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RESEARCH NOTES AND COMMENTARIES

EXTERNAL COO/PRESIDENTS AS EXPERT DIRECTORS: A NEW LOOK AT THE SERVICE ROLE OF BOARDS

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Much of the scholarship on boards of directors has examined either the control (i.e., monitoring) role or the resource dependence role that boards fill. Relatively little has examined the service role, wherein directors provide advice and guidance to management. This study builds on recent work exploring director expertise by asking how operational expertise on boards impacts firm performance. We find that having external COO/presidents on a board of directors positively impacts firm performance when the firm's operational efficiency is declining, but negatively impacts performance when the firm's operational efficiency is improving. We also find that other types of external executives serving as directors exhibit the opposite relationship, suggesting that the value of director expertise is context-dependent. We discuss the implications of these findings for director selection.

INTRODUCTION

What is the role of the board of directors? Why do firms have them, and what value, if any, do they provide? Scholars have spent the better part of a century attempting to answer these questions (Dalton *et al.*, 1998; Lorsch and MacIver, 1989; Zald, 1969). More than a decade ago, Johnson, Daily, and Ellstrand (1996) identified three primary roles that boards fill at their firms. The control—or monitoring—role, rooted in agency theory, has garnered the lion's share of attention in the governance literature (Dalton *et al.*, 2007). Boards serving as effective monitors are independent and vigilant, ensuring that managers focus on shareholder value (Kroll, Walters, and Wright, 2008). The resource dependence role, rooted in the work of Pfeffer and Salancik (1978), has also informed a substantial stream of research on corporate boards. Directors of resource-providing boards tend to be connected to important external organizations and stakeholders (Hillman, Cannella, and Paetzold, 2000). Ample research has been conducted to better understand both the control (Finkelstein and D'Aveni, 1994) and resource dependence (Dalton *et al.*, 1999; Hillman, 2005) board roles.

Since the publication of Johnson *et al.*'s (1996) review, however, what they term the service role of boards, which consists mainly of boards' ability to provide their firms with expert advice and

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guidance, has received relatively less attention (for exceptions, see Carpenter and Westphal, 2001; Kroll *et al.*, 2008; McDonald, Westphal, and Graebner, 2008). In their service role, directors do not necessarily aid the firm in managing external interdependencies, as resource dependence theory suggests. Rather, they are the resources, providing idiosyncratic knowledge and expertise to assist in the management of the firm. To date, little research has explored how directors' expertise impacts the firms on whose boards they serve.

In this paper, we address this gap by studying external COO (chief operating officer)/presidents as expert directors. Several earlier studies have concluded that COO/presidents who are not also CEOs are primarily devoted to operational issues, and develop specific expertise in managing internal operations (Bennett and Miles, 2006; Hambrick and Cannella, 2004; Vancil, 1987). While some (though not all) may also be heirs apparent "in waiting" to become CEOs (Cannella and Shen, 2001), their primary responsibilities remain with issues of operations, according to Vancil (1987), regardless of whether they are heirs apparent or permanent heads of operations (COOs). We argue that as their employing firms' chiefs of operations, COO/presidents can offer unique insights on issues of operational efficiency as outside directors. Because expertise is contextual, we hypothesize that only firms experiencing declines in operational efficiency will see performance benefits from directors who currently serve as the COO/presidents of other firms. At firms whose operational efficiency is improving, such directors will actually hurt performance. Then, to further investigate our theory that the performance effects of director expertise are contextually dependent, we hypothesize that directors who are external executives, but are not COO/presidents at their primary firms, will negatively impact firm performance when the firm's operational efficiency is declining, but positively impact performance at firms whose operational efficiency is improving. We test this theory on a sample of S&P 1500 heavy manufacturing firms from 1998 to 2006.

This study contributes to the literature on boards of directors in several ways. First, by examining directors as experts, we reintroduce the service role of boards as a subject of study. While this role received some attention prior to Zahra and Pearce's (1989) review of the literature, its inclusion in research on boards has dwindled in the subsequent decades. Second, while McDonald *et al.* (2008) and Kroll *et al.* (2008) study the benefits of director experience with discrete events such as acquisitions, we build on this literature by examining directors' functional experience and expertise. Finally, we contribute to the view of directors as resources by showing that the benefits of expertise are contextually dependent. In this way, our study suggests that boards should consider the knowledge needs of the firm when selecting external executives to serve as directors.

THEORY AND HYPOTHESES

According to Johnson *et al.* (1996: 424), the service role of boards of directors "addresses directors' provision of advice and counsel to the CEO." While this role received considerable qualitative and theoretical attention in the early days of board research (Lorsch and MacIver, 1989; Mace, 1971), it has received little research attention in the ensuing years. Recently, however, a few studies have surfaced to reverse this trend and revisit the service role of boards. McDonald *et al.* (2008) referred to the exploration of this role as "a second main front" in research on board effectiveness. With our study, we hope to further extend this front, which is still in the infancy of its resurgence, by studying functional expertise among directors.

