultz (1975) was unusual among U.S. economists for his ideas about the importance and pervasiveness of disequilibria, but these ideas were for the most part not adopted by the profession.

other ideas about decision making within firms that were developed as part of the behavioral approach to organizations (Cyert and March, 1963). However, little in economic orthodoxy has changed since Fritz Machlup, as president of the American Economic Association, declared that behavioral theory was unlikely to be of use for more than generating insights "of a normative, that is, advisory nature" about individual firms (Machlup, 1967: 31).

In the strategic management field, managers constitute one part of what are known as the capabilities of a firm. While managers can come and go, other aspects of firm-level capabilities are rooted in well-established processes, values, and culture that are slower to change.

An enterprise capability is a set of current or potential activities that combine some portion of the firm's resources to make and/or deliver products and services. The concept was developed in the field of strategic management, but there is an equivalent of sorts in economics, namely "organization capital" (Prescott and Visscher, 1980). However, the theory of where a firm's organization capital comes from is underdeveloped. In empirical research, it has been estimated as the black-box residual of a production function (Lev and Radhakrishnan, 2005) and, in a plant-level study, as a function of manufacturing plant age (Atkeson and Kehoe, 2005). Because the underpinnings of capabilities have been explored more thoroughly in the management literature, I will stay with the management terminology.

The most important analytical distinction among capabilities is that between ordinary and dynamic. Ordinary capabilities involve the performance of administrative, operational, and governance-related functions that are necessary to the execution of current plans. Dynamic capabilities are higher-level activities that can enable an enterprise to direct its ordinary activities toward high-demand uses, develop new capabilities, and effectively coordinate (or "orchestrate") internal and external resources to address and shape shifting business environments. More will be said about these later.

The capabilities view of the firm is a marked contrast with the model favored in mainstream economic theory. As we are told in almost every introductory economics textbook, economics is the study of the allocation of scarce resources among unlimited wants. The price system is presented as the means to allocate resources efficiently toward uses where wants are strongest, as proxied by the highest willingness to pay. The system attains an optimal equilibrium, or, in the event of a change in one of the variables, travels along an identifiable path from the old equilibrium point to the new one.

Mainstream economics glosses over the fact that a tremendous amount of the allocation of human and other resources occurs inside firms, under the direction of managers. Current and anticipated prices are part of the information set of these managers, but managers are also able to envision ways to allocate their resources and efforts so as to move their markets toward more favorable price distributions through innovation, alliance, or other strategic action. Moreover, many of the resources/assets inside the firm are unpriced—and unable to be priced—so resource allocation takes place by

administrative and managerial coordination (orchestration) processes even if transfer prices are subsequently used to record transfers from one division (or wholly owned company) to another.

Firms can also change their resource base, diversify their activities, or divest assets. Managerial orchestration is thus for the firm what prices are to the market, in that they both function to achieve coordination, resource allocation, and adjustment.

The (neoclassical) economic model of market exchange takes for granted that somehow, somewhere, new goods and services are being designed, developed, and produced. It also tends to assume that production methods will be technically efficient, conditional only on factor costs. In industrial organization economics, even when firms compete with differentiated products the firms themselves are most often assumed to be identical with respect to design, production, and information.

The mainstream paradigm is thus blind to the fact that firms own many idiosyncratic, cospecialized, and nontradable resources with highly decision-contingent opportunity costs. In other words, the firm's production possibilities (and thus the value of its nontradable factors of production) may depend endogenously on management-determined variables such as governance modes and organizational structures, as well as on the quality of the firm's supply of managerial knowledge. Formal economic theory, with its emphasis on rational choices among identifiable options is "ill-equipped to deal

with the complexity and diversity of management problems" (Teece and Winter, 1984: 117).

The response of most economists, since at least Adam Smith, is to gloss over the fact that that much organizing must be undertaken by individuals before there are goods and services to exchange in markets. In Smith's famous pin-making example (Smith, 1776, I.1.3), he offers no explanations of how the manufactured pin got invented and how the integration and coordination of non-traded manufactured pin sections (e.g., the wire, the head) took place inside the workshop in order to realize the fruits of specialization. Smith can be forgiven because, apart from the military and the Church, there were no large organizations to observe, and the Industrial Revolution was in its infancy. Modern economists cannot be so readily excused.

There have been notable "modern" exceptions, such as Alfred Marshall, one of the most influential economists of the late nineteenth and early twentieth centuries. In his *Principles of Economics* (1890), Marshall revealed an awareness of the roles of managers at various levels of the firm, and that their decisions were not determined solely by factor and product prices. He noted that the attention of the "head of a large business" can be directed to "thinking out the most difficult and vital problems of his business" after selecting and monitoring the "managers, clerks and foremen" needed to operate the business and settle its details (pp.344-345). The foremen in turn can manage either "by over-driving those whose work they superintend," or "by securing a better organization of [the firm's] details; so that fewer things are done amiss and need to be undone"

(Marshall, 1890: 632). Put differently, Marshall recognized that strategy and implementation matter, too.

Marshall was also sensitive to differences in quality among managers. In his 1919 book *Industry and Trade*, Marshall remarked on the importance of paying high wages to attract better managers (p. 327) while also recognizing the presence of non-pecuniary motivations for managerial effort such as the approval of the manager's professional peers at other companies (p. 326). He was also aware of the value of instilling a sense of loyalty to, and pride in, the business, and that "there arise from time to time managers, who evoke among their subordinates a high regard for themselves; and through themselves for the company" (p. 326). In short, Marshall, writing at the dawn of the era of managerial capitalism, had a keen sense of the contributions and heterogeneity of managers.

