Strategic Management Journal
Strat. Mgmt. J., **38**: 1391–1415 (2017)
Published online EarlyView 28 October 2016 in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/smj.2562
Received 6 March 2013; *Final revision received 9 May 2016*

ROOKIES AND SEASONED RECRUITS: HOW EXPERIENCE IN DIFFERENT LEVELS, FIRMS, AND INDUSTRIES SHAPES STRATEGIC RENEWAL IN TOP MANAGEMENT

CHARLES WILLIAMS,[1,†,*] PAO-LIEN CHEN,[2,†] and RAJSHREE AGARWAL[3,†]
[1] *Department of Management and Technology and ICRIOS, Bocconi University, Milan, Italy*
[2] *Institute of Technology Management, National Tsing Hua University, Hsinchu, Taiwan*
[3] *Robert H. Smith School of Business, University of Maryland, College Park, Maryland, U.S.A.*

Research summary: *This study explores the effect of knowledge integration on strategic renewal. In particular, it examines how executives from different* levels *and* sources *influence renewal when added to top management teams (TMT). In contrast to prior work, the study hypothesizes and finds that new outside rookies—those new to top management and the firm—are associated with higher firm growth than other types of executives. We also find that seasoned outsiders—those with prior TMT experience outside the focal industry—contribute to growth only when the existing TMT has a long tenure. The results suggest that the ability of the TMT to integrate new members varies by executive type and has an important effect on incremental strategic renewal.*

Managerial summary: *Conventional wisdom holds that firms are better off hiring those who can demonstrate prior experience and skill in tasks as close as possible to the job. In the realm of the top management team (TMT), however, we find that many firms benefit from hiring rookies from other firms who are new to the top management team level. These candidates bring useful knowledge of the operations of competitors and other firms, and they are easier to socialize and integrate with the existing team. While more experienced senior leaders may bring valuable strategic knowledge, this study suggests that only top management teams with long shared experience can weather the disruption that they cause to realize the potential benefits.*

INTRODUCTION

New executives joining top management teams (TMTs) contribute to discontinuous strategic change (Boeker, 1997; Wiersema and Bantel, 1993) and the construction of valuable capabilities in firms (Carpenter, Sanders, and Gregersen, 2001), but we know little about how they affect incremental strategic renewal. While incremental renewal may seem less important than radical change, theory suggests that it makes substantial contributions to long-term growth and value (Agarwal and Helfat, 2009). In addition, it entails difficult trade-offs between benefits and disruptions from new knowledge (Nelson and Winter, 1982). In this article, we propose that the acquisition of top executives is a critical mechanism for incremental renewal and that the level of new hires, the tenure of the existing team, and the stage of industry evolution all shape the costs and benefits of integrating their outside knowledge.

Keywords: strategic renewal; top management team; knowledge integration; strategic human capital
*Correspondence to: C. Williams. E-mail: charles.williams@unibocconi.it
[†]All authors contributed equally.

Our theories suggest that incremental renewal, despite its seemingly ordinary status relative to radical change, can nonetheless be quite difficult for firms (Agarwal and Helfat, 2009; Floyd and Lane, 2000; O'Reilly and Tushman, 2008). Theorists have proposed that incremental renewal requires the simultaneous management of top-down and bottom-up processes, so it tends to be unstable compared to the status quo or more dramatic change (Floyd and Lane, 2000). This makes incremental renewal a useful setting to study the acquisition and integration of new knowledge since the costs and benefits of integration are more visible when finely balanced.

In this study, we focus on the *level* of prior experience of executive hires as an overlooked characteristic that affects the rewards from and challenges of integrating new executives. Tying together insights from literatures on strategic renewal, upper echelons, and industry evolution, we develop a theoretical framework to compare the effects of new TMT members from five different backgrounds: (1) rookie executives from inside the firm, (2) rookie executives from industry competitors, (3) rookie executives from outside the industry, (4) seasoned executives from inside the industry, and (5) seasoned executives from outside the industry.[1] These five types represent different knowledge connections, adaptability, and compatibility with existing teams.

We posit that rookie outside executives—those new to top management and the firm—are an important vehicle for incremental renewal for two reasons. First, these executives bring new operational and functional knowledge that help a firm refresh its capabilities at the operational and intermediate levels. Second, they are easier to integrate with the existing team since they are more open to socialization and integration at the TMT level. Seasoned executives, on the other hand, bring a high-level, strategic perspective, but can be more disruptive to existing teams because of their authority and commitment to prior team-specific practices. The integration challenges that seasoned executives present can be mitigated for more positive value, though, when the power dynamics of the existing TMT minimize the disruption and facilitate the adaptation of knowledge. Specifically, TMTs whose members have a longer tenure together will be more likely to achieve a positive effect from adding seasoned outsiders. Finally, we predict that the effect of outside industry executives on firm growth will shift as an industry ages: rookie outsiders will contribute less valuable knowledge, while the positive impact of seasoned outsiders will rise.

We examine these hypotheses in the context of the emerging U.S. cellular industry from 1983 to 1998. Consistent with our predictions, we find that firms see higher growth after adding outside rookies from within the industry, and this result is robust to several alternative specifications and approaches to endogeneity. We also find that seasoned executives from outside the industry are more disruptive and difficult to integrate, accounting for the overall negative growth effects associated with their addition. However, these outside seasoned executives are associated with a more positive effect when they join longer tenured teams, though these results are potentially endogenous. Finally, we find that the value of knowledge from outside the industry, in terms of firm growth, depends on an industry's age: Over time, seasoned outside industry executives are associated with more positive growth, while the positive effect of rookies from other industries declines.

In bringing together the upper echelons and strategic renewal literatures, we advance scholarly thought in several ways. First, the study contributes to knowledge theory by exploring factors that affect the cost of integrating new knowledge, which have not generally been studied. As such, it is an empirical illustration of Penrose's core proposition that the cost of integrating new resources is a prime driver of the growth capacity of firms. For the literature on strategic renewal, our results show that the challenges of incremental renewal can be mitigated by knowledge acquisition strategies that reduce the cost of integrating outside knowledge, as in the case of hiring rookie executives. In addition, the findings serve as a counterpoint to recent studies in strategic human capital that document disadvantages associated with outside hiring in professional services contexts (Bidwell, 2011; Groysberg, Lee, and Nanda, 2008). Finally, by examining the contingent role of individual level TMT knowledge as the industry evolves, we broaden a literature predominantly focused on the firm and capabilities level of

[1] We use the term *rookie* to denote executives without prior experience in top management experience—similar to athletes new to the top level of a sport, such as the Champions League in European football or the Major Leagues in American baseball—while we use *seasoned* to refer to executives with prior experience in a top management team.

DOI: 10.1002/smj

analysis (Helfat and Lieberman, 2002; Klepper and Simons, 2000).

THEORETICAL BACKGROUND

While earlier studies of strategic change emphasized cases of radical or discontinuous overhaul, the evolutionary tradition of renewal highlights the substantial benefit to firms from continuous, incremental adaptation, which over time, can add up to changes as large as or greater than a single, radical overhaul (Harreld, O'Reilly, and Tushman, 2007; Utterback, 1994). The concept of renewal is embedded in an evolutionary framework of variation, retention, and selection (Burgelman, 1991), which involves "promoting, accommodating, and utilizing new knowledge and innovative behavior" (Floyd and Lane, 2000). Incremental renewal, then, involves updating the existing resource base of the firm by incorporating new knowledge, and scholars have provided a number of reasons why incremental renewal may be difficult for firms to enact. At the level of operations, continuous adaptation conflicts with the need for standardized routines to perform critical tasks (Nelson and Winter, 1982). At a higher level, enacting ongoing renewal requires potentially conflicting activities to support either continuity or change (Agarwal and Helfat, 2009; Crossan and Berdrow, 2003; Floyd and Lane, 2000).

Top executives play a fundamental role in maintaining balance and resolving conflict between continuity and change since they represent the dominant decision making coalition of a firm. This coalition, described in the behavioral theory of the firm (Cyert and March, 1963) and explored in greater depth by the upper echelons literature (Hambrick and Mason, 1984), interacts to make key decisions that affect the entire organization. The human and social capital embodied in the dominant coalition of the firm represents not only a very important knowledge base for the firm, but the cognitive lens of the organization in carrying renewal efforts forward (Adner and Helfat, 2003; Eggers and Kaplan, 2009; Salvato, 2009; Taylor and Helfat, 2009). Consistent with this, scholars have documented the role of senior managers in integrating the requisite assets for evolving industry needs (Taylor and Helfat, 2009), creating mechanisms to facilitate communication and coordination among middle managers (Agarwal and Helfat, 2009), influencing the evolution of product development capabilities (Salvato, 2009) and determining the timing of follow-on generations of products and services (Eggers and Kaplan, 2009). Thus, the acquisition and integration of knowledge embodied in executives for the TMT is an important avenue for ongoing renewal.

At its root, the behavioral theory of the firm is a theory of coalitions and decision making in a complex political environment. Naturally, research on TMTs has studied power dynamics among team members (Boeker, 1992; Eisenhardt and Bourgeois, 1988; Finkelstein, 1992). The logic of political imbalance and entrenchment suggests an important truth for studies of strategic renewal: EXECUTIVES who create a more uneven power distribution will generate political disruption in the TMT, resulting in reduced adaptability for the firm. These costs are likely to be especially evident in the case of incremental strategic renewal since it requires a difficult balance between opposing processes. The costs of this disruption, and the benefits of knowledge acquisition and integration approaches that reduce it, have not generally been addressed in the literature.

HYPOTHESES

This study focuses on the *level* and *source* of prior experience of executive hires. The level distinguishes between hires with or without prior TMT experience, and the source distinguishes between prior experience inside or outside the focal firm or industry. The five distinct backgrounds we explore below characterize executives with different knowledge connections, adaptability, and compatibility with existing top management teams.

Rookie versus seasoned outsiders

We turn first to the question of how, *among outside recruits,* the level of prior experience affects renewal since this has not previously been considered in TMT research. Both seasoned and rookie outsiders will bring outside knowledge and fresh perspectives to a TMT, but both will also need additional vetting because firms have limited information about outsiders. Accordingly, the differential effect of rookie and seasoned executives will relate closely to their level of prior experience, which correlates with differences in knowledge domains, and

DOI: 10.1002/smj

in the challenge of integrating the executives into the existing team.

When comparing hiring from different levels, there is a natural presumption that firms will prefer TMT candidates with prior experience in this role, as they bring valuable strategic knowledge and skills specific to the role. Seasoned TMT executives have experience in defining their firm's strategic direction, working with others in the upper echelon, and helping deliver on organizational outcomes (Castanias and Helfat, 2001; Hambrick and Mason, 1984). Recruiting seasoned executives from other firms, particularly industry competitors, enables a firm to leverage its strategic knowledge (Virany, Tushman, and Romanelli, 1992; Wezel, Cattani, and Pennings, 2006) as well as access the valuable social capital and external network that it has amassed through experience (Campbell, Coff, and Kryscynski, 2012; Somaya, Williamson, and Lorinkova, 2008). Also, given that past performance of executives is the best predictor of future performance, companies should be able to predict the performance of a potential TMT member more accurately from the track record of executives with prior TMT experience than from the record of rookies who have none. There are fewer top executives at the pinnacle of the organization, making it easier to observe their responsibilities and outcomes in these areas to link their contribution to the performance of the firm.

