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A managerial capital perspective on chief marketing officer succession ☆

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ABSTRACT

Recognizing the importance of the person who occupies the chief marketing officer (CMO) position, we posit that a CMO's managerial capital, as signaled by his or her education, origin, and experience, indicates what a new CMO can bring to the table. We theorize that the value of CMO managerial capital is contingent on organizational demographics (firm age and size) and industry environment (dynamism and growth). Results from multi-source data collected on 303 CMO successions between 1996 and 2009 and an event study approach with corrections for unobserved heterogeneity and endogeneity reveals a positive influence of CMO's education and outsider status on abnormal returns associated with CMO succession and a U-shaped relationship between CMO experience and firm value. In terms of the moderation effects, we find that the value of CMO experience increases as the firm size increases; value of CMO external origin decreases whereas that of CMO experience increases with firm age; value of CMO education increases whereas that of outsider status and experience decreases with industry dynamism; and value of CMO education and experience increases as industry growth increases.

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1. Introduction

The presence of chief marketing officers (CMOs) in the C-suite signals that top management teams want to hear the proverbial voice of the customer (e.g., Boyd, Chandy, & Cunha, 2010; Nath & Mahajan, 2008).[1] As firms look for profitable paths to growth, creative leadership in the marketing function can help differentiate and strengthen brands, clarify and satisfy customers' needs, encourage development of quality products, and build long-term channel relationships (Koleszar & Bernhardt, 2000). Despite the importance of CMOs in shaping marketing strategy, which directly influences the customers, the CMO position is in great peril (Boyd et al., 2010). Marketing managers are constantly being

challenged to justify their existence (Wheaton, 2007), making it the "riskiest job in the American C-suite" (McGirt, 2007, p. 33). A report by the executive recruiting firm Spencer Stuart notes that on average the top 100 branded firms change their CMOs every 23 months — less than half the tenure of chief executive officers in the same firms (Welch, 2004). A CMO succession is a significant event that signals potential changes in the firm's strategic marketing emphases, including shifts in product development, pricing, channel management, marketing communications, selling, market information management, marketing planning, and marketing implementation (e.g., Koleszar & Bernhardt, 2000).

Academic research on CMOs and their successions accordingly is expanding; for example, Nath and Mahajan (2011) examine the drivers and outcomes of CMO power to clarify CMOs' position in organizations, and Boyd et al. (2010) propose a firm-level customer power variable to explain their impact.[2] This research stream on CMO builds on the broader literature on the value of marketing function within the firm (Homburg, Workman, & Krohmer, 1999). For example, Verhoef and colleagues (Verhoef et al., 2011; Verhoef & Leeflang, 2009) investigate the determinants and consequences of influence of marketing function, while Moorman and Rust (1999) examine what the role and value of the marketing function in firms with strong market orientation (e.g., Verhoef & Leeflang, 2009). Yet research investigating the value of the individual occupying the CMO position remains relatively scant

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[1] Other titles of top marketing executives include senior or executive vice president of marketing; extant literature uses "CMO" to refer specifically to chief marketing officers (Boyd et al., 2010) or to encompass all top marketing executives (Nath & Mahajan, 2008). Consistent with Nath and Mahajan (2008), we use CMOs to refer to top marketing executives with various actual titles.

[2] Although Boyd et al. (2010) include CMO's role- and firm-specific variables, their primary research question is how customer power, a firm-level factor, influences firm value and how this relationship is moderated.

(see Table 1 for a summary of extant research on the influence of CMOs on firm value), especially compared with studies on the succession of other members of the C-suite, including chief executive officer (CEOs), making it difficult to quantify the value of CMO position, an area that we seek to contribute through this research.

We build on CEO succession literature, and integrate it with emerging research on CMO succession, to discern the importance of individual-level CMO factors. Research shows that CEO succession depends on industry-level (e.g., Osborn, Jauch, Martin, & Glueck, 1981), firm-level (e.g., Kesner & Sebora, 1994), and individual CEO-level (e.g., Zhang & Rajagopalan, 2010) factors. Accordingly, we propose the CMOs' managerial capital perspective to assess CMOs' ability to build, integrate, and reconfigure organizational resources and competences that enable firms to develop sustainable competitive advantages (Adner & Helfat, 2003). We theorize that managerial capital is signaled by the CMO's education, origin, and experience; in turn, managerial capital variables signal expected outcomes and behaviors by a new CMO (Zhang & Wiersema, 2009) and thus should determine the value that the new CMOs create. Consistent with contingency theory (e.g., Ruekert, 1985), we propose that the influence of CMO managerial capital variables depends on organizational (firm age and size) and environmental (industry dynamism and growth) factors.