While Marshall helped to improve the mathematical rigor of economics, he did not believe that math should dominate economic thought. Unfortunately the subtlety of many of his important non-mathematical ideas, such as industrial districts, was effectively lost for decades as mainstream economists embraced mathematical modeling to the near exclusion of other modes of analysis.

As a result, managers are not much more visible in recent economic models of firms and industries than they were in the writings of Adam Smith. There have been occasional exceptions. Edith Penrose (1959), for example, saw managers as the instruments of

enterprise growth, and limitations on the speed with which managerial services could be expanded became "Penrose effects" (Teece, 1982). Robert Lucas (1978) showed how the introduction of "managerial talent" into a neoclassical model of the firm leads to an empirically plausible size distribution. Rotemberg and Saloner (2000) presented a game-theoretic model of innovation that encompasses CEO "vision" and the mediating role of middle managers. Yet, more than 220 years after *The Wealth of Nations*, the manager is scarcely present even in John Roberts' (2004) book-length treatment of *The Modern Firm.* The positive role of managers in the growth of firms is still largely ignored.

However, one branch of the economics and finance literature has modeled managers, but in roles that ignore the building of capabilities and value. In the middle of the twentieth century, as CEOs like Harold Geneen at ITT and Tex Thornton at Litton, were building conglomerates the size of small nations out of unrelated businesses, a group of economists began to model managers in a very negative light as prone to expend shareholder resources to increase their own utility (Marris, 1963; Williamson, 1963). This potential problem, which was already familiar to Alfred Marshall (1919),[4] was eventually formalized in the economics and finance literature as agency theory (Jensen & Meckling,

[4] For Marshall, the misdeeds of non-owner managers were likely to take the form of shirking: "the private interest of the salaried manager, or official, often draws him in another direction: the path of least resistance, of greatest comfort and least risk to himself, is generally that of not striving very energetically for improvement" (Marshall, 1919: 324).

1976).[5] Models of the firm in this approach led, on many occasions, to normative advocacy for regulation and for placing heavy debt loads on firms in order to limit their managerial margin of action (Jensen, 1986). For Oliver Williamson (1981), the emergence of a "market for corporate control," in which investors can oust managements of poorly run businesses, would serve to keep opportunistic managers in line. But for others, more regulation was required. In the United States, the Sarbanes-Oxley Act of 2002 and other constraints on corporate governance were fueled by Enron and similar corporate debacles in which agency problems were assumed to be the main culprit.

However the focus on the risk that managers will misuse resources that rightfully belong to the firm's owners bypasses the question of where the wealth inside firms comes from in the first place. The answer to this question has less to do with managing opportunism and more to do with managing opportunity. Strategic management perspectives such as the dynamic capabilities framework can help restore some balance to the post-war economics literature, which has largely jettisoned any focus on, or recognition of, the challenge of building firm-level competitive advantage.

One consequence of the neglect by most economists of the heterogeneity of managers and firms is that the economics literature has paid scant attention to the widespread

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[5] For an analysis of the relationship between economic theories, including agency theory and transaction cost economics, and the resource-based theory of strategic management, see Lockett and Thompson (2001). Topics covered include diversification, innovation activity, and corporate refocusing, but their analysis does not address the importance of managers as individual decision makers.

existence of technical inefficiency. Inefficiency is nearly always the result of regulations or poor management. Leibenstein (1966) was perhaps the first economist outside the Austrian School to explicitly recognize that firms may not, in fact, operate on their efficiency frontier. His concept of x-inefficiency, which occurs when a firm operates above its cost curve, made room for the possibility that managers matter.

However, Leibenstein's theory, despite being measured in some studies and disputed by others, has not been embraced in a significant way by the economics profession. As Leibenstein wrote in a subsequent article, "The question of how individuals in multiperson firms influence firm decisions seems like such a natural question to ask that it is amazing that it is not part of the formal agenda of economists as a profession" (Leibenstein, 1979: 477). Across the social sciences, it is perhaps only the strategic management field where much research is based on the premise that not all firms will follow best practice (much less develop a sustainable advantage in the market) and that management capabilities are at the heart of these differences.

A notable exception is an important controlled study published in the economics literature. In this study, Bloom et al. (2013) tied technical inefficiency to managerial practices of an operational nature. They introduced a set of 38 management practices that were already well-known in developed countries to fourteen textile plants in India. The training led to a 17% productivity increase in the first year. The apparent reason for the firms' initial inefficiency was that the Indian managers had either not known about the superior practices or had been skeptical of what they had heard. This supports basic

Austrian School notions about imperfect information (and inaction) being ubiquitous in the economic system.

As explained in Teece (1980, 1982, 1986) and in Helfat et al. (2007, Chapter 2), managers, including entrepreneurs, cannot just leave it up to the market to line up specific assets, develop new ones, and integrate them into a well-functioning production and marketing system. One reason is that markets for high-specificity assets generally don't exist, and if they do exist they are invariably "thin," depriving the decision maker of guidance from factor prices. To overcome this problem, managers collect information, sense opportunities, and make informed conjectures. They must also organize and carry out learning, co-creation, and asset/resource orchestration (Pitelis and Teece, 2009). The entrepreneurially managed business firm, not the open market, is where this can be done.