The few studies examining director expertise have typically done so through the concept of "board capital," which is the combination of directors' human and social capital (Hillman and Dalziel, 2003). In the interest of parsimony, Hillman and Dalziel (2003) combined the service and resource provision roles under the umbrella of resource dependence theory, arguing that directors' human capital—their experiences, expertise, knowledge, reputation, and skills (Becker, 1964)—and social capital—their linkages to other individuals and organizations (Nahapiet and Ghoshal, 1998)—both satisfied the resource dependence criteria established by Pfeffer and Salancik (1978). Hillman and Dalziel (2003) proposed that board capital should promote firm performance, because of the resources it provides. Harris and Helfat (2007) went a step further and argued that the board constitutes an entire social network unto itself.

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In many ways, this condensed framework has benefited board scholarship. As Haynes and Hillman (2010) note, the effects of human and social capital are often intertwined and difficult to parse (Coleman, 1988). In their study of strategic change, the authors showed how board capital influences firm direction, with board capital breadth increasing strategic change and board capital depth decreasing strategic change (Haynes and Hillman, 2010). As valuable as this empirical contribution is, the combination of directors' human and social capital into a single resource provision construct blurs the fact that human and social capital are fundamentally distinct constructs. An individual's social capital consists of his or her ability to access the resources of others, contributing "relationships as a resource" for the firm (Nahapiet and Ghoshal, 1998: 242). In contrast, human capital consists of the qualities an individual can contribute to the organization on his or her own, independent of others (Tian, Haleblian, and Rajagopalan, 2011). In the context of boards, this means that while directors' social capital constitutes a means for managing external forces in the traditional resource dependence sense, director expertise and knowledge constitute resources in and of themselves, to the extent that they are idiosyncratic and difficult to imitate (Dierickx and Cool, 1989). Examining the service and resource dependence roles independently allows researchers to distinguish between the board's management of external interdependencies (social capital-based resource dependence) and the board's management of internal and external strategic and operational initiatives (human capital-based service).

Some work has examined director expertise, independent of the board capital context. Carpenter and Westphal (2001) examined how directors' appointments to additional boards impacted their ability to provide managers with advice and counsel. They found that, depending on the stability of the focal firm's environment, a director's appointment to additional boards exhibited different effects. In stable environments, the relatedness between the other firms to which a director was appointed and the focal firm increased the director's ability to contribute to board discussions of strategic issues as well as the board's level of monitoring and advice interactions. In unstable environments, these relationships shifted. This study provided early evidence that not only does director experience influence board activity, but that such experience is contextual in nature.

McDonald *et al.* (2008) were some of the first to systematically test how director expertise impacts the performance of firms' strategic initiatives. Drawing on psychological theories of expertise, the authors found that outside director experience with acquisitions was associated with improved acquisition performance, depending on the context. Directors with prior experience acquiring firms in the same product markets as their current firm's target experienced higher acquisition performance. Likewise, if the acquisition was a related one—in the diversification sense—then outside director experience with related acquisitions was associated with higher acquisition performance. Similarly, if the acquisition was an unrelated one, then outside director experience with *un*related acquisitions was associated with higher performance. These findings are very important because they indicate that because expertise is contextual, the *value* of expertise is context-dependent. We take these findings a step further by exploring directors' functional experience as executives, rather than their board experience with discrete strategic events like acquisitions. More specifically, we examine the expertise value of external COO/presidents serving as directors.

While almost all work on director experience and expertise has focused on directors' prior experience as directors of other firms, a few studies have examined directors' experience as managers of other firms. Kroll *et al.* (2008), in a study similar to McDonald *et al.* (2008), found that outside director experience as CEO of an acquiring firm improved the focal firm's acquisition performance. Kor and Misangyi (2008) examined industry-specific managerial experience among directors of young, innovative firms. Tian *et al.* (2011) found that directors' experience as CEOs was associated with more positive investor reactions to the appointment of a new CEO at the focal firm. These studies have made important inroads toward developing the understanding of boards' service role; however, much work still remains.

For instance, no study of which we are aware has examined the impact of non-CEO executives serving as outside directors. As a result, focus on the functional expertise of directors has lagged behind the focus on more discrete director experience, such as with acquisitions. This is unfortunate,

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as executives of other firms are common choices for independent directors, and the specific expertise they bring is at least part of the rationale for their popularity. In contrast to nonexecutive outside directors, executive outside directors are likely to have developed expertise in both the broader strategic concerns (e.g., acquisitions) and more day-to-day managerial matters. COOs, chief finance officers (CFOs), and chief marketing officers (CMOs), to name a few, are experts in their functional areas and can provide unique insights based on that expertise. We believe that the absence of studies examining outside directors who are executives at other firms partially explains the dearth of evidence linking director expertise to overall firm performance. Nonexecutive expertise is often too specific to impact broader firm performance (McDonald *et al.*, 2008), whereas functional expertise is far more general. In an effort to systematically examine the value of functional expertise, and more importantly the context-dependence of this expertise's value, we chose to study the role of external COO/presidents as expert directors.