On the other hand, rookie recruits contribute functional and operational knowledge that have value when renewal requires change in operating capabilities. In contrast to the horizontal organization structure of professional service firms, vertical linkages and information flow are a key aspect of organizational structure and knowledge in most firms (Teece, 2003). Rookie recruits can be essential in establishing new networks of knowledge and activities required for the organization's operating knowledge and productivity (Argote and Ingram, 2000; Grant, 1996). Outside rookie executives are more likely to forge new links between activities and functions that renew core knowledge (Martin, 2011; Taylor and Helfat, 2009), as they bring new perspectives about the types of bottom-up processes that could drive organizational renewal (Bermiss and Murmann, 2015; Floyd and Lane, 2000). Their deeper engagement in functional areas can then be linked to the broader perspectives of current top executives (Cable and Edwards, 2004; Muchinsky and Monohan, 1987). This helps the TMT create fresh bridges connecting its vision with the creative potential of realities on the frontlines (Nonaka, 1994). For example, Boeker's (1997) study of strategic change after executive migration found that new executives with functional backgrounds in engineering or R&D played a larger role in enabling firms to enter new markets.

Given that both domains of experience are relevant, the question of whether seasoned or rookie outside recruits create more growth for the organization relates to the ability of the organization to hire and integrate the best talent within each pool. Several factors may shift the balance toward rookie rather than seasoned outsiders. First, the narrowing pyramid of hierarchy within manufacturing and high technology organizations (Teece, 2003) implies that in absolute numerical terms, at any point in time, the number of external rookie candidates of similar innate talent will be greater than the external number of seasoned executives. This greater talent will increase the likelihood of matching a quality rookie executive to the firm in need.

In addition, the challenge of integrating outsiders to a new team is likely to vary with the level of new executive's experience, due to potential differences in power dynamics. Over time, teams develop established norms and understanding of shared tasks, which builds social cohesion and integration and support effective team functioning (O'Reilly, Caldwell, and Barnett, 1989; Tuckman, 1965). Integrating new members within existing teams requires socialization to existing team values and norms, requiring teams to adapt to function effectively (Kozlowski *et al.*, 1999; Van Maanen, 1982). The socialization of rookie outsiders, given their newness to the level, can be facilitated by existing TMT members serving as mentors and models (Kozlowski *et al.*, 1999). Seasoned additions, meanwhile, run more risks of competition and conflict with existing team members (Karaevli, 2007; Shen and Cannella, 2002). In situations with substantial conflict or "politics," firms have been found to perform worse (Eisenhardt and Bourgeois, 1988). Thus, from the perspective of TMT power dynamics, the cost of integration and the level of disruption from a rookie outsider will be lower than from a seasoned executive.

Taken together, the utility of the functional and operational knowledge brought by rookie outsider recruits, and the easier integration of those rookies,

DOI: 10.1002/smj

implies that the firm will reap greater growth benefits when adding rookie outsiders to the top management team.

Hypothesis 1: Adding an outside rookie to the top management team will lead to higher growth than adding an outside seasoned executive.

Comparing rookies from inside and outside the firm

The question of how outside hires and internally promoted candidates compare is a long-standing issue in studies of labor and strategic human capital. However, if the level of prior experience shapes the type of knowledge a new team member brings, then comparing internal promotions to all outsiders compares inside rookies to both seasoned and rookie managers from outside the firm. A more equitable comparison is among TMT rookies: how a middle manager promoted internally compares to a similar candidate from outside.

Recent studies have shown that hiring outside candidates is costly and can lead to lower individual performance compared to inside candidates (Bidwell, 2011). Internal hires are favored by firm specificity of human capital (Becker, 1975; Castanias and Helfat, 2001) and information asymmetry regarding executive capabilities (Holmstrom, 1982; Zajac, 1990; Zhang and Rajagopalan, 2003). Studies have found that outside hires are paid more, but have lower average performance relative to internal promotions (Bidwell, 2011), and that high performers experience performance decline after job changes (Groysberg and Lee, 2009; Groysberg *et al.*, 2008). These studies support the notion of high costs of integrating outsiders who lack knowledge of firm-specific practices, including an organization's shared values and norms, relative to internal promotion. Notably, though, many of these recent studies utilize the professional services context, which is characterized by a predominance of horizontal communication flows, heightened problems of adverse selection, and winner-take-all results (Teece, 2003). These distinct organizational and human capital characteristics may not generalize to other industry contexts.

Specifically, emerging industries and, more broadly, dynamic and high-technology markets, represent contexts where outside knowledge is essential to the renewal process, with firms under constant pressure to adapt their existing resource base. In such contexts, the risks and costs associated with external hiring may be offset by the utility of external knowledge that rookie outsiders offer. From a knowledge-utility perspective, external rookies help firms renew their resource base by adding complementary knowledge, which is consistent with recent theory suggesting potential firm value even from general and industry-specific human capital (Campbell *et al.*, 2012). While recruiting from within strengthens convergent fit among top managers by promoting homogeneity and coherent culture (Cable and Edwards, 2004; DiMaggio and Powell, 1983; Pfeffer and Leblebici, 1973), outside rookie recruits represent new sources of knowledge to the firm and a conduit for inter-organizational learning (Boeker, 1997; Kraatz and Moore, 2002). In dynamic industry settings, the growth benefits that accrue from the knowledge of external recruits will be higher than the benefits of value congruence and consistent culture encouraged by internal promotion (Sørensen, 2002). Thus, the complementary value of the knowledge outsiders bring can improve team and organizational performance.

Complementary knowledge may originate from related industries as well. Scholars have underscored performance differentials at the firm level of analysis arising from experience in related industries (Helfat and Lieberman, 2002; Klepper and Simons, 2000), and a parallel argument can be made for the benefits of sourcing knowledge by hiring executives from another industry. Kraatz and Moore (2002) note the importance of hiring executives from outside the focal industry as a key mechanism for "introducing new values, objectives, cognitive models and technical skills" (p. 126). Similarly, Pfeffer and Leblebici (1973) underscore that recruiting executives from other industries reduces environmental uncertainty and shapes managerial knowledge in the focal industry. Thus, executives from outside the firm and industry represent agents of change, given the knowledge they bring from related institutional structures (DiMaggio and Powell, 1983; Kraatz and Moore, 2002).

Similarly, rookie executives from competitors represent an important source of inter-organizational learning for a firm's TMT (Boeker, 1997). Knowledge transfer through employee mobility enables the diffusion of both technological and market knowledge from competitors (Agarwal *et al.,* 2004; Almeida and Kogut, 1999). Boeker (1997) found that firms were more likely to

DOI: 10.1002/smj

grow through entry into new product markets when they sourced executives from outside the firm, and the effects were stronger when the executives brought with them relevant functional knowledge related to R&D and engineering. Thus, rookie executives from outside provide direct information about the strategic alternatives faced by other firms (Boeker, 1997), which can help the TMT evaluate potential competitive dynamics and make more informed decisions.

The utility of knowledge aside, information asymmetries represent a key issue that can cause firms to favor internal recruits by increasing the risks of hiring externally (Holmstrom, 1982; Zajac, 1990; Zhang and Rajagopalan, 2003). An implicit and strong assumption in the literature on adverse selection in hiring, however, is that firms do not have ways to alleviate information asymmetries, and that direct experience is the only approach to assess candidates effectively. The related literature in economic sociology has emphasized the role of social networks (Fernandez, Castilla, and Moore, 2000; Granovetter, 1995) in reducing such asymmetries and creating vibrant labor markets. Rich social networks can span geographical and product space to promote executive migration (Almeida and Kogut, 1999; Saxenian, 1994), and enable firms to overcome the uncertainty and risks of external hiring by tapping into their inter-firm networks (Williamson and Cable, 2003). Further, not only do firms rely extensively on executive search firms for TMT hires (Hamori, 2010), but referrals of outside candidates by the firm's own employees can act as an important conduit for tacit information (Fernandez *et al.*, 2000; Simon and Warner, 1992), thereby increasing the match between the firm and the recruit.

Scholars have also argued that firms prefer internal promotion over external hiring because it elicits effort and firm-specific investment from workers and managers who aspire to promotion (Bidwell and Keller, 2014; Prendergast, 1993). This mechanism, however, does not necessarily imply an incremental effect for every additional internal promotion. Economic logic has shown that promotion tournaments, in which only a limited number of executives are promoted, may still elicit significant effort on the part of all executives in the competition (Chan, 1996; Lazear and Rosen, 1981). This suggests that even a small number of internal promotions may suffice to elicit effort and investment at lower levels of the firm. In addition, active markets for managers may increase the incentives for effort and firm-specific investments, since managers know that a successful track record increases rewards through outside opportunities. Thus, as long as firms are above some minimal threshold of internal promotion, additional internal promotion may not have a substantial effect on the incentives perceived by lower-level managers. Taken together, the above rationale suggests that the risks and costs of adding rookies from outside the firm (relative to rookie insiders) may be offset by the utility of new external knowledge. Thus, in dynamic markets, outside rookies will support growth more than rookies from inside.

Hypothesis 2: Adding an outside rookie to the top management team will lead to higher growth than adding an internal rookie.

Integrating seasoned outsiders: the effect of existing TMT tenure

In general, we have argued that the utility of outside knowledge may be situation specific. To highlight this point, we turn to a key contingency that shapes the potential contribution of outside seasoned executives to the TMT: the average tenure of the existing team. For firms attempting renewal through outside resources, the integration of these resources is an important challenge. To assert that outsiders change knowledge and practices in a team is to suggest that outsiders are a source of disruption, with both positive and negative consequences. We have argued that a key advantage of outside rookies over seasoned executives is that they are more easily socialized and integrated to an existing team, while also bringing useful outside knowledge. The potential disruption from an outside executive will depend not just on the nature of the executive, but on the team that they join, and in particular, the longevity of that team.

When existing top executives have spent more time in an organization, they have a better understanding of organizational policies and procedures (Finkelstein, Hambrick, and Cannella, 2008; O'Reilly *et al.*, 1989). Further, in the presence of heterogeneous beliefs and knowledge that can slow the decision making of firms (Hambrick, Cho, and Chen, 1996), longer average team tenure helps reconcile differences, leads to greater social cohesion, and lessens the likelihood of internal conflicts among existing team members (Michel and Hambrick, 1992; Smith *et al.*, 1994). TMTs

DOI: 10.1002/smj

with longer average tenure are likely to have strong established norms, routines, and communication channels (Janz, Colquitt, and Noe, 1997; Kozlowski *et al.*, 1999). Accordingly, longer average tenure is associated with improved communication and implementation effectiveness in TMTs (Boone *et al.*, 2004). The stronger mental models of the operating environment, and more established internal processes and norms, help preserve stability in executive leadership.