In a significant comparative international study of management practices by Bloom et al. (2012), the authors showed that management matters with respect to developing and using quite ordinary capabilities in thousands of medium-size manufacturers, retail firms, hospitals, and secondary schools located across twenty countries. The practices on which they concentrated their study were in the categories of performance monitoring and improvement, the setting of financial and nonfinancial targets, and employee reward systems.

As this paper will explore at length, there is much more to management. The concept of capabilities, including their creation and use, is vital for understanding the role of

managers in the economic system. Moreover, management is highly dependent on context; what works well in one country or even one firm with a particular history may produce poor results elsewhere (Waldman, Sully de Luque, Wang, 2012).

In a rare economic study of higher-order capabilities, Bertrand and Schoar (2003) researched a sample of about 500 C-level executives who had moved from one major U.S. company to another. They found significant managerial fixed effects in return on assets. The identity of individual top managers also mattered for a number of operating variables, including acquisition and diversification decisions, dividend policy, and cost-cutting. The results confirm that individual executives bring unique and potentially valuable characteristics to the firms they manage.

The next section looks more closely at the multiple roles of managers. In the dynamic capabilities framework, discussed further below, the roles that matter most are those of perpetual entrepreneur and transformational leader, which together describe the "entrepreneurial manager."

## 3. Managers as Entrepreneurs and Leaders

The management team in a large organization is called on to fill three main types of roles (Table 1). The roles might be split across different jobs or combined in a single individual, depending on the structure and culture of the organization.

The first role, operational management is concerned primarily with the efficient development and execution of current plans. This involves activities such as budgeting and staffing, with a view toward matching or exceeding past performance. The necessary skills are not scarce. They are taught in most business schools and little more will be said about them here.

Entrepreneurial management involves the ability to sense opportunities and shifts in the business environment, to coordinate the resources to exploit promising new avenues, and to develop plans to adapt the organization and its business model for maximum advantage. These functions, which will ideally be supported by routines and coordinated across all levels of the organization, are core elements of the dynamic capabilities of the firm.

**Table 1: Three Roles for Managers**

| | **Operational Role** | **Entrepreneurial Role** | **Leadership Role** |
|---|---|---|---|
| RESPONSIBILITIES | Planning and Budgeting | Sensing and Seizing | Propagating Vision and Values |
| ACTIVITIES | Organizing and Staffing | Orchestrating Resources | Aligning People with Strategy |
| LEVERS | Control and Problem Solving | Investing in R&D, Developing New Business Models | Motivating People |
| GOALS | Technical Efficiency and Predictable Results | Competitive Advantage | Unity of Purpose |

Leadership is required for implementing the changes needed to keep the firm tuned to the needs and opportunities of the business environment. As an entrepreneur develops a

vision of the future, leadership skills are needed to get others in the organization to share the strategic vision, to desire alignment of their activities with the strategy, and to want the organization as a whole to succeed. These are desirable if an organizational transformation is to be successful (Augier and Teece, 2009). Leadership is another core element of an organization's dynamic capabilities.

Entrepreneurial and leadership skills are difficult to teach and absorb if they have not already developed naturally. They can be mimicked only up to a point. Organizational performance will likely suffer if the leadership skills of management are deficient. The remainder of this section will focus on entrepreneurship and leadership, the two skill sets that together make up entrepreneurial management.

William Baumol (1968) put it somewhat differently, but also recognized that the most economically important functions of managers are not reflected in orthodox economic theory:

> We may define the manager to be the individual who oversees the ongoing efficiency of continuing processes ... The entrepreneur (whether or not he in fact also doubles as a manager) has a different function. It is his job to locate new ideas and to put them into effect. ... He is the individual who exercises what in the business literature is called 'leadership.' And it is he who is virtually absent from the received theory of the firm (Baumol, 1968: 64-65)

As Baumol noted, the assumptions and models of mainstream economic theory marginalize any roles for entrepreneurs, managers, and leaders:[6]

> There is no room for enterprise or initiative. The management group becomes a passive calculator that reacts mechanically to changes imposed on it by fortuitous external developments over which it does not exert, and does not even attempt to exert, any influence. One hears of no clever ruses, ingenious schemes, brilliant innovations, of no charisma or of any of the other stuff of which outstanding entrepreneurship is made; one does not hear of them because there is no way in which they can fit into the model (Baumol, 1968: 67).

While the economics literature has largely ignored the value-creating manager, the management literature has for some time been exploring the concept of entrepreneurship within large corporations, including the role of managers in the process. It has long been recognized that a promising idea for a new venture can lead to anything from the creation of a new business unit to the spin-off of a separate company, depending on its strategic relevance and relatedness to the firm's existing activities (Burgelman, 1984). The concept of "corporate venturing" is related to a broader concept in the management literature, "corporate entrepreneurship," the essence of which has been characterized as: "decisions are made and actions are taken that result in new combinations of resources being carried out" (Guth and Ginsberg, 1990: 6). Kuratko and Audretsch (2013) provide a historical overview of the field.

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[6] See Bianchi and Henrekson (2005) for a review of neoclassical models that have included some aspect of entrepreneurship.

Furthermore, empirical studies linking corporate entrepreneurship with performance have been conducted for decades. Empirically, corporate entrepreneurship is often measured by well-validated survey questions in areas that can be summarized (e.g., Zahra, 1996) by categories such as innovation (introductions of new products, commitment to R&D), venturing (entry into new businesses), and strategic renewal (improved internal coordination, divestiture of unpromising businesses). These are all, as will be discussed later, outward manifestations of strong dynamic capabilities, a framework laid out elsewhere (see Teece, 2014, for an updated summary). However, corporate entrepreneurship research has lacked models of how firms develop and implement their entrepreneurship.