The roles that COO/presidents fill at their home firms are heterogeneous and difficult to categorize. Bennett and Miles (2006) identified seven distinct roles that COOs can potentially play at their organizations, all of which depend on the CEO under which they serve. One consistent theme of COO research, however, is that the COO/president is generally concerned with the internal and operational concerns of the firm, while the CEO generally focuses on external and strategic matters (Hambrick and Cannella, 2004). Of course, not all firms have COOs, and many CEOs also hold the title of president. At the firms that do have separate COOs, and where those COOs are not simply the CEO's recently promoted heir apparent, the individual holding this title is likely to be more involved in the firm's day-to-day operations than is the CEO (Hambrick and Cannella, 2004; Zhang, 2006). Even when separate COO/presidents are heirs apparent, according to Vancil (1987) their primary responsibilities will be with the internal operations of the firm, as this forms the foundation of their training for eventually moving up to the CEO role. In addition, the brief literature on this subject seems to have reached a consensus that executives with the title of president who do not also hold the CEO title are functionally equivalent to COOs, even if they do not formally hold the COO title (Hambrick and Cannella, 2004; Marcel, 2009; Zhang, 2006).

Because of this expertise, COO/presidents can add value as expert independent directors. In addition to being the most likely non-CEO executives to sit on their home firm's board (Mooney *et al.*, 2007), COO/presidents also often sit on a number of other firms' boards. For example, while COO of Apple, Tim Cook also served as an independent director on the board of Nike (Nike, 2011). In the sample we collected for this study, about a third of all firms had at least one independent COO/president serving on their boards. Therefore, the question of what value these individuals contribute to their boards is a relevant one. Because of the expertise that COO/presidents develop in the course of managing their firms' day-to-day operations, we anticipate that having these individuals on a firm's board will improve that firm's performance. Moreover, since the problems with which COO/presidents contend often differ to some extent between firms (Bennett and Miles, 2006), we expect that the more COO/presidents there are serving on a board, the more expert perspectives will be available to managers, and thus the better informed managers' decisions will be.

We do not, however, expect this relationship to hold universally. As we have stated above, we believe that expertise is contextual, and thus the value of expertise is context-dependent (McDonald *et al.*, 2008). In the case of COO/presidents, this expertise generally exists within the context of operational efficiency. Many authors have noted that when the CEO and COO/president roles are separated, the CEO generally focuses on external strategic matters, while the COO/president focuses on day-to-day operations of the firm (Hambrick and Cannella, 2004; Zhang, 2006). Hambrick and Cannella (2004) found that CEOs were more likely to have COOs serving with them if the CEOs lacked operational experience, were hired from outside the firm, or had a background in finance or law. As Zhang (2006) observes, the existence of separate CEO and COO/president roles indicates a separation of the formulation and implementation aspects of strategy, with the COO/president focused on implementation.

Assuming that COO/presidents are experts in operational matters, we expect that their value as outside directors will depend on the need for such expertise at the firm. Specifically, if the

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firm's operational efficiency is on the decline, then external COO/presidents on the board can be a valuable resource by imparting their expertise to management (Castanias and Helfat, 1991). We hasten to stress that the trajectory of efficiency change is important. The firm may be historically inefficient, but if it is improving its efficiency, then the efforts of the current executive in charge of operations—whether the CEO or the COO of the focal firm—are producing desirable results. If, however, the firm's efficiency is trending downward, then it signals a management team in need of guidance and expertise. We expect the value of external COO/presidents on the board to be the greatest under these conditions.

As Wernerfelt (1984) observed, however, resources can constitute either strengths or weaknesses for firms. Directors that are experts in certain matters could become counterproductive if expertise is required in an altogether separate context. Though they did not explicitly discuss this finding, McDonald *et al.*'s (2008) results indicate that not only did related acquisitions perform better when outside directors had related acquisition experience, they also performed worse when directors had unrelated acquisition experience. Because expertise requires devoted attention and persistence in relatively narrow knowledge domains (Ericsson and Charness, 1994; Salas, Rosen, and DiazGranados, 2010), experts make better decisions within their domains of expertise, but worse decisions than novices in more general contexts (Dreyfus, Dreyfus, and Athanasiou, 1986). We therefore expect that COO/president expertise will not only be less useful at firms whose efficiency is improving, but will actually be counterproductive at those firms and negatively impact performance. Based on this logic, we offer the following hypothesis:

Hypothesis 1: The number of external COO/presidents on a firm's board will be positively associated with firm performance when the firm's operational efficiency is declining, but negatively associated with firm performance when the firm's operational efficiency is improving.[1]