To test our assertions, we collected multiple-source data pertaining to 303 CMO succession events during 1996–2009. To delineate the value created by CMO succession, consistent with Boyd et al. (2010), we use an event study methodology that allows us to isolate the value created by CMO succession (McWilliams & Siegel, 1997). Furthermore, our empirical model addresses both heterogeneity and endogeneity in our data. First, we recognize that hiring a new CMO depends on multiple factors (e.g., organizational resources, firm's strategic emphasis) that likely go unobserved by researchers; thus, we explicitly model unobserved heterogeneity by incorporating latent classes in the intercept term in a linear regression specification (Chintagunta, 2001; Heckman

& Singer, 1984). Second, we recognize that when firms make CMO succession decisions, they may make selections according to CMO managerial capital variables to enhance firm value, such that the managerial succession variables are endogenous. We thus use a control function approach (Garen, 1984; Petrin & Train, 2010) to correct for multiple, endogenous CMO managerial capital variables.

Considering our limited understanding of marketing leadership and the lamentable "scarcity of systematic research about CMOs" (Boyd et al., 2010, p. 31), our study adds substantively to emerging literature on CMOs. Theoretically, we suggest an additional and overlooked explanation for value created during CMO succession, namely, managerial capital. Whereas extant studies on CMOs emphasize the role of the CMO position (e.g., Nath & Mahajan, 2008; Nath & Mahajan, 2011) or use firm-level variables to explain their impact (Boyd et al., 2010), we also show that the characteristics of individuals occupying CMO positions are also important.

We organize the remainder of this article as follows: We begin by presenting our theoretical framework and hypotheses. Then we present our methodology, including details about our research design and data collection and analysis procedures. Finally, we offer our results and conclude with a discussion of our findings and their implications.

2. Conceptual background

2.1. CMO succession and managerial capital perspective

To understand an executive's potential, scholars commonly refer to the capital, resources, or assets that s\he possesses, which should benefit the employing firms (e.g., Li & Zhang, 2007). Top executives often possess human (e.g., marketing, technical knowledge and skills; Adner & Helfat, 2003) and social (e.g., interpersonal relationships, social connections that enable planning and execution; Lin, 2001) capital that enables them to develop and configure organizational competencies to ensure

Table 1
Summary of research on the influence of CMOs on firm value.

	Nath and Mahajan (2008)	Boyd et al. (2010)	Nath and Mahajan (2011)	Current research
Independent variable	CMO presence (marketing executive in the TMT)	Customer power (presence of a major customer)	CMO power (measured by subtracting from 1 the proportion of levels in the TMT above the CMO's level)	CMO managerial capital (origin, education, experience)
Dependent variable	Sales growth, ROS (return on sales), Tobin's Q	Abnormal returns	Sales growth and ROS (return on sales)	Abnormal returns
Moderators	NA	Role-specific experience (prior CMO experience), firm specific experience (insider), firm scope (number of market segments), firm size (number of employees), firm performance (average five year sales growth)	TMT divisionalization and unrelated diversification	Environmental moderators (industry dynamism and growth); firm-specific moderators (firm age and size)
Control variables	Market concentration, firm size (log of employees), diversified or undiversified, prior firm performance (sales growth and ROS at $t - 1$), firm innovation, firm differentiation (advertising intensity at $t - 1$), corporate branding, TMT marketing experience, TMT general management experience, COO presence, CEO tenure, outsider CEO.	Industry R&D, industry advertising, industry capital intensity, industry sales volatility, new position, book-to-market, high tech, CMO top-5 compensation.	Year dummies, industry sales growth, market concentration, industry instability, firm size (log of employees), diversified or undiversified, B2B or B2C, prior firm performance (sales growth and ROS at $t - 1$), firm innovation, firm differentiation (advertising intensity at $t - 1$), acquisition active firm, TMT size, TMT levels, TMT marketing experience, COO presence, CEO tenure, outsider CEO	Year dummies, customer power, new position, title (CMO or others), gender, prior performance (ROA), industry outsider
Sample size	167 firms from 2000 to 2004	88 CMO successions between 1996 and 2005	167 firms between 2001 and 2005 (of which 91 employed a CMO)	303 successions 1996 and 2009
Estimation	Generalized estimating equations (GEE)	OLS	Generalized estimating equations (GEE) after controlling for selection bias	Regression analysis with latent classes on the intercept term (to account for heterogeneity) and endogeneity correction.
Findings	CMO presence does not influence Tobin's Q or sales growth	CMO impact on firm value is conditional on customer power, which has a negative impact on firm value.	CMO power does not influence firm performance directly, but the influence of CMO power is conditional on TMT divisionalization and firm diversification	Managerial capital influences firm value — CMO education and external origin positively influence abnormal stock returns and there exists a U-shaped relationship between CMO experience and firm value.