The dynamic capabilities framework has been recognized as a potential source for a model of the entrepreneurial firm (Zahra, Sapienza, and Davidsson, 2006). The framework prioritizes the identification of organizational processes and managerial traits that can help the enterprise find and calibrate latent customer needs and promising technological opportunities, then orchestrate the resources needed to innovate, or co-innovate products and services that address them (Teece, 2007, 2012a). Dynamic capabilities research can in turn point to the long line of studies linking corporate entrepreneurship with firm performance with various moderating and contextual variables as evidence of how dynamic capabilities are linked to firm performance.

Some, but by no means all, corporate entrepreneurship research has incorporated the activities of corporate management (e.g., Stevenson and Jarillo, 1990). Top management, by shaping the organization's structure and its culture, plays a large role in determining whether the organization as a whole is able to act entrepreneurially (Covin and Slevin, 1991). Covin and Slevin (1988) found that performance was highest when management's pursuit of an entrepreneurial (risk-taking, innovative) strategy was supported by what Burns and Stalker (1961) called an "organic" structure that was less formal and hierarchical than a conventional corporate structure. More recently, Burgers and Covin (2014) found complex interactions between corporate entrepreneurship and a firm's levels of structural integration and decentralization under various conditions relating to organization size and environmental turbulence.

The roles of lower-level managers in the generation and implementation of entrepreneurial activities are less often explored than those of top management. An early entry in this line of research was Burgelman's detailed (1983a) case study of internal corporate venturing in a technology firm, which showed the importance of middle managers in a "bottom-up" path for entrepreneurial ideas. A more recent study (Hornsby et al., 2009) of over 400 managers from a variety of companies also looked at the role of lower-level, front-line managers. The study found that front-line managers have more difficulty than middle and top managers to see their ideas implemented even in organizations that value entrepreneurial action and provide some level of managerial autonomy. This suggests that many companies have not extended their support for entrepreneurial change very deep into the enterprise.

Leadership has been an explicit topic in the management literature for far longer than corporate entrepreneurship (e.g., Craig and Charters, 1925). One of the chief paradigms for analyzing leadership is the distinction between transformational and transactional leadership. This was systematized in a business context by Bass (1985) but had its roots in earlier work, such as the "transforming leadership" formulation proposed in the field of political science (Burns, 1978). Transactional leadership is more consistent with economic theory. At its core, is "pay for performance." Transformational leadership, on the other hand, involves motivation and inspiration so that employees exceed the basic requirements of a job. A "revolutionary transformational" leader is one who goes further by guiding the organization in shaping its business environment (Burns, 1978; Avolio and Bass, 1988).

Both transactional and transformational leadership are needed for the running of complex organizations. However, transformational leadership is generally found to contribute more to organizational effectiveness (Lowe et al., 1996). It has also been shown to contribute to corporate entrepreneurship, especially in how the CEO shapes the structure, incentives, and risk attitudes of the top management team (Ling et al., 2008).

The transformational leader construct is not restricted to the few countries where most of the related studies have occurred. International research has shown that transformational

leader characteristics, such as charisma and mentoring, are recognized as positive attributes of leadership across a wide range of cultures (Den Hartog et al., 1999).[7]

Transformational leadership (also called "charismatic" leadership) is often hypothesized to be most valuable in an organization when the business environment is unstable, although empirical results to date are sometimes contradictory (Agle et al., 2006; Waldman et al., 2001). Evidence is stronger that transformational leadership makes organizations, regardless of the environmental context, more innovative and adaptable (Jung, Chow, and Wu, 2003).

As mentioned already, the attributes of entrepreneurialism and leadership need not—indeed, in most cases, should not—be restricted to the CEO or even the top management team. Entrepreneurial efforts are needed throughout a firm when it competes in a particularly dynamic industry (Miller, 1983).

In large firms, top-down approaches are likely to lead to low entrepreneurial performance. Few good ideas will emanate exclusively from top management. Instead, middle managers can play a critical role in selecting and developing promising entrepreneurial concepts that are proposed to their superiors (Burgelman, 1983b; Nonaka,

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[7] Looked at from the other direction, however, leadership that spans two or more cultural boundaries, as is increasingly common, requires special attributes, such as a high tolerance for ambiguity (Javidan et al., 2006).

1988). Top management's role is one of recognizing and acting on good ideas from any level (or even from outside) of the organization.

Leaders need not occupy positions of formal authority. Leadership can potentially emerge at all levels of the organization, particularly in a knowledge-based enterprise (Uhl-bien et al., 2007). For example, an area expert on a project team may become the *de facto* team leader, with a formal manager playing the more supportive role of keeping the team's work aligned with broader organizational goals.

**4. Entrepreneurial Management**

Although transformational leadership and organizational entrepreneurship are analytically separable, their goals and other characteristics overlap, and they may both be present in a single individual. For the purposes of this paper, and in dynamic capabilities research more generally, these two managerial roles can usefully be combined as "entrepreneurial management," which has also been called "entrepreneurial leadership" (Gupta et al., 2004).

Entrepreneurial functions are quite different from those of the ordinary manager. The ordinary manager oversees the ongoing efficiency of established processes: that schedules are met and contracts honored, that quality and productivity improve, and that the business model is constantly tuned. Although there are creative aspects to

accomplishing these tasks, managing the operations of an ongoing business is comparatively straightforward.