If expertise is context-specific, then the opposite relationship should hold for those external executives who have other types of functional expertise. Research in the resource-based tradition has demonstrated that the ability of a firm to leverage particular resources to improve firm performance is contingent on the specific needs of the firm (Brush and Artz, 1999). In the context of strategic leaders, Castanias and Helfat (2001: 670) explain that "changing firm and industry conditions may alter the managerial skills that firms require." Even the role that the board plays can change depending on the circumstances the firm faces (Kroll, Walters, Le, 2007). Thus, when the skills of an operations expert are needed, available functional expertise in nonoperations fields will only divert attention from the immediate needs of the firm. When operations are not a concern, however, the assorted skills of other types of external executives can gain salience for the firm. Operational efficiency is commonly thought to be a necessary, but insufficient, condition for sustained competitive advantage (Porter, 1996). So, once operational efficiency is on the upswing, a firm's board can focus on leveraging other types of functional expertise such as financial or marketing skills. Therefore, we offer the following hypothesis:

Hypothesis 2: The number of external non-COO/president executives serving on a firm's board will be negatively associated with firm performance when the firm's operational efficiency is declining, but positively associated with firm performance when the firm's operational efficiency is improving.

METHOD

Our sample for this study consists of all heavy manufacturing firms in the S&P 1500 between 1998 and 2006, inclusive. We chose to include only heavy manufacturing firms because operational efficiency is a more salient issue for these firms than it is for service firms or even light manufacturing firms. We identified heavy manufacturers as those firms with a one-digit SIC code of 3. The final sample consists of 403 firms and a panel of 1,903 firm-year observations. We collected all governance data from the RiskMetrics Directors database, and all accounting and market data from Compustat.

[1] We note that our measures of operational efficiency are lagged and not measured contemporaneously with firm performance. Specifically, performance will be captured in time t, while operational efficiencies will be captured in time t-1.

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Variables

Both of our hypotheses deal with the impact of board characteristics on performance. We measured performance as industry-adjusted return on assets (ROA), which is closely linked to operational effectiveness and thus appropriate for our study.[2] We calculated ROA as the firm's net income divided by the book value of its assets, minus the average ROA for the firm's industry, consistent with prior research (Zhang and Rajagopalan, 2010). Industry performance measures were compiled at the three-digit SIC code level.

Our independent variables consisted of the number of external COO/presidents serving on a firm's board, the annual change in the firm's operational efficiency, and the number of non-COO/president external executives serving on the board. We identified external COO/presidents in the following manner. To qualify, directors must be classified as independent in the firm's proxy statement, have a title of COO and/or president at their place of primary employment, and also not be serving as CEO at their place of primary employment. Focusing only on independent directors, as opposed to "affiliated" directors, avoids confounding our results with the likely resource dependence relationship that exists between affiliated directors and the firms they serve as directors (Hillman and Dalziel, 2003). Excluding CEOs ensures that the individuals included as COO/presidents have a major focus on internal operations to match our theoretical assumptions about these individuals.

Hambrick and Cannella (2004) note that some COOs are actually their CEOs' heirs apparent, and are basically in training for promotion to CEO. However, this is unlikely to affect our study, as these executives are typically focused internally and given broad responsibility for managing internal operations. Further, our data provide little indication as to which COO/presidents are heirs apparent and which are engaged in managing internal operations with no expectation of promotion to CEO. Hambrick and Cannella addressed this issue by excluding any COOs from their sample that were more than four years younger than the CEOs under which they served. Of course, the focus of their study was to separate COOs who are heirs apparent from those that are not. For us, the distinction is less important, as we noted earlier. As we do not have data about the ages of the CEOs under which these COO/presidents served, we are unable to limit our sample in this way. However, we ran our analyses excluding any COO/presidents who were more than four years younger than the average CEO in our sample (56 years old), and our results did not change. Therefore, for both theoretical and empirical reasons, we feel confident including all sampled individuals with the COO/president title but who are not CEOs.

We measured the movement in a firm's operational efficiency in three ways. First, we calculated the extent to which growth in the firm's cost of goods sold (COGS) outpaced growth in the firm's revenue over the previous year. Specifically, we calculated the one-year growth rate in COGS and subtracted the one-year growth rate in revenue. We labeled this variable declining cost efficiency. It is very similar to Kotha and Nair's (1995) measure of cost efficiency; however, we examine the *difference in growth rates* rather than the ratio of COGS to revenue, as the latter is highly related to gross margin, a measure of profitability. By looking at the difference in growth rates, we can identify whether a firm is keeping the growth of its costs in line with revenue growth. The mean value for this variable is 0.002, indicating that COGS tracks very closely with revenue, with growth in the former exceeding growth in the latter by only 0.2 percentage points, on average.