desirable organizational outcomes. We conceptualize human and social capital as constituents of managerial capital, such that managerial capital reflects the skills, knowledge, experience, and network of interpersonal relationships that managers use to "build, integrate, and reconfigure organizational resources and competences" and attain organizational objectives (Adner & Helfat, 2003, p. 1012; see also Murphy & Zabojnik, 2004). This characterization of managerial capital also appears in prior literature (Gabbay & Leenders, 1999; Kor & Sundaramurthy, 2009): Human capital represents executives' knowledge and skills, developed through their investments in education and various experiences (Becker, 1993), and social capital features their knowledge and skills, rooted in external assets such as social relationships (Adler & Kwon, 2002).

Although the distinction between human and social capital is common (e.g., Li & Zhang, 2007), recent work, including that by the Nobel Laureate Elinor Ostrom, challenges the dichotomy (Ostrom & Ahn, 2010). Various forms of individual capital are so intertwined that it is seldom possible to disentangle them cleanly. Consider, for example, experience, which is traditionally a measure of human capital (e.g., Seibert, Kraimer, & Liden, 2001). Formal work experience certainly provides the knowledge and expertise to handle a task directly, but it also encourages social ties that may facilitate task execution. Similarly, education provides knowledge and skills (human capital) but also social status and important social connections (social capital). Organizational theorists thus are divided into two camps: Some believe that human capital complements social capital (Portes, 1998), whereas others use a broader definition of social capital that subsumes human capital (Gabbay & Leenders, 1999; Lin, 1999). We concur that it is difficult, if not impossible, to separate these forms of capital empirically and that attributes such as education or experience contribute to the development of both human and social capital. Accordingly, we subscribe to a notion of CMO managerial capital that combines human and social capital. In line with top management succession literature (Zhang & Wiersema, 2009) and market signaling theory (Spence, 1973), we also examine the signaling role of CMO characteristics that indicate the CMO's managerial capital.

Building on extant research on CEO succession (e.g., Adler & Kwon, 2002; Bailey & Helfat, 2003; Kor & Sundaramurthy, 2009), we focus on three common indicators of managerial capital: education, origin, and experience. Whereas education represents executives' generic knowledge and skills (e.g., Bailey & Helfat, 2003), experience captures their industry- or firm-specific knowledge and skills (Kor & Sundaramurthy, 2009). Origin refers to work histories, in that an internal promotion signals an internal origin, but an external hire implies an external origin; it provides an indicator of the source of the CMO's knowledge and social relationships (Adler & Kwon, 2002). Given our objective to measure investors' response to CMO succession, we focus on these indicators as they are prominently mentioned in press releases and hence influence investors' reactions.

2.2. Organizational and environmental moderators

We rely on the contingency theory to argue that the value of managerial capital depends on organizational and environmental factors (Ruekert, 1985). These factors describe various internal and external situations and constraints that influence the effect of CMOs on firm value[3] (consistent with upper echelon literature; Carlton & Waldman, 2002; Datta & Rajagopalan, 1998). Specifically, we investigate the importance of firm age and size as organizational moderators (Carroll & Hannan, 2000) and industry dynamism and growth as environmental moderators (Datta & Rajagopalan, 1998), as we summarize in our conceptual framework in Fig. 1.

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[3] We use the label "firm value" to refer to the value created or destroyed by the CMO. However, instead of using the phrase "value created or destroyed" throughout the manuscript (which makes for an awkward read), in line with extant research, we use the existing label.