However, in competitive environments, a business that stands still is on a path to extinction. Entrepreneurial managers are needed to guide the organization in both creating and capturing value.

Timing is critical. Many inventions go unexploited for extended periods, and the pioneer in a market may not turn out to be the eventual winner (Teece, 1986, 2006). One can invest too late or too soon in bringing a technology to market. Entrepreneurial managers must keep the business enterprise on the right "clock" (Mitchell, 1991).

Much like the founders of start-up companies, entrepreneurial managers in established firms assemble and deploy resources in pursuit of fresh opportunities, while imparting their vision of the future to the employees within their purview. They excel at the scanning, learning, creative and interpretive activity needed to sense (and later seize) new technological and market opportunities that may require building new capabilities. Daft et al. (1988) found that companies in uncertain environments performed better when their CEOs engaged in these scanning activities frequently and widely over the entire business environment.

The discovery (or creation) of opportunity requires specific knowledge, creativity, insight into customer decision making, and "practical wisdom" (Nonaka and Toyama, 2007). It

involves interpreting and synthesizing information in whatever form it appears, be it a chart, a picture, a conversation at a trade show, news of a technological breakthrough, or the angst expressed by a frustrated customer.[8] The entrepreneurial manager will use this to generate or update a conjecture about the likely evolution of technologies, customer needs and marketplace responses. The firm must then undertake actions to generate outcomes and data to support or refute the hypothesis, which can potentially reveal ways to profitably exploit new opportunities (Teece, Peteraf, and Leih, forthcoming).

Once exploitable opportunities are discerned, entrepreneurial managers must devise a business model (preferably one that cannot readily be imitated) and a strategy for capturing a meaningful share of value that a new product or service will generate (Teece, 2010). Then they must guide the organization through the necessary knowledge creation and acquisition to fulfill the vision.

Entrepreneurial management thus requires creative vision, hypothesis creation and validation, wily pragmatism, and sensitive people skills. The requisite abilities are not uniformly distributed among individuals. Someone who excels, for example, at "reading the tea leaves"—or perhaps even imagining what's at the bottom of the tea cup—is thus

[8] The processing of these disparate elements requires abductive reasoning, the generation of coherent explanations for observed patterns (Hanson, 1958). This is distinct from inductive logic (going from specific examples to general principles) and deductive logic (going from general precepts to specific truths).

able to discern and/or shape upcoming trends, but may not be good at propagating that vision to a company-wide audience. Increasingly, however, they need to be.

In large organizations, an individual entrepreneurial manager has not historically been expected to be able to perform all the activities of the role as defined here. Although certain individuals may stand out or become the focus of public attention, entrepreneurial management involves exceptional leaders and/or a strong team.

The top management team (TMT) consists of those who report directly to the CEO. The TMT tackles highly complex issues and bears responsibility for the future of the organization. Among other duties, it sets corporate strategy, communicates it organization-wide, and oversees its implementation. It must also be good at directing the organization through the integration or creation of new capabilities.

Entrepreneurial managers can be "grown" internally or brought in from the outside. Developing leadership involves building not only skills and self-awareness (human capital) but also trust and the respect of others (social capital). Typical development methods include mentoring and "stretch" assignments, with "360-degree" feedback (Day, 2001).

## 5. The Dynamic Capabilities Framework[9]

A useful tool for understanding the functions of entrepreneurial managers in the context of the overall work of the organization is the dynamic capabilities framework that was referred to earlier. The framework was developed in the field of strategic management (Teece, Pisano, and Shuen, 1997), and the quality of an organization's managers are central to the strength (or weakness) of its dynamic capabilities (Augier and Teece, 2009).

An organizational capability is a resource that can be harnessed to produce a desirable outcome. Besides being inherent in individuals, capabilities arise from learning, from combinations of organizational assets, and from acquisitions.

A capability can potentially be turned toward any of a broad range of uses, not just (sometimes, not even) what the organization is currently producing. Examples include a capability to rapidly introduce new products on a national or global scale in consumer goods industries and a capability to effectively navigate the product approval process in heavily regulated industries such as pharmaceuticals and autos.

As mentioned above, there are two important classes of capability: ordinary and dynamic. Ordinary capabilities allow the performance of the activities needed to meet current objectives. They require only the type of efficiency-oriented management that has dominated management education (and economic theorizing) for more than a century.

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[9] This section was adapted from Teece (2014).

Dynamic capabilities involve higher-level activities that can enable an enterprise to upgrade its ordinary capabilities and to direct its ordinary activities toward high-payoff endeavors. This requires developing and coordinating, or "orchestrating," the firm's resources to address and even shape changes in the business environment. Strong dynamic capabilities can allow an enterprise to generate superior profits by developing and producing differentiated products and services that address new markets, or existing markets in new ways. The strength of a firm's dynamic capabilities determines the speed and degree to which the firm's resources can be aligned and realigned. To achieve this, organizations must be able to continuously sense and seize, and to periodically transform.

To summarize, ordinary capabilities are about being efficient; dynamic capabilities are about learning and improving and about being innovative and effective or, in a word, entrepreneurial. We now look at these two classes of capabilities in greater detail.

### 5.1 Ordinary Capabilities

Ordinary capabilities permit some degree of sufficiency (and possibly excellence) in the performance of a well-delineated task. They are embedded in some combination of (1) skilled personnel, including, under certain circumstances, independent contractors; (2) facilities and equipment; (3) processes and routines, including any supporting technical manuals; and (4) the administrative coordination needed to get the job done.