Next, we calculated the extent to which growth in the firm's selling, general, and administrative expenses (SG&A) outpaced growth in the firm's employment in percentage terms over the previous year. Specifically, we calculated the one-year growth rate in SG&A and subtracted the one-year growth rate in employment. We labeled this variable declining overhead efficiency. It is similar to Love and Nohria's (2005) measure of absorbed slack, with the difference being that we compared SG&A to employment rather than to revenue, as we wanted to ascertain the efficiency with which firms were utilizing their staff. As Love and Nohria (2005: 1095) wrote, "SG&A has been theorized to vary with levels of absorbed slack and has often been used as an indicator of slack resources channeled into overhead and staff expenses." Also, by calculating differences in growth rates—rather than a ratio—as before,

[2] We are indebted to an anonymous *SMJ* reviewer for pointing this out. We also tested our hypotheses using industry-adjusted return on equity and found similar results.

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we can isolate whether employment-related costs are growing faster than actual employment. The mean value for this variable is 0.04, indicating that SG&A outgrows employment by 4 percentage points, on average.

Finally, we measured the growth in employee productivity over the previous year, calculated as the change in revenue ($1,000s) per employee. As this measure is a ratio that varies positively with efficiency, we reverse-coded it and labeled it declining productivity. Our measure of this variable is consistent with a number of prior studies measuring firm productivity (Huselid, 1995; Konrad and Mangel, 2000). The mean value for this variable is −12.205 (reverse-coded), indicating that employee productivity grew by an average of $12,205 per employee annually.

We identified non-COO/president external executives as those independent directors who served as executive officers (i.e., held titles such as CEO, CFO, or executive vice president) at their primary place of employment and did not also serve as either COO or president at their primary place of employment. This classification allowed us to include any directors who might be considered "executives" at their primary firms.

Our analysis included a number of control variables. First, we controlled for the industry median number of external COO/presidents and the industry median number of non-COO/president executives serving on boards, with industry identified by three-digit SIC code. To make sure we were not obtaining effects due to the number of directors on a board, rather than the number of external executive directors, we included a control for board size, measured as the total number of directors on the board. We also controlled for whether the directorships being measured were also interlocking directorships, which have been shown to impact board processes (Zajac, 1988). Such directorships occurred if an executive of the focal firm also served on the board of the outside director's primary employer firm. This measure was a count of the number of external executive directorships that were interlocked at the firm. In addition, of the external executives being studied, we identified how many held seats on multiple boards. Firm size was calculated as the number of employees, and we also included a control for firm revenues. To control for the amount of influence that external executives had on the board, we included a dichotomous variable indicating whether at least one of the directors we are examining (COO/presidents or other executives, depending on the analysis) served on any one of the audit, compensation, governance, or nomination committees (Klein, 1998). A value of 1 indicates at least one director we are examining is providing committee service, whereas a value of 0 indicates no such service. We compiled industry-average efficiency and inefficiency measures at the three-digit SIC level. Finally, our analysis included year dummy variables to control for contemporaneous correlation (Certo and Semadeni, 2006).

ANALYSIS AND RESULTS

We used generalized least squares (GLS) fixed-effects regression in Stata 12 (StataCorp, 2011) to test our hypotheses. We tested Hypothesis 1 in one model and Hypothesis 2 in a separate model. Descriptive statistics and pairwise correlations for our variables are shown in Table 1. Sixty-seven percent of boards had no external COO/presidents, 23 percent had one, 7 percent had two, and 3 percent had more than two. Table 2 shows the results of our tests of Hypothesis 1, and Table 3 shows the results of our tests of Hypothesis 2. In each table, Model 1 includes only control variables, Model 2 includes main effects, and Model 3 includes the interaction terms needed to test the hypotheses. On concerns of endogeneity, we also conducted our analyses using an Arellano-Bond generalized method of moments estimation. The results of these tests are shown in Model 4 of Tables 2 and 3. The difference in results between estimation techniques was negligible.

Hypothesis 1, which stated that the effect of external COO/presidents on boards would impact performance positively when the firm's efficiency was declining and negatively when the firm's efficiency was improving, received strong support across all three measures of efficiency: declining cost efficiency ($\beta = 2.048$, $p < 0.01$), declining overhead efficiency ($\beta = 0.269$, $p < 0.001$), and declining productivity ($\beta = 0.114$, $p < 0.05$).[3] As

[3] Decreasing productivity is technically an interaction (a ratio). As a check, we ran our models including interactions between COOs or non-COO executives and both revenue and employees. None of these coefficients was significant in any model, and their inclusion had no effect on the hypothesized relationships.

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Table 1. Correlations and descriptive statistics