As a result, TMTs with longer average tenure are more likely to exhibit stronger persistence in strategic choices such as advertising and R&D intensity, especially in high-discretion industries such as computers (Finkelstein and Hambrick, 1990; Hambrick, Geletkanycz, and Fredrickson, 1993). These teams are more likely to filter out information that disrupts their current behavior (Zenger and Lawrence, 1989). This filter will reduce the changes made in reaction to new outsiders. For example, experienced teams have been found to reduce the effect of executive migration on strategic change among semiconductor firms (Boeker, 1997). Since higher average tenure in the existing TMT creates a buffer against a new executive's influence, it can mitigate the disruption from an outsider—for better or for worse. In their extensive literature review on teams, Kozlowski *et al.* (1999) highlight the pressure that existing teams exert on newcomers to conform to their standard practices, and note that established teams exert more pressure on new members to conform to team norms than vice versa. This pattern may overwhelm the positive effects of adding outside rookies, but it can also allow teams to manage the disruption of more seasoned executives while still gaining benefits from their substantial strategic knowledge and experience.

In addition, longer average team tenure implies a more stable and balanced dominant coalition in place at the hiring firm. As noted above, TMT power dynamics suggest that very imbalanced power distributions lead to less information flow (Haleblian and Finkelstein, 1993), more competition for influence (Shen and Cannella, 2002), and lower performance (Eisenhardt and Bourgeois, 1988). The literature linking outside CEO recruitment to firm performance has highlighted internal power dynamics as an important moderator (e.g., Karaevli, 2007), but those findings do not necessarily extend to non-CEO additions. For all of the reasons explained above, we believe that outside seasoned executives who are not CEOs will be more likely to "toe the line" when joining an existing TMT that is more cohesive. Increased socialization of seasoned executives implies an increased investment in integration, which allows the underlying value of their experience and knowledge to dominate. Overall, then, teams with longer average tenure may reduce the disruption of outsiders, and accordingly, increase the positive impact of their experience and strategic knowledge. Hence, we predict that firms with a higher average team tenure in their TMT will achieve more positive results from adding a seasoned outside executive.

Hypothesis 3: Longer tenure of existing TMT members positively moderates the growth effect of a seasoned outside executive.

The value of knowledge over the industry life cycle

Our second contextual contingency for the value of outside knowledge relates to the stage of industry development. As industries evolve, the stock of industry-specific knowledge increases (Gort and Klepper, 1982), as does the repository of information embodied in firm routines (Nelson and Winter, 1982). For example, scholars have noted that as industries age, the advantage of diversifying entrants over start-ups erodes due to a lower fit between their resources and capabilities and the environment of the focal industry (Bayus and Agarwal, 2007; Teagarden, Echols, and Hatfield, 2000). It is natural, then, that the value of knowledge embodied in top executives will also vary over industry age, given that managerial talent includes general, firm-specific, and industry-specific skills (Castanias and Helfat, 2001). We posit that functional and operational knowledge from outside the industry becomes less relevant as industry-specific knowledge accumulates over time, leading to a decline in the growth effect of hiring rookies from outside the industry. On the other hand, high-level strategic perspectives across industries will remain or increase in value as industry recipes become more established.

Early in an industry's history, there has not been time for industry-specific practices and institutions to emerge. Because the norms for behavior and competition are unfolding, an emerging industry represents a "high discretion" environment in which the characteristics of managerial teams can have a large effect on the strategic choices and outcomes

DOI: 10.1002/smj

for firms (Finkelstein and Hambrick, 1990). Indeed, as noted earlier, outside institutional or industry leaders matter most when the practices and goals are not strongly established and secure (DiMaggio, 1988; Selznick, 1957), opening up opportunities for executives from outside the focal industry to be influential in creating strategic change (Kraatz and Moore, 2002). Since early industry ferment involves the core attributes of the product (Utterback, 1994), new knowledge adds value by helping refresh the operating capabilities and functional knowledge of the firm.

As an industry ages, however, the industry-specific human capital component of managerial talent increases, along with the need to leverage these skills and knowledge for continued firm growth. For instance, relationships with suppliers, complementors, and regulators will require more industry-specific knowledge of the history of regulation, standards, and technology. Outside industry recruits have to acquire this information to be effective, and the operational knowledge that is specific to their own industry is less fungible in the more mature landscape of the focal industry. Thus, relative to both recruits from competitors, and internal promotion candidates, rookie industry outsiders may be at a disadvantage as the industry ages.

On the other hand, the strategic knowledge of seasoned TMT members from outside the industry will retain value, and perhaps, even increase in value because these additions will help enable the stable routines required for more mature industries. Early in the industry, outside industry seasoned executives may find their knowledge less applicable to the emergent nature of industry practices, causing them to unlearn "what works" in a more stable context and incur integration costs. As industry practices become more stable and established, though, the strategic knowledge of seasoned executives from other industries may be more relevant, and increase the growth potential of the firm as the industry ages. Accordingly,

Hypothesis 4a: Industry age negatively moderates the growth effect of adding a rookie executive from outside the industry.

Hypothesis 4b: Industry age positively moderates the growth effect of adding a seasoned executive from outside the industry.

Table 1. Cumulative numbers of new executives in each executive sourcing choice

	Inside firm	From competitor	Outside the industry
Rookie executive	119	31	141
Seasoned executive		65	114

EMPIRICAL CONTEXT AND METHODOLOGY

Industry context

We test our hypotheses with data from the U.S. cellular industry from 1983 to 1998. The industry emerged in 1983, when Ameritech Mobile Communications launched the first commercial wireless phone service in Chicago, Illinois. The firms in this evolving industry provided wireless radio communications services based on regional licenses from the Federal Communications Commission. The cellular industry in this period offers several attractive features for studying recruits to TMTs. First, we observe frequent changes in TMTs from 1983 to 1998, and new recruits come from a wide variety of hierarchical, organizational, and industry backgrounds (see Table 1). Next, there is a high degree of uncertainty and ambiguity as to the outcome of executive hiring decisions for firms in the industry. During this period, the industry underwent the typical life cycle stages of takeoff, growth, and maturity (Gort and Klepper, 1982), fueled by both technological evolution (e.g., the change from analog to digital technology, along with numerous incremental innovations) and increasing demand (e.g., the move from business professional users to mass market). At the firm level, these evolutionary changes both expanded opportunities to add to current practices and created competitive pressures to renew firm knowledge.

Data description

To obtain a comprehensive list of wireless telecommunications firms in the United States in each year from 1983 to 1998, we collected data from multiple sources, including annual directories published by Phillips Publishing, the FCC's Universal Licensing System (ULS), and industry magazines and publications such as *Cellular Business*, *Cellular Radio: Birth of an Industry* (1983), *Cellular Marketplace*

DOI: 10.1002/smj

(1984), and *The Status of the Cellular Industry (1986–1992)*. Additionally, we obtained relevant information on license ownership and licensees' activities from LexisNexis; company annual reports and 10Ks; and Donaldson, Lufkin & Jenrette's *Cellular Communications Industry Report* (1985). To be included in our sample, we defined a wireless telecommunications firm as one that held majority ownership in a cellular phone license, installed network service equipment (such as radio base stations and a switch), and actually provided wireless communications service to users. This ruled out firms or individuals that entered the industry solely to realize short-term gains from trading licenses, which occurred early in the industry's emergence.

To identify the TMT, we followed the upper echelons literature (Hambrick and Mason, 1984), where most studies identify the team as "CEO and direct reports" or as the "top two levels of the firm" (c.f. review by Carpenter, Geletkanycz, and Sanders, 2004). Consistent with this literature, we focus on the top two levels of the firm: the CEO and the executives with whom she or he regularly interacts with to make important organizational decisions. We use the title of vice president (VP), which is a common dividing line between this top level of the firm and the broader set of middle managers.[2] We used a rich variety of databases and publications[3] to identify all of a firm's TMT members in any given year, the functional backgrounds of these executives when they entered the firm, and their work experience prior to entering the firm. Consistent with other studies (Carpenter *et al.*, 2004) for public firms, we used company reports and SEC filings to identify executives and the employment history of top executives. To maintain consistency across firms and retain a focus on the cellular industry, we identified the top two levels of managers within the cellular business if the parent firm was large and diversified across industries. For private firms, we used the comprehensive industry directories from Phillips Publishing's *Telephone Industry Directory,* which provides most companies' key contact personnel in each cellular market after 1986, typically including the CEO, and top executives in operations, marketing, technology, and engineering. Because top managers handling finance or accounting areas were not usually listed in this directory, we appended information about them by searching news reports regarding the firms' management team from the above-mentioned sources. Outside the cellular industry, we used related industry directories for telecommunications, cable television, and radio communications as well as company reports, to categorize hired executives coming from the VP rank as belonging to the top two levels of the firm (seasoned) or not (rookies).[4]

When a manager appears in a TMT for the first time, they are identified as a new TMT member for that year. To identify new executives' experience prior to entering the TMT, we used companies' SEC filings; Phillips Publishing's *Wireless Industry Directory*, which reported carriers' middle management team from 1987 until 1998; and press reports in four industry magazines: *Telephony*, *Cellular Business*, *Communications* (Englewood), and *Mobile Phone News*, which reported the movement of managers within the industry from 1983 until the end of 1997. These publications generally provided information about a manager's current position, responsibility in the focal firm, and prior work experience. To be sure that we obtained comprehensive work experience information, we supplemented the previous sources with searches from D&B's *Corporate Management*, LexisNexis, and Hoover's Online.

[2]Among the studies that use a VP dividing line in the Carpenter *et al.* (2004) review of upper echelons research, four studies classified top managers as all of those above the level of vice president (meaning senior VP or executive VP and above), while two studies classified top managers inclusively as VP and above. Carpenter *et al.* (2004) note that the empirical definition in the studies matches the specific context to the theoretical construct of the dominant coalition so as to identify individuals who influence the strategic outcomes of the firm. In our context of the emerging U.S. cellular industry, we use VP as the dividing line because we found very little differentiation between levels of vice presidents in this industry. In practice, this gives us a top management team size that is within the bounds reported in the Carpenter *et al.* (2004) review, albeit at the high end. Firms in this study have an average of nine TMT members, while six out of 20 studies in Carpenter *et al.* (2004) that reported TMT size in descriptives had eight or more TMT members.

[3]These include (alphabetically) *Cellular Business*, *Cellular/Mobile Communications Directory*, *Communications* (Englewood), Company SEC filings, Corporate Affiliations, LexisNexis, *Moody's Unlisted OTC Manual*, *OTC Manual and Industry Manual*, Phillips Publishing's *Telephone Industry Directory*, *Telecom Factbook 1985–1988*, *Telephony*, *Telephone Industry Directory and Sourcebook*, and *Wireless Industry Directory*.

[4]In our baseline analysis, the study includes 114 executives categorized as seasoned outsiders because they came from outside the industry from positions ranked VP or above. In 95 cases, we were able to confirm that these executives were in the top two levels of the firm. In supplemental analysis, we ensured that results are robust to the recoding of the nine unconfirmed former VPs as rookies.