Ordinary capabilities can be measured against the requirements of specific tasks, such as labor productivity, inventory turns, and time to completion, and can thus be benchmarked internally or externally to industry best practices. Much of the knowledge behind ordinary capabilities can be bought through consultants or through investment in training (Bloom et al., 2013).

In business environments subject to open competition, good and even "best" practices diffuse rather quickly among at least some firms, thereby sooner or later nullifying best practices as a basis for unique competitive differentiation. Diffusion of a best practice was observed, for example, with respect to the implementation of the multidivisional (M-form) organizational structure in large-scale corporations in the middle of the 20th century. In the petroleum industry, the M-form structure diffused to a majority of the leading firms over a period of about 15 years (Armour & Teece, 1978). Once this organizational best practice (for large firms) became widely adopted, the econometric results show that the higher profits associated with its early adoption in the U.S. petroleum industry dissipated. In developing countries, especially those with protected markets, mastering world-class practices may have a more durable relationship to profitability.

The presence of strong ordinary capabilities in a firm says nothing about whether the current production schedule is the right (or even a profitable) path to follow in the future should conditions change. In fact, best practices can become a trap. The single-minded pursuit of efficiency can drive out the will to effectuate change when it is most needed

because efficiency is easiest to achieve if the tasks the organization is to perform remain fixed. Demands by a firm's shareholders to maintain high productivity in the short term can distract top management from recognizing when strategic change is needed. Strong dynamic capabilities can allow the organization to modify or reinvent its processes in the pursuit not just of efficiency and cost-control, but also of greater differentiation and competitive effectiveness.

### 5.2 Dynamic Capabilities

Whereas ordinary capabilities are about doing things right, dynamic capabilities are about doing the right things, at the right time. This, in turn, requires a prescient assessment of the business environment and technological opportunities, complex managerial orchestration, and the building of a change-oriented organizational culture.

Strong dynamic capabilities help enable an enterprise to profitably build and renew resources, assets, and ordinary capabilities that lie both within and beyond its boundaries, reconfiguring them as needed to innovate and respond to (or bring about) changes in the market. They are vital for firms facing not just textbook market competition but dynamic competition, in which market disruption occurs regularly and without respect to traditional industry boundaries (Sidak and Teece, 2009).

Successfully building strong dynamic capabilities allows firms to challenge competitors that are enamored with the resources they currently possess, that ignore (or are ignorant

of) changing customer needs, that cherish the status quo, that fail to empower internal entrepreneurs and change agents, and that prioritize efficiency over innovation.

Innovation, of course, comes in many varieties. In general, innovation refers to creative ideas related to the generation and delivery of products or services. They may be new to the world or just new in a given context. An important distinction is between ideas that extend existing activities in some way (improved process, upgraded product, new business model) and those that are completely new (creating a new market, satisfying a previously unrecognized demand, developing and commercializing a new technology).

This bifurcation corresponds roughly to what Baumol (2002) called routinized and independent innovation. He saw the routinization of innovation as the response by large firms to the pressures of free-market competition. Independent innovation is, in Baumol's view, the purview of the entrepreneur, who is required to shepherd a revolutionary idea from its beginnings to a viable business offering. Baumol did not, however, analyze the possibility of independent innovation conducted within large firms.

As should be evident from the discussion so far, the dynamic capabilities framework recognizes not only the entrepreneurial tasks involved in maintaining a competitive pace of so-called routinized innovation but also the need to pursue independent innovation at the same time. This is by no means a simple requirement. How well a firm fosters both types of innovation simultaneously is a function of the strength of its dynamic capabilities.

Beyond innovation, the dynamic capabilities framework envisions a more general ability to recognize threats as well as opportunities, to identify external changes that affect the alignment of the organization with its business environment, and to prevent the onset of organizational rigidity or inertia. They can usefully be broken down into three primary clusters: (1) the identification, development, codevelopment, and assessment of technological opportunities in relationship to customer needs (sensing); (2) the mobilization of resources to address needs and opportunities and to capture value from doing so (seizing); and (3) continued renewal (transforming). These capabilities must be exercised on an ongoing basis rather than episodically if the firm is to sustain itself as customers, competitors, and technologies change (Teece, 2007).

Dynamic capabilities reside, in part, with individual managers and the top management team (Adner and Helfat, 2003). At critical junctures for the organization, the ability of a CEO and the top management team to have insight into key developments and trends, delineate a response, and then reallocate resources to lead the firm in its path forward, is likely to be the most visible feature of the firm's dynamic capabilities.

The other pillar on which dynamic capabilities rest is that of the organization's values, culture, and collective ability to quickly implement a new business model or other changes. In large organizations, these are partly the result of current management efforts but are also, to a large extent, the legacy of the past and deeply embedded in the

organization as a whole rather than in particular individuals. Strategic change can only be implemented as fast as the capabilities of the organization will allow.

The dependence of dynamic capabilities on the knowledge of individual managers and in idiosyncratic organizational routines (signature routines) that have developed over time makes them hard for rivals to imitate (Gratton and Ghoshal, 2005). This is all the more true as the firm itself may not entirely understand the complex cause-effect relationships that drive its performance (Lippman and Rumelt 1982).

To summarize this section, Table 2 lays out the basic distinctions between ordinary and dynamic capabilities.