3. Research hypotheses

3.1. CMO education

An executive's education level reflects the generic knowledge and skill the executive possesses. Labor economics research indicates that educational attainments enhance an executive's value (Palia, 2000). The pursuit of higher education, such as an MBA, also should provide a knowledge and productivity advantage through the accumulation of superior managerial competencies and business knowledge (Becker, 1993). Upper echelon literature suggests that their educational background indicates executives' knowledge, skill, and resource bases (Datta & Guthrie, 1994), equating education levels with attributes such as open mindeness, tolerance for ambiguity, capacity for information processing, and ability to identify and evaluate multiple alternatives (e.g., Herrmann & Datta, 2002).

In addition to knowledge and skills, education implies close interactions with peers (e.g., MBA cohorts), which can significantly influence achievement (Johnson, 1981). Professional education programs provide an opportunity to establish close ties with others in similar fields, which increases embeddedness in the social network that pervades such programs, to the benefit of executives in the long run (Baldwin, Bedell, & Johnson, 1997). Social resources embedded in such networks also can provide greater and more timely access to information, greater access to financial or material resources, and greater visibility or legitimacy within a social system (Seibert et al., 2001).

Building on prior studies that rely on signaling theory to examine how executive characteristics influence firm valuation (e.g., Zhang & Wiersema, 2009), we propose that the education level of an incoming CMO communicates important information to investors that signals the CMO's abilities to improve firm performance. Consistent with extant research (Palia, 2000), we suggest a positive relationship between a new CMO's education level and the value created by the CMO:

H1a. The firm value created by a new CMO in a CMO succession event is positively associated with the CMO's education level.

3.1.1. Organizational moderators

As firms age, they tend to stabilize organizational structures, formalize processes, and standardize routines (Hannan & Freeman, 1984). This institutionalization of organizational structures, processes, and routines leads to structural inertia that makes firms resistant to change and reduces creativity (Kelly & Amburgey, 1991). Consecutively, as firms age, organizational inertia increases, and the flexibility and leeway that new CMOs have to implement their vision decreases. Thus, the likelihood that new CMOs can fully realize the value of their abilities and skills drops as firms' age and this loss in potential value created should increase with CMO education as education increases the upside potential.

H1b. The positive influence of CMO education on firm value in a CMO succession event decreases as firm age increases.

Furthermore, not only are large firms highly visible, firm size is an indicator of prestige (Davis & Mizruchi, 1999). Moreover, as size increases, the resources available to the firm, such as financial, technical, manufacturing, and marketing resources, also increase (Chen & Hambrick, 1995) and firms can make the same available for new strategies, creativity, and innovative experimentation (Barney, 1991). Finally, because large firms are well known, prestigious, and believed to be good, stable employers, they are able to attract quality employees with superior education levels (Ahmadjian & Robinson, 2001). Thus, as firm size increases, the number of executives (including those with MBAs) and the level of their collective education increase; the generic knowledge and capital embedded in CMOs' educational background may become redundant as firm size increases, such that the value of a CMO's education is diluted when firms grow (e.g., Alavi & Leidner, 2001).

H1c. The positive influence of CMO education on firm value in a CMO succession event decreases as firm size increases.

3.1.2. Environmental moderators

Industry dynamism refers to the rate of change and unpredictability in organizational environments (Dess & Beard, 1984) and places demands on executives to process environmental stimuli continuously and to coordinate and realign their strategies rapidly (Hambrick & Cannella, 2004). Their relevant education should endow CMOs with the cognitive ability to process dynamic environmental stimuli and the personal connections needed to obtain knowledge to manage uncertainty created by industry dynamism. Thus, the value of CMO education should increase with industry dynamism.

H1d. The positive influence of CMO education on firm value in a CMO succession event increases as industry dynamism increases.

Beyond growth opportunities, high-growth industries are associated with uncertainty due to evolving customer preferences, competitive actions, and distribution infrastructure, which requires frequent strategic adjustments (Geletkanycz & Boyd, 2011). Here again, education should endow CMOs with the cognitive ability to make sense of the uncertainty and the personal connections to mitigate that uncertainty. Thus, the value of CMO education should increase with growth levels in their industry.

H1e. The positive influence of CMO education on firm value in a CMO succession event increases as industry-level growth increases.