We note that our data only extend through 1998 due to a lack of comprehensive information on TMT composition available after that date. At the end of our sample period, the major industrial directories such as *Status of the Cellular Industry* and Phillips' *Telephony* and *Wireless Industry Directory*, ceased to report information on firms' management teams, and *Cellular Business*, one of the industry's primary publications, cancelled the column tracking personnel movement in the industry. Nonetheless, our data set spans 15 years of an evolving and dynamic industry, and consists of 58 firms that operated during this period. For the analysis, missing subscriber data cause our sample size of firms to go down to 45, and an additional three firms were excluded when we included controls for changes in the TMT size between year t and year $t+1$, which requires a minimum of three years of operation for inclusion in the sample. Thus, our final sample for analysis represents an unbalanced panel of 42 firms that together provided service to an average of 87 percent (ranging from 64 to 100%) of the subscribers in the market from 1983 to 1998.

Model specification and estimation

We tested our hypotheses in an empirical growth model, which looks at the effect of explanatory variables on the growth of a firm's subscribers from one year to the next. Following the standard approach to growth models (c.f. Geroski, 2005), we are interested in the natural logarithm of the growth rate (r), which is defined as

$$\mathrm{Ln}\left(r_{it}\right) = \ln\left(\frac{subscribers_{it}}{subscribers_{it\text{-}1}}\right) = \alpha + \gamma \ln\left(subscribers_{it\text{-}1}\right) + \beta X_{it\text{-}1} + \varepsilon,$$

where i denotes the firm of interest and t denotes the year, α is an intercept, X is a vector of other explanatory and control variables, β is a vector of estimated parameter values for those variables, and ε is an error term. We consolidated the lagged variables on the right-hand side, thus our final growth model was the following:

$$\ln\left(subscribers_{it}\right) = \alpha + (1+\gamma) \ln\left(subscribers_{it\text{-}1}\right) + \beta X_{it\text{-}1} + \varepsilon.$$

We estimate this model using a panel regression estimator with fixed effects to account for unobserved heterogeneity across firms. Thus, the effects are identified using changes within firms rather than variance between firms.

Variable definitions and descriptive statistics

Table 2 provides concise definitions and measurement of all variables used in the analysis, and we elaborate further on the dependent variable and key explanatory variables below. Table 3 provides the corresponding descriptive statistics. Table 1 presents the cumulative numbers of new executives from each category, and Table 4 shows the correlation matrix for all variables.

Dependent variable: firm growth

We proxy for incremental renewal of the firm by its growth. Growth is a general indicator of firm health and fit with the environment, as firms that offer a mix of product, value, and quality will generate demand and grow. Further, it is a fine-grained measure of firm-level outcomes that can be observed over time in both public and private firms. Growth was particularly important in the context of the early U.S. cellular industry, giving the rising minimum efficient scale of operations as firms worked hard to meet customers' expectations and demands. As with any single performance measure, growth does not reflect all facets of the firm; in particular, some firms may sacrifice profitability or effectiveness in order to grow. In fact, scholars have pointed out that research needs to explore why firms appear to value growth more than economic theory would suggest is rational. For the purposes of our study, however, growth is a particularly apt measure to examine the effects of knowledge in the TMT since effective management is likely to give the firm managerial capabilities that support and encourage growth.

Our central dependent variable, then, is the increase in firm size, measured in total subscribers excluding those added through acquisitions in year t, between two consecutive years. We transform growth into the logarithm of subscribers in a given year, with the lagged values of the variable collected on the right-hand side. Thus, the dependent variable in the analysis of firm growth is the natural logarithm of subscribers for firm i at the end of year t, or ln ($subscribers_{it}$).

DOI: 10.1002/smj

Table 2. Variable list and measurement

Variable	Description
Ln (firm subscribers in the current year)	Natural logarithm of wireless telecommunications service subscribers for firm *i* at the end of year *t*
Ln (firm subscribers in the prior year)	Natural logarithm of wireless telecommunications service subscribers for firm *i* at the end of year *t* – 1
N of new rookie executives from inside the firm	Total number of new TMT members in year t who were middle managers within the focal firm prior to entering the TMT
N of new rookie executives from competitors	Total number of new TMT members in year *t* who were middle managers of wireless competitors prior to entering the TMT
N of new rookie executives from outside the industry	Total number of new TMT members in year *t* who were middle managers in industries other than wireless telecom services prior to entering the TMT
N of new seasoned executives from competitors	Total number of new TMT members in year *t* who were top managers of competitors in wireless telecom services prior to entering the TMT
N of new seasoned executives from outside the industry	Total number of new TMT members in year *t* who were top managers in industries other than the wireless telecom services prior to entering the TMT
Industry age	Total number of years passed from the introduction of wireless telecom services in 1983 to the current year *t*
Average team tenure of existing TMT members	Average years of team tenure of the existing managers in the TMT in year *t*
Heterogeneity of team tenure of all TMT members	The variation of all TMT members' team tenure (standard deviation divided by the mean)
Industry-specific executive experience of existing TMT members	Average years of executive experience in the wireless telecom services industry for existing TMT managers in year *t*
Size of the TMT	Total number of TMT managers in year *t*
N of executives leaving TMT	Total number of top managers exiting the TMT in year *t*
N of executives missing information	Total number of managers in the TMT missing background information in year *t*
t + 1 changes in TMT size	(TMT size in year *t* + 1) – (TMT size in year *t*)
N of operators acquired in year *t* – 1	Total number of acquired wireless telecommunications service operators in year *t* – 1
Firm size above industry median in year *t* – 1	1 if Firm size at the end of year *t* – 1 is above industry median
Pre-digital regime	1 if focal year is before digital technology regime, year 1991
Ln (industry subscribers in the prior year)	Natural logarithm of industry total subscribers at end of year *t* – 1
Firm count	Total number of firms in the industry in year *t*

Key explanatory variables

We study the main and interaction effects of three sets of key explanatory variables: (1) New TMT members' origins, (2) Team Tenure of Existing TMT Members, and (3) Industry Age. For the first set of variables—New TMT members' origins—we employ counts of executives that represented new additions in each of the following five categories during the year *t* – 1 (the year prior to growth measurement): (1) *Number of rookie executives from inside the firm,*[5] (2) *Number of rookie executives from industry competitors*, (3) *Number of rookie executives from outside the industry*, (4) *Number of seasoned executives from industry competitors,* and (5) *Number of seasoned executives from outside the industry*. Please see Table 2 for more details. *Average team tenure of existing TMT members*, following other upper echelons studies (Finkelstein *et al.*, 2008), is measured by the existing TMT members' average years of experience on the TMT of firm *i* in year *t. Industry age* is measured by the number of years since

[5]In the few cases of an executive transfer from another business within a diversified firm, they were counted as a rookie from outside the industry. (Results are robust to categorizing these individuals as rookies from inside the firm.)

DOI: 10.1002/smj

Table 3. Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
Ln (firm subscribers at the end of current year)	12.32	1.71	8.10	15.88
Ln (firm subscribers at the end of prior year)	11.86	1.84	7.22	15.60
N of new rookie executives from inside the firm	0.43	0.74	0	4
N of new rookie executives from competitors	0.11	0.35	0	2
N of new rookie executives from outside the industry	0.51	1.05	0	8
N of new seasoned executive from competitors	0.24	0.62	0	5
N of new seasoned executives from outside the industry	0.42	0.79	0	5
Industry age	10.98	3.41	4	16
Average team tenure of existing TMT members	5.42	1.81	2	14.5
Heterogeneity of team tenure of all TMT members	2.86	1.34	0	9.9
Industry-specific executive experience of existing TMT members	5.46	1.74	1.86	12.14
Size of the TMT	9.37	5.36	2	31
N of executives leaving the TMT	1.31	2.06	0	15
N of executives missing information	0.14	0.42	0	3
$t+1$ changes in TMT size	0.72	2.38	-7	13
N of operators acquired in year $t-1$	0.05	0.24	0	2
Firm size above industry median in year $t-1$	0.51	0.50	0	1
Pre-digital regime	0.27	0.45	0	1
Ln (industry subscribers in the prior year)	16.10	1.36	12.74	17.83
Firm count	42.75	5.20	27	53

the first introduction of wireless communications service in the United States in 1983 in year *t*.

Control variables

Table 2 also provides descriptions of the various controls for team, firm, and industry characteristics employed in our study. Following the TMT literature, our "team-level controls" include, for each firm *i* in year *t,* the count of TMT executives of firm (*Size of the TMT),* variation of team tenure of all TMT members of firm *i* in year *t* (*Heterogeneity of team tenure of all TMT members)*, the average years of executive experience in the wireless industry of the existing TMT members of firm *i* in year *t* (*Industry experience of existing TMT members),* the total number of executives leaving the TMT of firm *i* in year $t-1$ (*Number of executives leaving TMT),* and changes in the TMT due to team growth in the following year ($t+1$ *changes in TMT size)*. To reduce potential measurement bias, we include the total number of TMT members of firm *i* whose background information was unavailable (*Number* of *executives with missing information)*. Our "firm-level controls" include the number of cellular firms acquired in year $t-1$ by firm *i*, (*Number of firms acquired in year* $t-1$), and a dummy variable to designate if the total number of subscribers of firm *i* was above the industry median size in year *t (Firm size above industry median in year* $t-1$). Our "industry-level controls" include measures for industry size (*Ln (Industry subscribers in the prior year)),* a dummy variable to capture analog regime prior to 1991 (*Pre-digital regime),* and competitive intensity quadratic term measures for the number of competitors in the industry in year *t (Firm count* and *Firm count squared)*.

RESULTS

Table 5 shows the empirical results in three models. All models used fixed-effects analysis, so the increase in growth is established compared to a baseline growth rate for each firm, rather than a "between-firm" effect. Model 1 in Table 5 shows the main effects of adding new executives from each of the five categories of origin. Model 2 considers the conditioning effect of TMT average team tenure on the relationships between firm growth and the five categories of executive origin. Model 3 considers the conditioning effects of industry age on the relationships between firm growth and new executives from outside the industry.