**Table 2: Some Differences Between Ordinary and Dynamic Capabilities**

| | Ordinary capabilities | Dynamic capabilities |
|---|---|---|
| **Purpose** | Technical efficiency in business functions | Congruence with customer needs and with technological and business opportunities |
| **Tripartite schema** | Operate, administrate, and govern | Sense, seize, and transform |
| **Key routines** | Best practices | Signature (upgraded) processes |
| **Managerial emphasis** | Cost control | Entrepreneurial asset orchestration, leadership, and learning |
| **Priority** | Doing things right | Doing the right things |
| **Imitability** | Relatively imitable | Inimitable |
| **Result** | Technical fitness (static efficiency) | Evolutionary fitness (ongoing learning, capability enhancement, and alignment) |

Source: adapted from Teece (2014)

## 6. Entrepreneurial Managers in the Dynamic Capabilities Framework

The role of managers in the dynamic capabilities of the firm has received special attention under the designation of dynamic managerial capabilities, introduced by Adner and Helfat (2003). A still-expanding theoretical and empirical literature has deepened understanding of the underpinnings and economic implications of managerial abilities (Castanias and Helfat, 2001; Helfat and Martin, 2015).

The managerial capabilities literature focuses on three chief foundational elements. First is managerial cognition, the mental process and maps that structure and guide decision making by identifying, for example, which knowledge is important in a given context (Kaplan, 2008). The second element is managerial social capital, the networks of personal and business relations a manager has inside and outside the firm that are vital for the organization's access to information and resources (Blyler and Coff, 2003). The third is managerial human capital, the knowledge, experience, and skill that an individual can bring to bear on the tasks at hand (Carpenter, Sanders, and Gregersen, 2001).

The processes for sensing, seizing, and transforming must be distributed throughout the organization so that all levels of the organization's managers, experts, and even line workers are involved. This works best when management hierarchies are kept relatively shallow and lines of communication sufficiently open to permit knowledge and information to flow to where it will be most valuable (Reitzig and Maciejovsky, 2014).

However, even if potentially valuable information reaches management, it may be poorly processed by the top management team (TMT). The TMT bears the ultimate responsibility for deciding which opportunities are most favorable, developing and promulgating a coherent vision and strategy, and orchestrating the firm's resources accordingly (Linden and Teece, 2014).

When the TMT performs poorly together, the result is likely to be organizational decline (Hambrick, 1994). Management teams often find it difficult to look beyond a narrow search horizon tied to established competences. Henderson (1994) cites General Motors, Digital Equipment, and IBM as companies that faced major problems due to being trapped in their deeply ingrained assumptions, information filters, and problem-solving strategies.

A well-integrated TMT, in which members share openly and truly work together on strategic issues, has been shown to facilitate organizational ambidexterity, the pursuit of new concepts while not losing sight of current operations (Lubatkin et al., 2006). TMT integration is also associated with active strategy formation and agile implementation in fast- moving competitive settings (Chen et al., 2010).

I will now characterize in greater detail the critical tasks to be performed by managers if an organization is to have strong dynamic capabilities. Sensing, seizing, and transforming will be discussed here sequentially, but in reality they overlap and loop, and in large firms they may be staged differently in different divisions.

Of the activities involved in dynamic capabilities, sensing activities are the most immediately recognizable as entrepreneurial. Sensing in dynamic capabilities is very similar to the concept of "opportunity recognition" by individuals that has been developed in the entrepreneurship literature (e.g., Baron and Ensley, 2006). For a business enterprise, sensing involves the identification of opportunities both within and

beyond prevailing technological paradigms as well as the conceptualization of new resource combinations and business models for exploiting them. In some cases, as stressed by Kirzner (1973), the firm may have differential access to existing information relative to rivals. More often, though, it is a matter of the firm's managers and experts doggedly scanning, interpreting, and learning across the same technologies and markets that are visible to rival firms in an effort to discern the possibility of a new or better competitive position (Nelson and Winter, 1982). In large organizations, the discovery process can also be supported by established routines, such as continuous research and development activity, external scanning for new technologies, and co-development activities with alliance partners.

When opportunities are first glimpsed, entrepreneurial managers must decide which technologies to pursue and which market segments to target while continuing to interpret ongoing developments. They must develop forecasts about how technologies will evolve and how—and how quickly—competitors, suppliers, and customers will respond. Competitors may or may not see the opportunity, and even if they do, they might calibrate it differently.

The activities involved in seizing an opportunity require both entrepreneurship and leadership on the part of managers. Devising a business model that will allow the firm to capture a share of the value it creates for customers is a core entrepreneurial skill. Convincing the organization and its partner firms of the rightness of this judgment necessitates leadership.

A key role of entrepreneurial managers is to permit experimentation and search, then support promising paths and close down foolish ones. It is as vital to have leadership that knows which ideas should be rejected as to have CEOs who know when it is worth taking the risk to mobilize resources to launch new products or processes. They must also have good instincts and analytics to go down new paths and create entirely new markets while knowing how to keep the board of directors "onside" for such journeys.

The seizing of new business opportunities by large organizations will often need to resemble the "lean startup" model now popular in Silicon Valley, where new firms quickly test, then update or replace ideas and business models that do not work (Ries, 2011). This process is greatly facilitated by the rapid feedback afforded by social media and the availability of tools for the analysis of unstructured data. Such agility is harder, but not impossible, to achieve in large organizations.[10]

Transformation of the firm in order to exploit new opportunities is the third group of capabilities required of entrepreneurial managers. In periods of business and technological turbulence, firms can gain considerable competitive advantage if top management is able to rapidly propagate a strategic vision at all levels of an organization that is sufficiently flexible to execute the new strategy effectively.