3.2. CMO origin

One of the key elements in CMO hiring decisions is whether to hire internally or from outside the firm. An internal successor is familiar with organizational context, routines, and priorities; insiders also possess firm-specific social resources obtained from their extensive internal networks and thus might find more support for their efforts than external successors (Marcel, 2009). Internal successors offer the promise of smooth transitions, because they are well acquainted with and may have participated in developing the existing corporate strategy (Lauterbach, Joseph, & Weisberg, 1999). Thus, internal successors should start enhancing firm value with little or no delay.

An external successor, in contrast, has access to novel, non-redundant information and knowledge bases that can enrich the firm with "new perspectives, fresh ideas, and decisive actions" (Lauterbach et al., 1999, p. 1486). External successors also provide opportunities and resources associated with their connections to external entities (Zhang & Rajagopalan, 2003). An external successor thus should introduce fresh perspectives and combine them with existing organizational routines and processes to enrich existing strategies or develop new ones (Helmich & Brown, 1972).

Research on managerial succession reveals that an internal replacement signals a maintenance strategy, whereas external successions are associated with change (Dalton & Kesner, 1985). Investors, therefore, may believe that an internal successor might be caught up in inertial forces (Worrell, Davidson, & Glascock, 1993), whereas outsiders are less likely to be committed to existing strategies, can evaluate ongoing strategies objectively, and might initiate strategy shifts (Tushman & Rosenkopf, 1996). Therefore, investors should favor external successions, because an external successor can bring in external resources and enhance existing organizational resource bases. Dalton and Kesner (1985) also argue that outsiders are not appointed unless they are notably better than internal candidates, because an external succession is more costly than an internal one. The selection of an external successor therefore indicates that the external successor is superior to a large pool of options, including both external and internal candidates for the position (Lauterbach et al., 1999).

H2a. The firm value created by an external CMO succession event is greater than the firm value created by an internal CMO succession event.
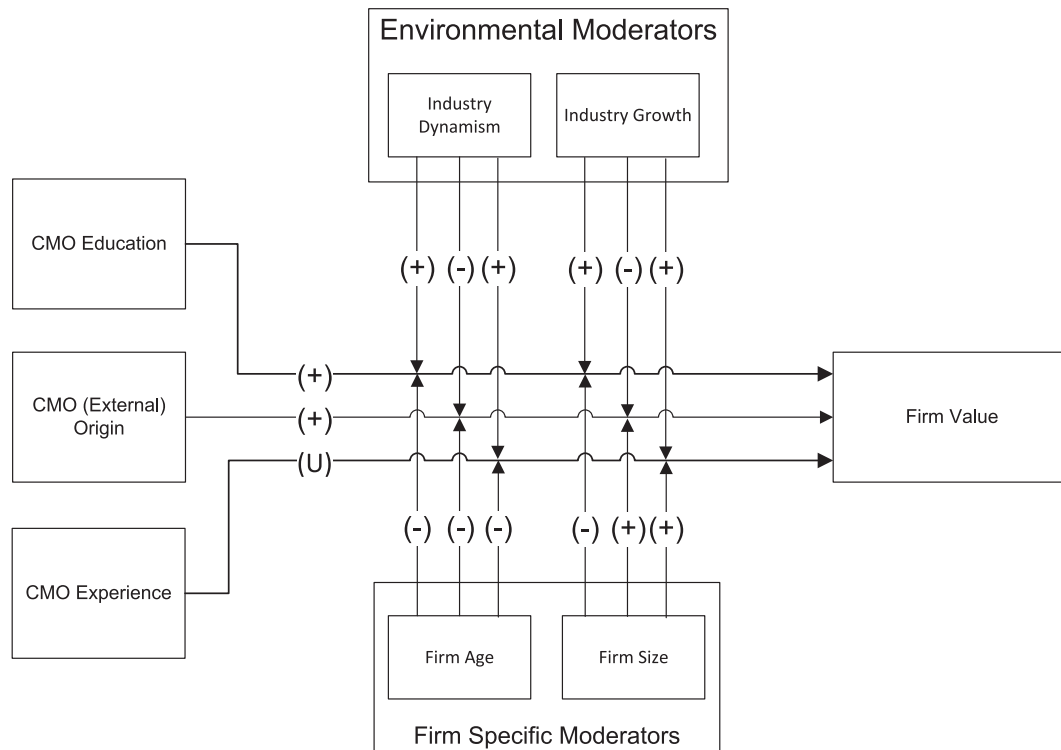

Fig. 1. Conceptual framework.