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Future industry-adjusted ROA	0.006	0.165																	
2 Current industry-adjusted ROA	0.010	0.171	0.462																
3 External COO/presidents on board	0.383	0.662	0.062	0.033															
4 Other external executives on board	1.036	1.427	0.001	0.025	−0.353														
5 Declining cost efficiency	0.002	0.100	0.226	0.103	0.013	0.002													
6 Declining overhead efficiency	0.040	0.241	−0.212	−0.125	−0.011	0.006	0.009												
7 Declining productivity	−12.205	73.327	−0.005	−0.020	0.024	−0.008	0.067	−0.413											
8 Industry median COO/presidents	0.152	0.376	0.016	0.000	0.412	−0.129	−0.026	−0.024	0.031										
9 Industry median other executives	0.849	0.757	0.020	0.024	−0.086	0.320	0.003	−0.018	0.004	−0.047									
10 Board interlocks	0.022	0.150	0.014	0.004	−0.007	0.025	−0.007	−0.014	0.008	0.035	0.060								
11 Committee presence	0.300	0.458	0.011	0.019	0.783	−0.287	0.000	−0.003	0.015	0.336	0.336	0.025							
12 Board size	8.547	2.323	0.077	0.075	0.194	0.247	0.080	0.017	−0.012	0.077	0.231	0.084	0.254						
13 Multiple directorships	0.900	1.018	0.071	0.064	0.281	0.389	0.021	−0.021	0.026	0.169	0.210	0.158	0.308	0.323					
14 Revenue	4095	14743	−0.001	0.011	0.006	0.134	0.008	0.027	−0.049	−0.050	0.073	0.031	0.011	0.281	0.095				
15 Firm size	15.208	33.011	−0.012	0.009	0.021	0.184	0.012	0.012	−0.022	−0.041	0.006	0.072	0.038	0.384	0.158	0.908			
16 Declining industry cost efficiency	−0.011	0.099	0.008	0.000	−0.009	0.006	0.297	−0.006	0.074	−0.095	0.017	−0.016	0.006	0.000	−0.026	0.018	0.026		
17 Declining industry overhead efficiency	0.039	0.102	−0.012	0.000	0.009	0.023	−0.003	0.422	−0.142	−0.055	−0.028	−0.030	−0.011	−0.004	0.012	0.007	0.007	0.003	
18 Declining industry productivity	−11.726	33.013	0.013	0.000	0.044	−0.030	0.048	−0.134	0.463	0.056	0.014	0.017	0.019	−0.058	0.016	−0.046	−0.029	0.174	−0.292

All correlations greater than 0.035 are significant at the $p < 0.05$ level.

Table 2. Effects of external COO/president directors on future firm performance

	ROA			
	Model 1	Model 2	Model 3	Model 4
Constant	0.240***	0.247***	0.244***	0.173**
	(0.064)	(0.066)	(0.065)	(0.060)
Current industry-adjusted ROA	0.067**	0.067**	0.059*	−0.044*
	(0.025)	(0.025)	(0.025)	(0.020)
Industry median COO/presidents	−0.027	−0.029	−0.023	−0.034
	(0.024)	(0.024)	(0.024)	(0.023)
Board interlocks	0.003	0.003	0.006	0.010
	(0.023)	(0.023)	(0.023)	(0.023)
Other external executives on board	−0.039	−0.034	−0.039	−0.039
	(0.028)	(0.030)	(0.030)	(0.031)
Board size	0.007	0.004	0.003	−0.015
	(0.058)	(0.059)	(0.058)	(0.061)
Multiple directorships	0.007	0.005	0.013	0.017
	(0.026)	(0.027)	(0.026)	(0.027)
Committee presence	0.063	0.042	0.063	0.107
	(0.050)	(0.072)	(0.071)	(0.068)
Revenue	0.228	0.231	0.220	0.072
	(0.205)	(0.205)	(0.203)	(0.254)
Firm size	−0.580**	−0.582**	−0.572**	−1.669***
	(0.211)	(0.211)	(0.209)	(0.271)
Declining cost efficiency	−2.128***	−2.125***	−1.440**	−1.194**
	(0.448)	(0.448)	(0.502)	(0.449)
Declining overhead efficiency	−0.328***	−0.328***	−0.247***	−0.320***
	(0.033)	(0.033)	(0.036)	(0.031)
Declining productivity	−0.233***	−0.233***	−0.169***	−0.260***
	(0.045)	(0.045)	(0.047)	(0.041)
Declining industry cost efficiency	−4.902***	−4.928***	−4.899***	−5.800***
	(1.368)	(1.370)	(1.355)	(1.186)
Declining industry overhead efficiency	0.334***	0.333***	0.306**	0.433***
	(0.094)	(0.094)	(0.093)	(0.084)
Declining industry productivity	0.248***	0.249***	0.239***	0.283***
	(0.061)	(0.061)	(0.061)	(0.053)
External COO/presidents on board	—	0.019	0.000	0.030
	—	(0.045)	(0.045)	(0.045)
External COO/presidents on board × declining cost efficiency	—	—	2.048**	1.471*
	—	—	(0.743)	(0.690)
External COO/presidents on board × declining overhead efficiency	—	—	0.269***	0.315***
	—	—	(0.049)	(0.042)
External COO/presidents on board × declining productivity	—	—	0.114*	0.181***
	—	—	(0.052)	(0.045)
Observations	1903	1903	1903	1496
Number of firms	403	403	403	361
R-squared	0.122	0.122	0.144	
F-score/Wald χ^2	9.796	9.353	9.946	489.820