Hypothesis 1 predicts that adding rookies from outside the firm to the TMT would be associated with a larger impact on growth than adding seasoned executives from outside the firm. Across the

DOI: 10.1002/smj

Table 4. Correlation matrix

Variable		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1)	Ln (firm subscribers at the end of current year)	1.00																			
(2)	Ln (firm subscribers at the end of prior year)	0.97	1.00																		
(3)	N of new rookie executives from inside the firm	0.15	0.16	1.00																	
(4)	N of new rookie executives from competitors	0.07	0.03	0.09	1.00																
(5)	N of new rookie executives from outside the industry	0.00	−0.01	0.03	0.20	1.00															
(6)	N of new seasoned executive from competitors	0.19	0.17	0.10	0.04	0.07	1.00														
(7)	N of new seasoned executives from outside the industry	0.08	0.08	0.09	0.11	0.16	0.10	1.00													
(8)	Industry age	0.47	0.49	0.01	0.07	−0.09	0.10	−0.03	1.00												
(9)	Average team tenure of existing TMT members	0.03	0.06	−0.01	0.02	0.03	−0.09	−0.04	0.27	1.00											
(10)	Heterogeneity of team tenure of all TMT members	0.10	0.13	0.02	0.07	0.06	−0.05	0.04	0.34	0.78	1.00										
(11)	Industry-specific executive experience of existing TMT members	0.32	0.32	−0.01	0.01	−0.08	−0.02	−0.14	0.47	0.72	0.48	1.00									
(12)	Size of the TMT	0.40	0.41	0.24	0.14	0.34	0.25	0.26	0.16	0.05	0.15	0.06	1.00								
(13)	N of executives leaving the TMT	0.33	0.34	0.07	−0.08	0.03	0.07	0.14	0.18	−0.02	−0.05	0.02	0.14	1.00							
(14)	N of executives missing information	0.03	0.05	0.00	0.12	0.26	−0.03	−0.01	0.03	0.08	0.15	−0.07	0.25	−0.02	1.00						
(15)	$t+1$ changes in TMT size	0.05	0.02	0.04	0.03	−0.01	0.20	0.05	−0.01	−0.17	−0.02	−0.16	0.29	0.25	−0.03	1.00					
(16)	N of operators acquired in year $t-1$	0.09	0.09	0.02	0.11	0.04	0.17	0.04	0.04	−0.08	−0.07	−0.04	0.08	−0.03	0.11	0.10	1.00				
(17)	Firm size above industry median in year $t-1$	0.72	0.74	0.16	−0.06	−0.07	0.04	0.13	0.05	−0.10	−0.05	0.05	0.26	0.22	0.00	0.04	0.06	1.00			
(18)	Pre-digital regime	−0.35	−0.39	−0.02	−0.03	0.04	−0.13	0.05	−0.81	−0.28	−0.31	−0.42	−0.14	−0.10	−0.01	0.06	−0.06	−0.06	1.00		
(19)	Ln (industry subscribers in the prior year)	0.47	0.49	0.02	0.07	−0.09	0.11	−0.03	0.99	0.29	0.36	0.48	0.17	0.16	0.03	−0.01	0.04	0.06	−0.84	1.00	
(20)	Firm count	0.44	0.47	−0.02	0.02	−0.09	0.12	0.00	0.88	0.26	0.28	0.42	0.13	0.24	−0.02	−0.02	0.05	0.05	−0.75	0.88	1.00

DOI: 10.1002/smj

Table 5. The effect of sourcing new executives from top and middle management on firm growth

DV: Ln (firm subscribers excluding acquisitions at the end of year *t*)	(1)	(2)	(3)
N of new rookie executives from the focal firm	−0.03	0.02	−0.02
	(0.03)	(0.12)	(0.03)
N of new rookie executives from competitors	0.16	0.21	0.18
	(0.07)	(0.26)	(0.07)
N of new rookie executives from other industries	−0.02	0.09	0.16
	(0.03)	(0.08)	(0.08)
N of new seasoned executives from competitors	0.05	0.19	0.05
	(0.04)	(0.12)	(0.04)
N of new seasoned executives from other industries	−0.01	−0.27	−0.23
	(0.03)	(0.11)	(0.10)
Industry age	−0.03	−0.02	−0.11
	(0.19)	(0.19)	(0.19)
Avg. team tenure of existing TMT members	−0.21	−0.21	−0.24
	(0.04)	(0.05)	(0.04)
Avg. team tenure of existing TMT members *X*			
N of new rookie executives from the focal firm		−0.01	
		(0.02)	
N of new rookie executives from competitors		−0.01	
		(0.05)	
N of new rookie executives from other industries		−0.02	
		(0.01)	
N of new seasoned executives from competitors		−0.03	
		(0.02)	
N of new seasoned executives from other industries		0.05	
		(0.02)	
Industry age *X*			
N of new rookie executives from other industries			−0.02
			(0.01)
N of new seasoned executives from other industries			0.02
			(0.01)
Heterogeneity of team tenure	0.07	0.08	0.07
	(0.04)	(0.04)	(0.04)
Avg. industry executive experience of existing TMT members	0.23	0.24	0.27
	(0.04)	(0.04)	(0.05)
Size of the TMT	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
N of executives leaving TMT	0.02	0.01	0.02
	(0.01)	(0.01)	(0.01)
N of executives missing information	0.06	0.07	0.08
	(0.07)	(0.07)	(0.07)
Ln (firm subscribers in the prior year)	0.53	0.55	0.51
	(0.06)	(0.06)	(0.06)
Ln (industry subscribers in the prior year)	0.45	0.40	0.68
	(0.51)	(0.51)	(0.51)
N of operators acquired in year $t-1$	−0.05	−0.05	−0.06
	(0.10)	(0.10)	(0.10)
$t+1$ changes in TMT size	0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)
Firm size above industry median in year $t-1$	−0.05	−0.06	−0.04
	(0.09)	(0.09)	(0.09)
Pre-digital regime	0.31	0.30	0.32
	(0.09)	(0.09)	(0.09)
Firm count	0.02	0.02	−0.04
	(0.16)	(0.15)	(0.15)
Firm count squared	−0.00	−0.00	0.00
	(0.00)	(0.00)	(0.00)
Constant	−1.85	−1.42	−3.19
	(3.15)	(3.15)	(3.14)
Observations	275	275	275
Adjusted R^2	0.92	0.92	0.92

Fixed-effects regression; outcome is natural logarithm of subscribers year *t*; n = 275; firms = 42.
Standard errors in parentheses.

DOI: 10.1002/smj

models, outside rookie executives from within the industry have the largest positive effects. The data suggest that the values are not likely to be generated by a true effect of zero, since in Models 1 and 3, the effect is estimated with *p*-values of 0.015 and 0.007 (though in Model 2 with the team experience interaction this effect is estimated with much higher variance and *p*-value of 0.42). A Wald test comparing rookies and seasoned executives from competitors suggests no difference in Model 1, but suggests a differential effect in Model 3 with a *p*-value of 0.10. Similarly, results in Model 3 in Table 5 show different effects on firm growth from adding new rookies ($\gamma = 0.16$, $p = 0.045$) and seasoned executives from outside the industry ($\gamma = -0.23$, $p = 0.029$). A Wald test comparing these coefficients in Model 3 suggests the difference would be very unlikely to arise if the effects were the same ($p = 0.007$). The effect size is relatively straightforward to infer from the estimates, since the outcome is the log of the growth rate and the addition of one executive would change the variable from 0 to 1. Given this, the estimated parameters suggest the addition of a rookie executive will increase the growth rate by 16–21 percent. At the sample mean, this would raise the average growth from 4 to 20–25 percent. In sum, the empirical results are mostly consistent with Hypothesis 1, though the differential effect is much stronger for executives from outside the industry than for those from within.

Hypothesis 2 predicts that rookie executives from outside the firm would have a greater impact on firm growth than rookie executives from inside the firm. To test this hypothesis, we compared the effect of rookie executives from competitors and from outside the industry to the effect of rookie executives from inside the firm. As mentioned, the coefficient for new rookie executives from competitors is positive, while the coefficient for new rookie executives from inside the firm is close to zero in all models (e.g., Model 1: $\gamma = -0.03$, $p = 0.42$). A Wald test shows a difference between the two coefficients in Model 1 ($p = 0.01$) and Model 3 ($p = 0.007$), though not in Model 2, where the coefficients are similar but the estimated variances much higher. For rookies from outside the industry, the results in Model 1 show no relationship with growth. However, once the conditioning effect of industry age is included in Model 3, the direct effect of new rookie executives from outside the industry is about the same as rookies from competitors ($\gamma = 0.16$, $p = 0.05$). A Wald test comparing rookies from outside the industry to those inside the firm suggests the results are unlikely to emerge from data in which the effects are actually equal ($p = 0.03$). The results are consistent with the prediction, then, that growth is higher after the addition of rookie outsiders than after the promotion of rookies from inside the firm, though this effect disappears over time for rookies from outside the industry.

Hypothesis 3 predicts that when current TMT members have longer tenures as a team, the effect of adding a seasoned outside executive will be more positive. Model 2 includes interaction terms between all new executive types and the average team tenure of existing TMT members. Results show that the effects of seasoned and rookie executives from competitors are not moderated by the team tenure of the existing TMT. Consistent with the hypothesis, however, the effect of seasoned executives from outside the industry depends on the tenure of the existing team. The simple effect of seasoned executives from outside the industry is -0.27 ($p = 0.02$), while the interaction effect with team tenure of existing TMT members is 0.05 ($p = 0.02$). Thus, for seasoned executives from outside the industry—potentially the most disruptive to a TMT—their effect becomes less negative for teams as tenure rises. At the average team tenure of just above five years, the effect of adding a seasoned executive becomes positive. One standard deviation above the average, the net effect of an additional seasoned executive is a nine percent increase in the growth rate of the firm. Thus, the results are consistent with Hypothesis 3 for seasoned industry outsiders, but not for those from within the industry.

Next, Hypothesis 4a predicts that the effect of adding a rookie executive from outside the industry will fall with industry age. Model 3 in Table 5 shows that the effect of rookie executives from other industries is 0.16 ($p = 0.05$), while the interaction effect with industry age on growth is -0.02 ($p = 0.02$). In real terms, rookies from outside the industry bring growth benefits until the middle of the sample period, the eighth year of industry emergence. By the 11th year of the sample (1993), the addition of a rookie from outside the industry is associated with a six percent decline in growth. On the other hand, Hypothesis 4b proposes that the growth effect from seasoned executives from outside the industry will become more positive as the industry ages. Consistent with this, the coefficient for the direct growth effect of new seasoned executives from outside the

DOI: 10.1002/smj

industry is -0.23 ($p = 0.03$), while the coefficient for the interaction between new seasoned executives from outside the industry and industry age is 0.02 ($p = 0.04$). This means that by the 12th year of the industry (1994), the addition of a seasoned executive from another industry is beginning to have a positive effect. Thus, we find evidence consistent with Hypothesis 4a and Hypothesis 4b: The positive growth impact of new rookie executives from other industries declines and disappears by the middle of the sample, while the negative effect of seasoned outside executives also shifts, becoming positive by the very end of the sample.

Robustness of analysis: addressing alternative specifications and explanations

The results suggest a reasonably strong relationship between adding rookies from competitors and the subsequent growth of firms as well as a contingent value of seasoned executives and rookies from outside the industry. The panel fixed-effects estimator uses only changes within firms to identify executive effects, so these effects are independent of any average differences between firms. This brings us much closer to causal identification than a simple regression; in fact, with the inclusion of a lagged dependent variable, the fixed-effects estimate is biased downward and can be considered a lower bound on the true parameter value (Roodman, 2009). Nonetheless, definitive causal identification remains difficult since both parties to the relationship act with some foresight of their own interests, which may be associated with future growth. In this section, we provide the results from numerous alternative specifications, and tests of alternative explanations. (See Table 6 for an alternative specification, and Table 7 for a summary of alternative explanation tests.)[6]

Our first concern is a reciprocal relationship between executive additions and growth. To address this, we turned to a GMM difference estimator, which uses long-lagged values of the outcome variable to instrument for later differences (Arellano, 2003). This approach removes any fixed effect and allows identification of the relationship between endogenous explanatory variables and the outcome (Roodman, 2009). It is particularly appropriate when the regression includes a lagged dependent variable—a feature of the growth model used in Table 5—because it removes any potentially correlated error embedded in the lagged value. Table 6 presents the results of GMM difference estimation that match the three columns of Table 5. In this specification, the effect sizes for rookie additions are still positive, though the parameter values are slightly smaller. The *p*-value of the effect of rookies from outside the industry is somewhat higher due to a larger estimation error, but the interaction with industry age remains equivalent. On the other hand, the relationships between seasoned executives and growth—both the negative direct effect and the positive interactions—are not robust to this specification. Overall, then, this analysis suggests a robust value of rookies from outside the firm but not seasoned outsiders.