3.2.1. Organizational moderators

As we noted previously, as firms mature, organizational structures, processes, and routines become institutionalized, leading to structural inertia and "habits of mind" (Louis & Sutton, 1991, p. 55). New internal CMOs, compared with external CMOs, should be in a better position to recognize and interpret these institutionalized patterns and work within the institutionalized framework. Internal CMOs also may be more likely than external CMOs to have the necessary social connections inside the firm to get things done in institutionalized firms (Shen & Cannella, 2002). Even if external CMOs might introduce more new ideas than internal CMOs, it is relatively difficult for them to fight inertial forces successfully (Helfat & Bailey, 2005).

H2b. The difference in the value created by an external CMO origin, relative to an internal CMO origin, decreases as firm age increases.

External CMOs are more likely than internal CMOs to initiate strategic changes that require focusing on new products, markets, or technologies (Zhang & Rajagopalan, 2010). Such changes in organizational strategy, where the firm is less likely to have an expertise, are likely to require greater resource commitment than continuing existing strategies. Thus, the resource requirements should be greater for external CMOs compared with internal CMOs. Organizational resources increase with firm size (Carroll & Hannan, 2000), so the value that external CMOs bring to the table, relative to internal CMOs, should increase with firm size.

H2c. The difference in the value created by an external CMO origin, relative to an internal CMO origin, increases as firm size increases.

3.2.2. Environmental moderators

Industry dynamism places demands on firms to update and adapt their structures, processes, and routines continuously (Hambrick & Cannella, 2004). Absorptive capacity literature suggests that existing knowledge stocks facilitate the absorption of and response to additional information (Cohen & Levinthal, 1990); we suggest in turn that internal CMOs, who are familiar with existing organizational structures, processes, and routines, should be better able to absorb and respond to additional (environmental) information than external CMOs who are unfamiliar with the organizational context. Thus, although external CMOs create more value than internal CMOs (per H2a), the uncertainties created by environmental dynamism hurt the external CMO more than they hurt the internal CMO, i.e., the efficacy of an internal successor, relative to an external one, should increase with industry dynamism.

H2d. The difference in the value created by an external CMO origin, relative to an internal CMO origin, decreases as industry dynamism increases.

To exploit the opportunities offered by growth industries, firms must develop strategies that build on and employ existing organizational structures, processes, and routines and thus require CMOs to be familiar with the way things are done in the firm (Zhang & Rajagopalan, 2010). Considering the cross-functional nature of marketing activities (e.g., Moorman & Rust, 1999), incoming CMOs need the support of and must collaborate with other functions to implement new initiatives. Thus, relative to internal successors, who have firm-specific knowledge and connections, external successors should be at a disadvantage from the perspective of organizational familiarity and internal connections (Zhang & Rajagopalan, 2010).

H2e. The difference in the value created by an external CMO origin, relative to an internal CMO origin, decreases as industry growth increases.

3.3. CMO experience

We conceptualize CMO experience as the length of experience the incoming CMO possesses (Daily, Certo, & Dalton, 2000). Experience is a useful proxy for other latent attributes, such as job-related abilities, knowledge, or skills (Sturman, 2003). Job experience involves the accumulation of skills and diverse experience through action, practice, and perception of tasks and duties previously carried out (Quinones, Kevin Ford, & Teachout, 1995). Their prior experience thus influences top executives' cognitive bases and likely courses of action (Hambrick & Mason, 1984). In addition to the practical knowledge and skills that CMOs acquire on the job, they obtain valuable social resources through personal contacts and network ties. These connections can provide social resources, such as information, material resources, and psychological support (Judge, Cable, Boudreau, & Bretz, 1995). Thus, CMO experience implies managerial social capital reflective of the manager's ability to access resources through relationships gained from his or her work experience (Lin, 2001).

By combining the human and social capital perspectives, we posit that the length of the new CMO's experience conveys important information (e.g., knowledge, skills, social resources) that should influence shareholders' evaluations of firm value in relation to CMO succession events. The experience of incoming CMOs should help them in their new role, so shareholders can gain valuable insights about managerial ability, according to this experience.