Calculations performed using GLS fixed effects regression and Arellano-Bond estimation.
Standard errors in parentheses; coefficients are standardized; year dummies not shown; all tests two-tailed.
Model 4 (Arellano-Bond estimation) included to control for possible endogeneity.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

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Table 3. Effects of other external executive directors on future firm performance

	ROA			
	Model 1	Model 2	Model 3	Model 4
Constant	0.232**	0.244**	0.252***	0.172*
	(0.075)	(0.075)	(0.073)	(0.070)
Current industry-adjusted ROA	0.066**	0.062*	0.117***	0.018
	(0.025)	(0.025)	(0.025)	(0.021)
Industry median other executives	−0.000	0.003	0.002	0.008
	(0.020)	(0.021)	(0.020)	(0.020)
Board interlocks	−0.009	0.004	0.008	0.013
	(0.023)	(0.023)	(0.023)	(0.024)
External COO/presidents on board	0.046^{+}	0.034	0.039	0.088**
	(0.026)	(0.032)	(0.031)	(0.033)
Board size	0.008	0.021	0.016	0.025
	(0.059)	(0.060)	(0.058)	(0.063)
Multiple directorships	0.003	0.005	0.001	−0.005
	(0.026)	(0.026)	(0.026)	(0.027)
Committee presence	−0.035	−0.019	−0.040	−0.025
	(0.051)	(0.053)	(0.051)	(0.052)
Revenue	0.253	0.237	0.189	0.094
	(0.205)	(0.205)	(0.199)	(0.260)
Firm size	−0.623**	−0.604**	−0.550**	−1.672***
	(0.212)	(0.211)	(0.204)	(0.278)
Declining cost efficiency	−1.866***	−2.254***	−2.155***	−1.708***
	(0.441)	(0.449)	(0.435)	(0.397)
Declining overhead efficiency	−0.335***	−0.353***	−0.330***	−0.425***
	(0.033)	(0.034)	(0.033)	(0.030)
Declining productivity	−0.236***	−0.246***	−0.236***	−0.350***
	(0.045)	(0.045)	(0.043)	(0.040)
Declining industry cost efficiency	−4.118**	−4.480**	−4.374**	−5.138***
	(1.379)	(1.374)	(1.329)	(1.229)
Declining industry overhead efficiency	0.302**	0.344***	0.443***	0.574***
	(0.095)	(0.095)	(0.092)	(0.086)
Declining industry productivity	0.233***	0.251***	0.277***	0.326***
	(0.061)	(0.061)	(0.059)	(0.054)
Other external executives on board	—	−0.027	−0.017	−0.018
	—	(0.032)	(0.032)	(0.034)
Other external executives on board × declining cost efficiency	—	—	−3.833***	−3.279***
	—	—	(0.579)	(0.524)
Other external executives on board × declining overhead efficiency	—	—	−0.272***	−0.282***
	—	—	(0.038)	(0.035)
Other external executives on board × declining productivity	—	—	−0.198**	−0.234***
	—	—	(0.064)	(0.059)
Observations	1897	1893	1893	1487
Number of firms	403	401	401	359
R-squared	0.116	0.127	0.185	
F-score/Wald χ^2	9.222	9.707	13.339	537.54

Calculations performed using GLS fixed effects regression and Arellano-Bond estimation.
Standard errors in parentheses; coefficients are standardized; year dummies not shown; all tests two-tailed.
Model 4 (Arellano-Bond estimation) included to control for possible endogeneity.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

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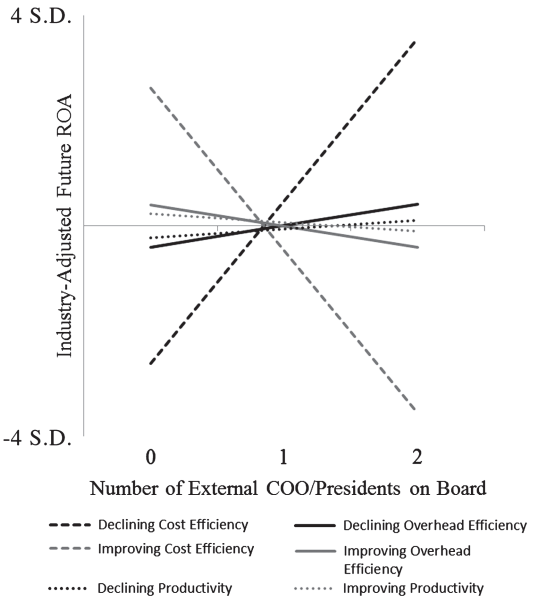