Selection

Our next concern is selection—the possibility that some types of firms are more likely to hire outsiders and these types produce the growth pattern we find. To address this issue, we used a two-stage selection model to test if the results depend on the likelihood of hiring outsiders (Semykina and Wooldridge, 2010; Wooldridge, 2010). The model uses counts of functional positions open at the firm in the prior year to instrument for the likelihood of hiring specific executive profiles. The rationale for these instruments is that the functional area of hiring is correlated with the likelihood of internal or external hiring, but will not affect growth outside of this hiring. In this analysis, the five instruments are correlated with external hiring and the positive effect of hiring rookies from competitors remains positive ($p = 0.09$). The interaction between outside rookies and industry age remains negative ($p = 0.08$), though the direct effect of these industry outsiders is somewhat smaller with a higher *p*-value ($p = 0.20$). Once again, however, the effects of seasoned executives are not robust to this specification.[7]

[6]Supplemental tables are available from the authors.

[7]In other unreported results, we also ran the selection model with five alternative instruments for external orientation, accounting for outside experience of TMT and board members. These results are nearly identical to the first selection model, though they rest on the stronger assumption that these forms of external orientation only affect knowledge acquisition of the firm through executive hiring. It is worth noting that in both selection models, the output of the first stage selection model is not distinguishable from zero in the second stage, suggesting that selection for external orientation is not materially relevant for Table 5.

DOI: 10.1002/smj

Table 6. Effect of new executives on firm growth, (GMM difference estimation)

DV: Ln (firm subscribers excluding acquisitions at the end of year t)	(1)	(2)	(3)
N of new rookie executives from the focal firm	−0.02	0.02	−0.03
	(0.04)	(0.10)	(0.04)
N of new rookie executives from competitors	0.10	0.37	0.14
	(0.05)	(0.24)	(0.07)
N of new rookie executives from other industries	−0.01	−0.04	0.19
	(0.03)	(0.08)	(0.10)
N of new seasoned executives from competitors	−0.02	0.14	0.00
	(0.05)	(0.15)	(0.04)
N of new seasoned executives from other industries	0.02	−0.03	−0.07
	(0.03)	(0.11)	(0.10)
Avg. team tenure of existing TMT members *X*			
N of new rookie executives from the focal firm		−0.01	
		(0.01)	
N of new rookie executives from competitors		−0.04	
		(0.04)	
N of new rookie executives from other industries		0.01	
		(0.01)	
N of new seasoned executives from competitors		−0.03	
		(0.03)	
N of new seasoned executives from other industries		0.01	
		(0.02)	
Industry age *X*			
N of new rookie executives from other industries			−0.02
			(0.01)
N of new seasoned executives from other industries			0.01
			(0.01)
Avg. team tenure of existing TMT members	−0.07	−0.08	−0.13
	(0.06)	(0.06)	(0.05)
Industry age	−0.15	−0.18	−0.12
	(0.15)	(0.15)	(0.14)
Heterogeneity of team tenure	0.07	0.06	0.07
	(0.06)	(0.06)	(0.06)
Avg. industry ixecutive experience of existing TMT members	0.04	0.06	0.11
	(0.06)	(0.05)	(0.06)
Size of the TMT	0.00	−0.01	0.01
	(0.02)	(0.01)	(0.02)
N of executives leaving TMT	−0.02	−0.02	−0.01
	(0.02)	(0.01)	(0.01)
N Execs w/missing info	−0.08	−0.04	−0.04
	(0.08)	(0.07)	(0.09)
Ln (firm subscribers in the prior year)	1.33	1.15	1.32
	(0.35)	(0.28)	(0.34)
Ln (industry subscribers in the prior year)	1.02	1.02	0.95
	(0.50)	(0.51)	(0.49)
Total number of acquired cellular operators in the prior year	−0.11	−0.12	−0.15
	(0.10)	(0.10)	(0.10)
Changes in the TMT size between t and $t+1$	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
Firm size above industry median	−0.22	−0.11	−0.17
	(0.17)	(0.13)	(0.15)
Focal year is before digital technology regime	0.19	0.20	0.22
	(0.19)	(0.20)	(0.20)

Table 6. Continued

DV: Ln (firm subscribers excluding acquisitions at the end of year t)	(1)	(2)	(3)
Firm count	−0.23	−0.28	−0.16
	(0.15)	(0.15)	(0.15)
firmcount_sqr	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
L·(**DV**)	−0.94	−0.66	−0.94
	(0.20)	(0.18)	(0.18)
N of observations	202	202	202
N of firms	36	36	36
N of instruments	93	153	119
p value of AR(1)	0.04	0.06	0.04
p value of AR(2)	0.38	0.33	0.36
p value of Sargan statistic	0.00	0.01	0.00
p value of Hansen statistic	1.00	1.00	1.00

Standard errors in parentheses.
GMM difference estimates with five endogenous variables, lagged levels dated $t - 2$ to beginning of panel are used as instruments for differenced values.

Endogeneity

In other analyses, we replicated Model 1 of Table 5 using a specification that accounts for endogeneity using the full ten selection variables from the selection models as instruments in an instrumental variable panel model (Semykina and Wooldridge, 2010). The signs of the estimated effects remain largely the same in this model, though the precision of the two-stage least squares estimates is lower, resulting in higher *p*-values for the effects of hiring and controls.

Changing labor markets and growth

Another concern is that internal and external labor markets are changing over the industry life cycle, leading to a spurious correlation between types of hiring and growth, as they both change over time. This interpretation, however, does not account for the starkly different patterns of outside executive effects over industry time. The effect of rookies from competitors remains positive across the industry sample, but the effect of rookies from outside the industry begins positive but falls over industry age. In addition, the increasingly positive effect of seasoned executives from outside the industry runs particularly counter to the interpretation that external sourcing earlier in the industry cycle will be associated with growth simply because growth is higher early in industry emergence. In additional analysis, we interacted the effect of rookie insiders with industry age, but no meaningful relationship was found.

Lagged effects

We examined whether rookies and seasoned executives have different effects over time. We found that seasoned executives have a positive relationship with growth at a lag of two years, while rookies maintain their positive relationship both at short and long lags. This is consistent with the logic from Hypothesis 1 that seasoned executives are more disruptive than rookies, though it could also arise if seasoned executives initiate strategies that take longer to implement.

Major events

The question naturally arises whether the results are driven by the type of events that lead to hiring. First, we examined the effect of different executives in the context of *low and high growth*. The results suggest that seasoned executives from competitors have a positive effect in firms that have fallen below the average growth for the industry that year. This is consistent with the logic of disruption in Hypothesis 1, but suggests another refinement of the contingent value of seasoned executives from competitors: When teams are primed for more drastic change by low performance, they weather the disruption of a seasoned executive more successfully. Next, we examine *CEO succession*, or radical

DOI: 10.1002/smj

Table 7. Addressing alternative explanations

Alternative explanation	Test	Results
Are high growth firms recruiting rookies? (reverse causality)	Selection model	No evidence of selection
	Regression of recruitment type on growth	No effect of growth on recruitment strategy
Are resource rich firms recruiting rookies? (endowment effect)	Regression of recruitment type on size	No effect of size or growth on recruitment strategy (except in counter direction for seasoned executives: more likely to join small firms)
Are CEO succession events driving results? (disruptive CEO changes)	Drop observations where CEO changed	Results remain consistent with hypotheses
	Drop observations where CEO change was due to bad performance	
	Drop observations of outside CEO being hired	
Are major TMT turnover events driving results? (disruptive TMT changes)	Drop observations where more than a third of TMT changed	Results remain consistent with hypotheses
	Drop observations where CEO changed and one third of TMT changed	
Are technological disruptions driving results? (analog to digital shift)	Included a dummy for digital shift	Results remain consistent with hypotheses
Are changing labor markets over industry life cycle driving results? (labor market composition changes)	Trend analysis of hiring decisions by type of recruit	No discernable changes over time
Are the results sensitive to lagged effects on growth?	Tested for growth for later years	No difference in rookie results; Seasoned outside industry executives, consistent with logic for Hypothesis 1 that they are more difficult to assimilate, are associated with positive growth on a two year lag
Are there differential effects of hires on firms based on their prior performance?	Tested for moderation effect of firms below or above median industry growth in prior year	No difference in rookie results; Seasoned executives from competitors have positive growth effects for firms with lower than average industry growth in preceding year

changes at the firm level, happening at the same time as rookie executives are added. We conducted supplemental analyses to check several possibilities, using historical information on the cellular industry to examine whether the types of renewal firms required affected the relationship between rookies and growth. When we eliminated years in which CEO leadership changed, there was no change in our results. Of particular importance is whether the CEO leadership was propelled by dire performance problems: Of the 275 firm-year observations in our data, only six represented instances where firms faced dire performance problems and replaced the CEO. When we eliminated these, statistical results remained the same. Similarly, our results were robust to the exclusion of observations when there was outside CEO succession. To ensure that the results were not driven by mass *TMT turnover* rather than single additions, we conducted robustness tests that excluded observations when more than one third of the TMT changed. Regardless of whether mass TMT changes were accompanied by outside CEO succession or by major acquisitions, these results suggested that radical transformations were not the primary cause of our outcomes.

Finally, at the industry level, we tested whether the declining effect of outside industry knowledge reset after the transition to digital service in 1992. In tests for discontinuities from this *technology change*, however, we did not find that the industry interaction (Hypothesis 3) changed after 1992. Thus, while the switch to digital was a major change

DOI: 10.1002/smj

in the underlying technology, it does not appear disruptive to the overall stock of industry knowledge (knowledge of demand, non technology-related investments and know-how, managerial and operation expertise, etc.).

Effects of past growth and resource endowments on hiring

To address the concern that firms are likely to pursue different hiring based on past performance, current resources, or the fraction of outsiders in the existing TMT, we conducted numerous analyses (in addition to our selection and endogeneity models above) to rule out these effects. For example, we found that recruitment of executives is not affected by whether firms exhibited lower-than-average industry growth in the prior period. We also checked whether executives of each type were more likely to join larger than average firms. The only potential relationship we found was that seasoned executives from competitors are *less* likely to join large firms. But we note that this variable does not appear important in our main tables on growth. Overall, these results indicate that there is not a relationship between prior firm growth or size and the likelihood of hiring outsiders. They are therefore not consistent with the idea that larger, resource-rich firms are more likely to add outsiders and outside rookies in particular. Nor do smaller, faster growing firms hire more outside rookies.