However, the effect may not be linear: As CMOs' experience increases, they accumulate knowledge about and experience with diverse problems, so their learning curve in the new job should be much sharper (Hill, 2005). At low levels of experience, executives predominantly enjoy task or functional expertise and still may be in the process of learning the "tricks of the trade" (Podsakoff, Ahearne, & MacKenzie, 1997, p. 264). As they gain more experience, they likely become aware of the "big picture" (Senge, 1991, p. 3), such that they align personal goals with organizational goals and develop strategic thinking skills (Goldman, 2007). Similarly, executives with little experience may not have developed strong ties with influential actors (Tichy, Tushman, & Fombrun, 1979). Thus, low levels of experience imply low levels of CMO managerial capital, which suggests that such CMOs add limited value to the firm. Yet the complexity of the job demands high levels of skill and mastery by marketing heads if the firm is to realize performance gains (Avolio, Waldman, & McDaniel, 1990). Only CMOs with sufficient experience likely have developed mastery over functional task aspects and strong ties with influential actors. Moreover, interacting with others in similar roles can provide them with vicarious experience (Goldman, 2007).

In summary, we expect experience to have a nonlinear effect on firm value, such that the value created by CMO experience increases at an increasing rate. At low levels of experience, CMOs lack resources that can be accessed through social connections, which build over time. That is, when they have low levels of experience, CMOs' human capital, which itself may be less developed, is not complemented by social capital embodied in their social connections. As CMOs gain experience though, they improve their abilities and resources, as well as complement their skills with growing social resources. Thus, they can exploit the complementary effects of personal abilities and social relations. Over time, human and social capital elements should interact, such that as CMOs' experience increases, returns to the experience grow at an increasing rate (Coleman, 1988).

H3a. As CMO experience increases, its impact on firm value increases at an increasing rate.

3.3.1. Organizational moderators

The institutionalization of firm structures, processes, and routines that occurs as firms grow older results in an organizational inability to initiate strategic change (Kelly & Amburgey, 1991). Such institutionalized forces limit the ability of new CMOs, despite rich prior experience, to mobilize organizational resources and initiate strategic change

(Lauterbach et al., 1999). Thus, the value of CMO experience should decrease with greater firm age.

H3b. The positive influence of CMO experience on firm value in a CMO succession event decreases as firm age increases.

As we noted previously, the resource base of firms increases with firm size (Chen & Hambrick, 1995), which also implies the resources at the disposal of new CMOs increase. While experienced CMOs may have insights about how to improve firm performance, they are more likely to be successful when they have the organizational resources to implement their strategies. A new CMO with more experience can better exploit resources and hence should be more effective in the presence of additional resources (Kor & Sundaramurthy, 2009), so the value of CMO experience should increase with firm size.

H3c. The positive influence of CMO experience on firm value in a CMO succession event increases as firm size increases.

3.3.2. Environmental moderators

The need for firms to update and adapt their structures, processes, and routines in the face of industry dynamism demands executives with the skills and ability to make high-quality decisions at a fast pace (Hambrick & Mason, 1984). With more experience, CMOs likely gain more diverse experience too (i.e., they have experienced a range of different situations; Quinones et al., 1995), so their skills and ability should improve, as should the number and quality of their social connections (e.g., Tesluk & Jacobs, 1998). The value of CMO experience increases with greater industry dynamism, which implies a greater need to make quality decisions at a fast pace.

H3d. The positive influence of CMO experience on firm value in a CMO succession event increases as industry dynamism increases.

Finally, to exploit the opportunities that growth industries provide, CMOs should be able to develop and implement viable strategic options. Their skills and abilities, as well as their understanding of market dynamics, increase with experience (Hambrick & Mason, 1984), so the value of CMOs' experience should increase with greater industry growth potential.

H3e. The positive influence of CMO experience on firm value in a CMO succession event increases as industry growth increases.

4. Model development

As we elaborate subsequently, we use an event study to assess the value added by a CMO succession announcement (Boyd et al., 2010) and rely on the event announcement and other secondary sources to derive measures for our variables of interest. We begin by laying out the linear regression model that captures the hypothesized effects, then expound on how we augment this model to account for (1) observed and unobserved sources of heterogeneity and (2) the endogeneity of certain key explanatory variables.