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[10] In the words of Louis Gerstner, the CEO credited with leading IBM's turnaround in the 1990s, "Who says elephants can't dance?" (Gerstner, 2002).

Beyond the implementation of strategy, top management needs to periodically consider (and reconsider) the "fit" of the organization with the opportunities it plans to exploit. Regular change is also required to soften the rigidities that develop over time from asset accumulation, standard operating procedures, and insider misappropriation of rent streams. In large organizations, renewal of the firm's structures and processes must be a semi-continuous process. To wait until change becomes unavoidable is to court business disaster.

Transformational management draws heavily on leadership skills because some tensions will inevitably arise from change. Commitment among the workforce to existing processes, assets, and problem definitions makes change hard to accept, especially in a firm that is currently performing satisfactorily. The best entrepreneurial leaders are able to overcome resistance without undermining workforce morale and to obtain support among key constituencies both inside the firm and out.

**7. Implications and Conclusions**

A social science dedicated to explaining the allocation of goods in the economy cannot afford to continue ignoring the mechanisms by which resources are allocated and coordinated inside firms. Too much about the manner in which new markets are identified and pioneered (or missed) by managers inside large organizations is assumed away by economists, even as major advances in the understanding of these processes have been deepened in other disciplines.

Competition doesn't take place between homogeneous firms but between inherently unequal and idiosyncratic ones with different capabilities. As a consequence of their heterogeneous organizational histories and differing managerial capabilities, firms vary not only in their efficiency with respect to production possibilities, but also in terms of the effectiveness with which they can develop and implement business plans, and the speed with which the can modify their activities. Much as some prices are stickier than others, some organizations are less adaptable to the ongoing waves of disequilibrium in the global economy.

Since the economics discipline consolidated around formal models of firms in the middle of the last century, it has narrowed the subjects it deems to be of interest. Fortunately, the dominance of neoclassical models of firm behavior and of agency theory is slowly giving way to a "heterodox mainstream" (Koppl, 2006) that incorporates institutional, behavioral, entrepreneurial, and even managerial perspectives. However, these new developments are still nascent and require more research to compensate for over half a century of neglect.

The dynamic capabilities framework provides the tissue and the logic to link disparate economic, organizational, managerial, and psychological studies of human capital, entrepreneurship, and cognition. It can do so because of its heterodox and interdisciplinary foundations. It embraces the core business disciplines, such as organizational behavior, corporate strategy and the resource-based view of the firm, but

also draws on numerous other sources, including sociology and behavioral psychology. It also draws on sub-disciplines of economics; the economics of innovation, evolutionary economics, transaction cost economics, and behavioral economics are all within its ambit. This eclecticism makes dynamic capabilities an overarching framework within which studies of firm behavior from a variety of perspectives can coexist under the broad umbrella of an inquiry into how firms manage internal and external resources to build sustainable competitive advantages under deep uncertainty.

The dynamic capabilities approach provides a contrasting perspective to existing economic ideas about firms. Diversification is not just a matter of increasing market power or managerial self-aggrandizement; it is, ideally, the product of a (boundedly rational) strategic analysis that balances (present and potential) capabilities and (perceived and calibrated) opportunities. Entrepreneurs exist not just in start-ups, but also in large organizations. Loading firms with debt in complex buy-outs doesn't just restrain managers from squandering resources, it may restrain and distract them from pursuing worthwhile investments.

An understanding of dynamic capabilities in general, and the role of entrepreneurial managers in particular, can contribute to a firmer foundation for economic models of production and innovation. The economic theory of the firm can be less of a caricature if it can embrace the idiosyncratic characteristics of managers and organizational processes. It should also recognize the importance of the manager in effectuating better resource

allocation under deep uncertainty—which is not something the price system does all that well.

The dynamic capabilities framework could also be applied on a macro scale. For policy makers, a deeper understanding of the origins and evolution of organizational capabilities will help to predict likely business responses to policy changes. The framework can also help illuminate national economic development, such as the successes of the Asian "tigers" (and the lackluster outcomes in many less developed countries). Whereas traditional economic development theorists stress resource accumulation (propelled by high rates of investment), the dynamic capabilities framework stresses the importance of enterprise-level entrepreneurship, innovation, learning, and good strategy. When Nelson and Pack (1997, p. 434) noted that "if … one marshals [inputs] but does not innovate and learn, development does not follow," they implicitly endorsed the importance of dynamic capabilities for national economic development.

Our understanding of dynamic capabilities and how they work is still incomplete, and research on entrepreneurial management in large organizations has a long way to go. Previous work is limited partly because managerial roles are context-specific and most researchers underrate the influence of contingencies in the business environment on the relative performance of managerial capabilities. Hambrick and Abrahamson (1995) researched the scope for managerial action across industries and found that high discretion (where capabilities matter most) occurs in industries with high R&D and advertising intensity (indicators of differentiability), low capital intensity (less long-term

commitment to investment plans), and high market growth (more room for experimentation with less severe consequences for miscalculations). While much progress has already been made, opportunities abound to dig deeper into the linkages between managerial actions, dynamic capabilities, and long-run firm performance.

The economic analysis of the firm will be strengthened and enriched by embracing a more varied and positive role for managers than that of larcenous leaders (agency theory) or anonymous automata (cost minimization and optimization models). The dynamic capabilities framework can provide the structure for advancing economic inquiry into fundamental issues that have confounded a better understanding of enterprise performance in the innovation economy.

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