DISCUSSION AND CONCLUSION

In this study, we examine the growth effects of top management recruits by distinguishing between the *level* and *source* of prior executive experience. We argue that outside rookie hires are positively associated with incremental firm renewal because they build new connections to functional knowledge and because their outside perspective is more easily integrated by incumbent teams. Across multiple model specifications accounting for endogeneity and selection, we find a robust result: Hiring rookies from competitors results in faster growth relative to hiring seasoned counterparts or promoting from within. In addition, hiring rookies from outside the industry is advantageous earlier in the industry life cycle when the industry stock of knowledge is less well developed. Thus, rookies represent a key source of strategic renewal because they bring relevant knowledge to the firm in a form that is more easily integrated with existing teams.

We also hypothesize contingent effects of adding seasoned outside executives, related to both TMT tenure and industry age. Our main analysis is consistent with the proposition that seasoned executives from outside the focal industry enhance firm growth when they join a top management team with high tenure. Further, we find that the effect of rookies and seasoned executives from outside the industry changes over the industry life cycle—the positive effect of rookies falls, while the effect of seasoned executives rises. However, while the results on rookies are highly robust to all specifications, the contingent value of seasoned executives appears to be part of a more endogenous relationship with growth.[8] This lack of robustness suggests the possibility that that stable teams at growing firms seek more seasoned and strategic knowledge.

Importantly, we are able to rule out several alternative explanations that could plausibly be at play, lending support to the two proposed mechanisms for the effects of new executives on firm growth: knowledge utility, which is the direct enhancement and extension of the resource base of the company, and knowledge integration, which is the cost of bringing the new knowledge into the company. While the two processes are not perfectly separable, the pattern of results highlights instances when one or the other appears to dominate. The positive effect of outside rookies compared to inside rookies points to the importance of knowledge utility since inside rookies, whose knowledge ought to be the most easily integrated with the existing TMT, have no demonstrable impact on growth. In addition the falling value of rookies from outside the industry as the industry ages points to the mechanism of knowledge utility, as functional knowledge from outside the industry becomes more difficult to apply. On the other hand, the fact that teams with longer tenure get greater value from seasoned executives outside the industry is consistent the mechanism of knowledge integration since the effect changes with a top management team's ability to integrate the new member. In our most robust result—the positive value of rookies from competitors compared to seasoned executives from competitors—the two mechanisms

[8]It may be the case that the contingent relationships for seasoned executives are real, but these more complex models are not able to estimate the effect with enough precision given lower degrees of freedom.

DOI: 10.1002/smj

are most likely jointly at work. Rookies from inside the industry bring deeper functional knowledge that supports renewal in operations, and they are also more easily integrated because they disrupt existing team practices and norms much less.

While our study's setting of evolving firms in the emerging U.S. cellular industry has a number of advantages for studying the utility and mobility of human capital, there are, naturally, limits to the conclusions we can draw. The first is definitive causality. As noted above, while we present evidence from fixed effects regressions, and robust to several possible forms of endogeneity, selection, reverse causality, and omitted variables, our research design is unable to rule out all forms of endogeneity. It still may be the case that some unobserved characteristic of firms that choose to hire outside rookies may drive their subsequent growth, rather than the new human capital itself.

In addition, since our study is based on a single industry, the application of these findings to other industries remains an open question. Nonetheless, some characteristics of the setting highlight potential conditions for external hires to generate value in TMTs. First, the industry features organization-wide team production and vertical organization similar to many manufacturing and service industries, and in stark contrast to the horizontal organization common to professional service industries where key "stylized facts" of strategic human capital have been established. Second, the emerging industry context emphasizes the renewal of core knowledge used to produce the good or service. This differs from other studies of top management and strategic change, which have focused on diversification and entry into established markets. Finally, this study focuses on incremental renewal in an emerging industry. It could be that disruptive executive additions, such as seasoned outsiders, have a more positive effect in cases of radical change.

This study extends our understanding of strategic renewal to the important but less studied area of incremental renewal. Our findings show that hiring outsiders for the TMT can play a key role in this process since rookies from competitors positively affect growth throughout the emergence and establishment of the cellular industry. In addition, by showing the divergent effects of rookie and seasoned outsiders, the study joins a small but growing set of research exploring the role that mid-level managers play in connecting knowledge repositories across the levels of the firm (Martin, 2011; Nonaka, 1994; Taylor and Helfat, 2009). Finally, our study highlights that the cost of integrating knowledge varies depending on the individuals, the firm, and the industry setting, and these costs can be as important as the knowledge's underlying value in use.

The results also contribute to our understanding of the role of upper echelons and dominant coalitions in strategic renewal. Studies have examined a number of types of top management experiences that influence the choices and performance of firms (Carpenter *et al.*, 2004; Floyd and Lane, 2000; Wiersema and Bantel, 1993): from prior international experience (Carpenter *et al.*, 2001) to particular functional backgrounds (Boeker, 1997). This study refines these categories of experience by showing that prior experience at or below the top management level influences the ongoing renewal of firms. In addition, while some studies have showed that the impact of top management characteristics will vary across industry types, such as high and low discretion (Finkelstein and Hambrick, 1990; Hambrick *et al.*, 1993), this study also shows that the impact of different types of experience varies over the age of an emerging industry.

Further, this study examines how power dynamics within the top management team as a whole can affect a firm's ability to acquire and integrate knowledge for renewal. In particular, the study suggests that longer average tenure in the top management team influences the ability to integrate outside knowledge. In the top management literature, team tenure has mostly been associated with inertia, conformity, and strategic persistence. However, in the team development literature, the final stages of joint team development are expected to lead to increased ability to learn and adapt. We find that teams with average tenure above the industry mean see positive growth benefits from adding seasoned executives from outside the industry, rather than the negative, disruptive effect that otherwise dominates. This suggests an integration of the two lines of research on teams: longer tenure may ultimately increase the ability of teams to adapt, but specifically through their ability to integrate more powerful and disruptive individuals as sources of outside knowledge.

Within the strategic human capital literature, there has been a recent convergence, perhaps prematurely, on a stylized fact: Outside hires—even those with a strong prior track record—perform

DOI: 10.1002/smj

poorly in new jobs because they lack firm-specific knowledge and complementary practices (Bidwell, 2011; Groysberg *et al.*, 2008). Even as this pattern has been established, studies have highlighted interesting paradoxes: Despite their lower performance on job evaluations, outside hiring remains a prevalent practice, and outsiders are promoted at a faster rate than insiders chosen for the same position. In addition, support for this generalization has mostly come from the distinct setting of investment banking and professional services. While professional services are an important setting to examine hiring decisions, it is important that we begin to add perspectives from other industries to understand the limits of these studies. Our study contributes to the literature by focusing on a dynamic high-technology context, and illustrates that, in this context, the benefits of outside knowledge can outweigh the costs for organizations integrating that knowledge.

Finally, in the context of industry evolution, prior literature has predominantly focused on the performance differentials between diversifying firms and entrepreneurial entrants when hypothesizing about the utility of inside versus outside knowledge (Helfat and Lieberman, 2002). Our study examines the effect on firms when such knowledge is mobile at the individual level rather than at the firm level. Consistent with the firm-level research, we find that as an industry ages, outside knowledge from rookie executives becomes less important, given the development of industry-specific knowledge and norms. However, contrary to what may have been predicted with the logic of industry evolution, outside knowledge from experienced executives gains utility over time, emphasizing the need to distinguish between strategic knowledge, which may be valuable across industries, and functional knowledge, which is more industry specific.

In summary, our study documents the growth effects stemming from outside rookie executive additions, relative to both seasoned outsiders and internal promotions as well as the more contingent value of seasoned outsiders for top management teams that are well established. Together, the utility of knowledge and cost of integrating it within top management teams will shape a firm's ability to renew itself by adding new executives to its top management team. By examining the level of new TMT hires for the first time, this study sheds light on the less acknowledged adaptive potential of teams with longer average tenure as well as the overlooked potential of firms to facilitate ongoing, incremental renewal by hiring rookie outsiders.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge support from the Ewing Marion Kauffman Foundation, Taiwan's Ministry of Science and Technology, and an academic research award from E.SUN Bank. The article has benefited from feedback from two anonymous reviewers; Editor Anita McGahan; peer feedback from Gilad Chen, Ben Campbell, Seth Carnahan, Alfonso Gambardella, Martin Ganco, Subra Tangirala as well as seminar participants at the 2012 Academy of Management Meetings, Bocconi University, the 2014 Strategy Research Initiative workshop, the 2015 BPS Executive Committee research day, the Department of Strategic Management and Globalization at Copenhagen Business School, and the University of Maryland.

REFERENCES

Adner R, Helfat CE. 2003. Corporate effects and dynamic managerial capabilities. *Strategic Management Journal* **24**(10): 1011–1025.

Agarwal R, Franco A, Echambadi R, Sarkar MB. 2004. Knowledge transfer through inheritance: spinout generation, development and survival. *Academy of Management Journal* **47**(4): 501–522.

Agarwal R, Helfat CE. 2009. Strategic renewal of organizations. *Organization Science* **20**(2): 281–293.

Almeida P, Kogut B. 1999. Localization of knowledge and the mobility of engineers in regional networks. *Management Science* **45**(7): 905–917.

Arellano M. 2003. *Panel Data Econometrics*. Oxford University Press: Oxford, UK.

Arellano M, Bond S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies* **58**(2): 277–297.

Argote L, Ingram P. 2000. Knowledge transfer: a basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes* **82**(1): 150–169.

Bayus BL, Agarwal R. 2007. The role of pre-entry experience, entry timing, and product technology strategies in explaining firm survival. *Management Science* **53**(12): 1887–1902.

Becker GS. 1975. *Human Capital* (2nd edn). Univeristy of Chicago Press: Chicago, IL.

Bermiss YS, Murmann JP. 2015. Who matters more? The impact of functional background and top executive mobility on firm survival. *Strategic Management Journal* **36**(11): 1697–1716.