Figure 1. Effects of external COO/president directors on ROA

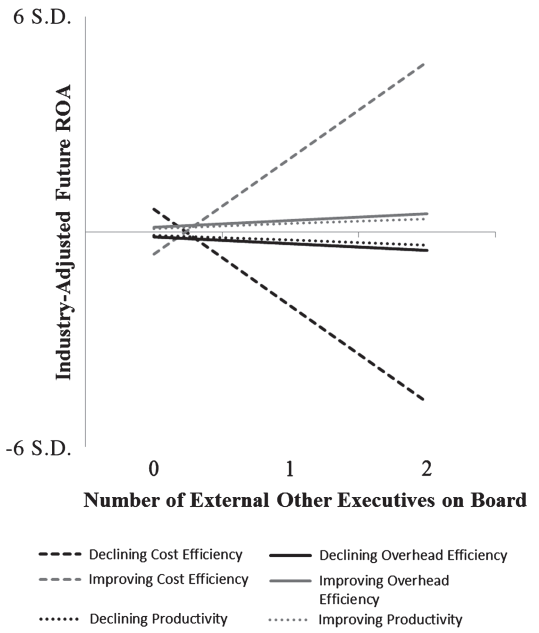

Figure 2. Effects of external other executive directors on ROA

Figure 1 demonstrates, whether operational efficiency is improving or declining changes the direction of the effect that external COO/presidents have on firm performance.

As Table 3 shows, the support for Hypothesis 2, which stated that non-COO/president external executives on boards would impact firm performance negatively when the firm's operational efficiency was declining and positively when the firm's operational efficiency was improving, is equally strong, if not stronger. The interaction between non-COO/president external executives and declining operational efficiency was significant for declining cost efficiency ($\beta = -3.833$, $p < 0.001$), overhead inefficiency ($\beta = -0.272$, $p < 0.001$), and productivity ($\beta = -0.198$, $p < 0.01$). As Figure 2 demonstrates, whether operational efficiency is improving or declining changes the direction of the effect that other external executives have on firm performance.

DISCUSSION

The findings in this study contribute to a small, but growing, body of work devoted to director expertise (Kroll *et al.*, 2008; McDonald *et al.*, 2008). In contrast to previous work, we are the first to examine the value of having external COO/presidents, experts in operational matters, sit on a board of directors. Our results support broader theories of expertise, which hold that expertise is contextual, and thus the value of that expertise is context-dependent. Boards looking to add external executives to the ranks of their independent directors would do well to consider the findings we report. Not all executives are alike, and their individual and idiosyncratic strengths may only add value under certain circumstances.

This research has significant implications for boards of directors as they consider what types of experience and expertise they look for in new members. Sitting executives have fallen out of favor as independent directors recently, partially due to concerns over board independence (Spencer Stuart, 2010). Our results suggest that this move away from executives as independent directors may be ill-advised in certain circumstances. Particularly, if a firm suffers from efficiency problems, the expertise an external COO/president can offer might be just what the firm's board needs. Yet we are not advocating adding COOs to boards as a universal best practice; indeed, our results suggest that firms whose efficiency is improving are better off with non-COO/presidents. We are simply reasserting the notion that director functional expertise can add value to the firm in

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ways beyond their independence or social capital, and that careful consideration needs to be given to the functional expertise of directors when they are selected.

Of course, research has shown that the director selection process is often plagued by the influence of social factors such as ingratiatory behavior (Westphal and Stern, 2006) or CEO power (Westphal and Zajac, 1995). This reduces the likelihood that a firm can simply dismiss a director once his or her functional expertise is no longer required. However, the context-specificity of functional expertise does offer a path through which director mobility can be facilitated. As an example, we suggest that firms could allocate a particular board seat to another firm. Depending on the strategic or operational needs of the focal firm, the board might nominate the external firm's COO to the board in one year and the external firm's CEO in another year. This way, the social linkage is kept intact, while allowing for a revolving door of expertise. This is by no means the only solution to the director selection problem, but it is one example of how firms can capitalize on the findings in this study while still operating within the empirically demonstrated limitations of the director selection process (Withers, Hillman, and Cannella, 2012).

One limitation of our study that we believe presents an opportunity for future research is that we examine the effect of director expertise on firm performance, but we hold constant the extent to which directors are capable of leveraging their expertise to influence strategy (Carpenter and Westphal, 2001). For example, while we controlled for directors' service on board committees, we did not hypothesize how levels of influence with top management could alter the way director expertise affects the firm. Directors with different types of expertise serving on different committees could have very different effects. In addition, the extent to which the directors own stock could also impact the degree to which they influence company strategy, as greater stock ownership would imply greater boardroom power. The role of power in leveraging director expertise is an area we believe deserves further investigation.

CONCLUSION

Scholarship on boards has not provided nearly as much guidance on director expertise as it has on independence or management of external interdependencies. As such, boards are on their own to determine how to fulfill their service role obligations. We believe that our study, along with the few that we have cited, begins to address this gap and provide decision makers with reliable prescriptions for maximizing board effectiveness. In addition, we believe that the more recent slate of board expertise studies, those that distinguish between human and social capital, contribute to the broader governance literature by focusing not just on experience and expertise in general, but on the specific nature of directors' experience and expertise. Our study provides evidence that directors can be resources, themselves, and not just connections to resources. Nevertheless, as with any resource, firms must learn to leverage their directors appropriately and in accordance with the demands of the firm's internal and external environment.

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