Bidwell M. 2011. Paying more to get less: the effects of external hiring versus internal mobility. *Administrative Science Quarterly* **56**(3): 369–407.
Bidwell M, Keller J. 2014. Within or without? How firms combine internal and external labor markets to fill jobs. *Academy of Management Journal* **57**(4): 1035–1055.
Boeker W. 1992. Power and managerial dismissal: scapegoating at the top. *Administrative Science Quarterly* **37**(3): 400–421.
Boeker W. 1997. Executive migration and strategic change: the effect of top manager movement on product-market entry. *Administrative Science Quarterly* **42**: 213–236.
Boone C, Van Olffen W, Van Witteloostuijn A, De Brabander B. 2004. The genesis of top management team diversity: selective turnover among top management teams in Dutch newspaper publishing, 1970–1994. *Academy of Management Journal* **47**(5): 633–656.
Burgelman RA. 1991. Intraorganizational ecology of strategy making and organizational adaptation: theory and field research. *Organization Science* **2**(3): 239–262.
Cable DM, Edwards JR. 2004. Complementary and supplementary fit: a theoretical and empirical integration. *Journal of Applied Psychology* **89**(5): 822–834.
Campbell BA, Coff R, Kryscynski D. 2012. Rethinking sustained competitive advantage from human capital. *Academy of Management Review* **37**(3): 376–395.
Carpenter MA, Geletkanycz MA, Sanders WG. 2004. Upper echelons research revisited: antecedents, elements, and consequences of top management team composition. *Journal of Management* **30**(6): 749–778.
Carpenter MA, Sanders WG, Gregersen HB. 2001. Bundling human capital with organizational context: the impact of international assignment experience on multinational firm performance and CEO pay. *Academy of Management Journal* **44**(3): 493–511.
Castanias RP, Helfat CE. 2001. The managerial rents model: theory and empirical analysis. *Journal of Management* **27**(6): 661–678.
Chan W. 1996. External recruitment versus internal promotion. *Journal of Labor Economics* **14**(4): 555–570.
Crossan MM, Berdrow I. 2003. Organizational learning and strategic renewal. *Strategic Management Journal* **24**(11): 1087–1105.
Cyert RM, March JG. 1963. *A Behavioral Theory of the Firm*. Prentice-Hall: Englewood Cliffs, NJ.
DiMaggio PJ. 1988. Interest and agency in institutional theory. In *Institutional Patterns and Organizations*, Zucker L (ed). Ballinger: Cambridge, MA.
DiMaggio PJ, Powell WW. 1983. The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *American Sociological Review* **48**(2): 147–160.
Eggers JP, Kaplan S. 2009. Cognition and renewal: comparing CEO and organizational effects on incumbent adaptation to technical change. *Organization Science* **20**(2): 461–477.
Eisenhardt KM, Bourgeois LJ. 1988. Politics of strategic decision making in high-velocity environments: toward a midrange theory. *Academy of Management Journal* **31**(4): 737–770.
Fernandez RM, Castilla EJ, Moore P. 2000. Social capital at work: networks and employment at a phone center. *American Journal of Sociology* **105**(5): 1288–1356.
Finkelstein S. 1992. Power in top management teams: dimensions, measurement, and validation. *Academy of Management Journal* **35**(3): 505–538.
Finkelstein S, Hambrick DC. 1990. Top-management-team tenure and organizational outcomes: the moderating role of managerial discretion. *Administrative Science Quarterly* **35**(3): 484–503.
Finkelstein S, Hambrick D, Cannella B. 2008. *Strategic Leadership: Theory and Research on Executives, Top Management Teams, and Boards*. Oxford University Press: Oxford, UK.
Floyd SW, Lane PJ. 2000. Strategizing throughout the organization: managing role conflict in strategic renewal. *Academy of Management Review* **25**(1): 154–177.
Geroski PA. 2005. Understanding the implications of empirical work on corporate growth rates. *Managerial and Decision Economics* **26**(2): 129–138.
Gort M, Klepper S. 1982. Time paths in the diffusion of product innovations. *Economic Journal* **92**(367): 630–653.
Granovetter M. 1995. *Getting a Job: A Study of Contacts and Careers*. University of Chicago Press: Chicago, IL.
Grant RM. 1996. Toward a knowledge–based theory of the firm. *Strategic Management Journal* **17**(Suppl. 2): 109–122.
Groysberg B, Lee LE. 2009. Hiring stars and their colleagues: exploration and exploitation in professional service firms. *Organization Science* **20**(4): 740–758.
Groysberg B, Lee LE, Nanda A. 2008. Can they take it with them? The portability of star knowledge workers' performance. *Management Science* **54**(7): 1213–1230.
Haleblian J, Finkelstein S. 1993. Top-management team size, CEO dominance, and firm performance: the moderating roles of environmental turbulence and discretion. *Academy of Management Journal* **36**(4): 844–863.
Hambrick DC, Cho TS, Chen MJ. 1996. The influence of top management team heterogeneity on firms' competitive moves. *Administrative Science Quarterly* **41**(4): 659–684.
Hambrick DC, Geletkanycz MA, Fredrickson JW. 1993. Top executive commitment to the status quo: some tests of its determinants. *Strategic Management Journal* **14**(6): 401–418.
Hambrick DC, Mason PA. 1984. Upper echelons: the organization as a reflection of its top managers. *Academy of Management Review* **9**(2): 193–206.
Hamori M. 2010. Who gets headhunted—and who gets ahead? The impact of search firms on executive careers. *Academy of Management Perspectives* **24**(4): 46–59.
Harreld JB, O'Reilly CA, Tushman ML. 2007. Dynamic capabilities at IBM: driving strategy into action. *California Management Review* **49**(4): 21–43.
Helfat C, Lieberman M. 2002. The birth of capabilities: market entry and the importance of pre-history. *Industrial and Corporate Change* **11**(4): 725–760.
Holmstrom B. 1982. Moral hazard in teams. *Bell Journal of Economics* **13**(2): 324–340.

DOI: 10.1002/smj

Janz BD, Colquitt JA, Noe RA. 1997. Knowledge worker team effectiveness: the role of autonomy, interdependence, team development, and contextual support variables. *Personnel Psychology* **50**(4): 877–904.

Karaevli A. 2007. Performance consequences of new CEO "Outsiderness": moderating effects of pre- and post-succession contexts. *Strategic Management Journal* **28**(7): 681–706.

Klepper S, Simons K. 2000. Dominance by birthright: entry of prior radio producers and competitive ramifications in the U.S. television receiver industry. *Strategic Management Journal* **21**(10–11): 997–1016.

Kozlowski SW, Gully SM, Nason ER, Smith EM. 1999. Developing adaptive teams: a theory of compilation and performance across levels and time. In *The Changing Nature of Performance: Implications for Staffing, Motivation, and Development*, Ilgen DR, Pulakos ED (eds). Jossey-Bass: San Francisco, CA; 240–292.

Kraatz M, Moore D. 2002. Executive migration and institutional change. *Academy of Management Journal* **45**: 120–143.

Lazear EP, Rosen S. 1981. Rank-order tournaments as optimum labor contracts. *Journal of Political Economy* **89**(5): 841–864.

Martin JA. 2011. Dynamic managerial capabilities and the multibusiness team: the role of episodic teams in executive leadership groups. *Organization Science* **22**(1): 118–140.

Michel J, Hambrick D. 1992. Diversification posture and top management team characteristics. *Academy of Management Journal* **35**(1): 9–37.

Muchinsky PM, Monohan CJ. 1987. What is person-environment congruence? Supplementary versus complementary models of fit. *Journal of Vocational Behavior* **31**(3): 268–277.

Nelson RR, Winter SG. 1982. *An Evolutionary Theory of Economic Change*. Belknap Press, Harvard University Press: Cambridge.

Nonaka I. 1994. A dynamic theory of organizational knowledge creation. *Organization Science* **5**(1): 14–37.

O'Reilly CA, Caldwell DF, Barnett WP. 1989. Work group demography, social integration, and turnover. *Administrative Science Quarterly* **34**(1): 21–37.

O'Reilly CA, Tushman ML. 2008. Ambidexterity as a dynamic capability: resolving the innovator's dilemma. *Research in Organizational Behavior* **28**: 185–206.

Penrose ET. 1995. *The Theory of the Growth of the Firm*. Oxford University Press: Oxford, UK.

Pfeffer J, Leblebici H. 1973. Executive recruitment and the development of interfirm organizations. *Administrative Science Quarterly* **18**(4): 449–461.

Prendergast C. 1993. The role of promotion in inducing specific human capital acquisition. *Quarterly Journal of Economics* **108**(2): 523–534.

Roodman D. 2009. A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics* **71**(1): 135–158.

Salvato C. 2009. Capabilities unveiled: the role of ordinary activities in the evolution of product development processes. *Organization Science* **20**(2): 384–409.

Saxenian A. 1994. *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Harvard University Press: Cambridge, MA.

Selznick P. 1957. *Leadership in Administration*. Harper & Row: New York.

Semykina A, Wooldridge JM. 2010. Estimating panel data models in the presence of endogeneity and selection. *Journal of Econometrics* **157**(2): 375–380.

Shen W, Cannella AA. 2002. Power dynamics within top management and their impacts on CEO dismissal followed by inside succession. *Academy of Management Journal* **45**(6): 1195–1206.

Simon CJ, Warner JT. 1992. Matchmaker, matchmaker: the effect of old boy networks on job match quality, earnings, and tenure. *Journal of Labor Economics* **10**(3): 306–330.

Smith KG, Smith KA, O'Bannon DP, Olian JD, Sims HP, Scully J. 1994. Top management team demography and process: the role of social integration and communication. *Administrative Science Quarterly* **39**(3): 412–438.

Somaya D, Williamson IO, Lorinkova N. 2008. Gone but not lost: the different performance impacts of employee mobility between cooperators versus competitors. *Academy of Management Journal* **51**(5): 936–953.

Sørensen JB. 2002. The strength of corporate culture and the reliability of firm performance. *Administrative Science Quarterly* **47**(1): 70–91.

Taylor A, Helfat CE. 2009. Organizational linkages for surviving technological change: complementary assets, middle management, and ambidexterity. *Organization Science* **20**(4): 718–739.

Teagarden L, Echols A, Hatfield D. 2000. The value of patience and start-up firms: a re-examination of entry timing for emerging markets. *Entrepreneurship: Theory and Practice* **24**(4): 41–48.

Teece DJ. 2003. Expert talent and the design of professional services firms. *Industrial and Corporate Change* **12**(4): 895–916.

Tuckman BW. 1965. Developmental sequence in small groups. *Psychological Bulletin* **63**(6): 384–399.

Tushman ML, Anderson P. 1986. Technological discontinuities and organizational environments. *Administrative Science Quarterly* **31**(3): 439–465.

Utterback JM. 1994. *Mastering the Dynamics of Innovation*. Harvard Business Press: Cambridge, MA.

Van Maanen J. 1982. Boundary crossings: major strategies of organizational socialization and their consequences. In *Career Issues in Human Resource Management*, Katz R (ed). Prentice-Hall: Englewood Cliffs, NJ; 85–115.

Virany B, Tushman ML, Romanelli E. 1992. Executive succession and organization outcomes in turbulent environments: an organization learning approach. *Organization Science* **3**(1): 72–91.

Wezel FC, Cattani G, Pennings JM. 2006. Competitive implications of interfirm mobility. *Organization Science* **17**(6): 691–709.

Wiersema MF, Bantel KA. 1993. Top management team turnover as an adaptation mechanism: the role of the

environment. *Strategic Management Journal* **14**(7): 485–504.

Williamson IO, Cable DM. 2003. Predicting early career research productivity: the case of management faculty. *Journal of Organizational Behavior* **24**(1): 25–44.

Wooldridge JM. 2010. *Econometric Analysis of Cross Section and Panel Data*. MIT Press: Cambridge, MA.

Zajac EJ. 1990. CEO selection, succession, compensation and firm performance: a theoretical integration and empirical analysis. *Strategic Management Journal* **11**(3): 217–230.

Zenger TR, Lawrence BS. 1989. Organizational demography: the differential effects of age and tenure distributions on technical communication. *Academy of Management Journal* **32**(2): 353–376.

Zhang Y, Rajagopalan N. 2003. Explaining new CEO origin: firm versus industry antecedents. *Academy of Management Journal* **46**(3): 327–338.

DOI: 10.1002/smj