4.1. Basic model specification

Because our dependent variable, value due to CMO succession, lies in the interval $(-\infty, \infty)$, we use a linear regression model:

$$y_i = \alpha_0 + X_i\alpha + \varepsilon_i, \tag{1}$$

where y_i is our measure of the value due to a CMO succession for firm i $(1, ..., N)$; α_0 is the constant term; X_i is a matrix of independent variables

with random effect coefficients; α is a vector of regression coefficients; and the error term ε_i is assumed to be independent and homoskedastic, $\varepsilon_i \sim N(0, \tau_\varepsilon)$.

4.2. Accounting for observed and unobserved heterogeneity

To obtain best, linear, unbiased estimates of the hypothesized variables, we must control for observed and unobserved sources of heterogeneity. In addition to our focal variables, we control for covariates that affect firm value, according to extant research on executive succession. As we elaborate subsequently, we control for individual-specific (gender), position-specific (whether the CMO position is newly created, position title), firm-specific (firm age, sales, whether the firm has major customers), and industry-specific (industry dynamism, growth) factors.

Despite all our efforts to control for known sources of heterogeneity, other sources of variations across CMO successions may not be observable. For example, the reason for the CMO succession rarely is included in CMO succession announcements.[4] The failure to account for such factors can lead to biased and inconsistent estimates (Chintagunta, 2001). We argue that unobserved heterogeneity masks some effects that extant research has not captured (e.g., Boyd et al., 2010; Nath & Mahajan, 2008; Nath & Mahajan, 2011); therefore, we account for it with a semi-parametric approach that employs a latent class specification with a finite number of support points for the intercept term (Heckman & Singer, 1984).[5] The basic idea underlying latent class analysis is simple: Some parameters in a postulated statistical model differ across unobserved subgroups (see Wedel & Kamakura, 2000). Because there is no a priori theoretical rationale to expect different effects for our focal variables, we model latent segments on the intercept (α_0). To estimate the support points and their probability masses, we use a nonparametric maximum likelihood approach (Heckman & Singer, 1984), with the assumption that modeling latent classes on the intercept helps (partly) account for heterogeneity across the sample (Chintagunta, 2001).

Our results also might be sensitive to year effects, in that intertemporal variations might not be attributable to other regressors. For example, depending on annual variations in the sentiments of the stock market, the same news on CMO succession might be perceived differently. Thus, we include year dummies to control for year-specific fixed effects. To incorporate multiple support points on the intercept term and the year-specific fixed effects, we thus rewrite Eq. (1) as:

$$y_{it} = \sum_{k=1}^{K} \pi_k I\{f \in k\} + X_i\alpha + \delta_t + \varepsilon_{it} \tag{2}$$

where δ_t is the year-specific fixed effect; the intercept can take the value of a finite number of discrete (Bernoulli) support points $\pi_1, ..., \pi_K$; and the indicator function $I\{\}$ is 1 for all $f \in k$, and 0 otherwise. In our estimation, which is typical of latent class analyses (Wedel & Kamakura, 2000), we keep increasing k until information criteria suggest otherwise.

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[4] In our study, only 23 press releases in the 303 succession events we study publicized the reasons for the CMO succession.

[5] Consistent with the Latent Instrumental Variable approach espoused by Ebbes, Wedel, Böckenholt, and Steerneman (2005), one could conceptualize the use latent segments on the intercept and error terms as a Latent Control Function approach, which akin to other control function type corrections for endogeneity (e.g., Wooldridge, 2007; Wooldridge, 2010) introduces correction terms (i.e., additional coefficients to be estimated) as control variables in the main regression.

4.3. Accounting for endogeneity

As is common in marketing literature, we use a control function approach to model the endogenous variables (e.g., Petrin & Train, 2010).[6] Firms hire new CMOs on the basis of their individual characteristics and with an objective to enhance firm performance, suggesting that our managerial capital may be endogenous. The Heckman–Lee approach can address endogeneity concerns when the endogenous variable is binary (Heckman, 1979; Lee, 1982). Garen (1984) also has proposed a control function approach to correct for endogeneity in the case of continuous variables. However, we need to account for multiple instances of endogeneity with both binary (origin and education) and continuous (experience) explanatory variables. We thus extend Garen's approach, together with recent work in marketing (e.g., Luan & Sudhir, 2010; Petrin & Train, 2010) that incorporates multiple (continuous) endogenous variables, to correct for multiple endogeneity due to both binary and continuous variables.

In the first stage, we estimate the correction terms by regressing the endogenous variables, *MBA*, *ORG*, and *EXP*, on a set of exogenous variables. Let z_i^{MBA}, z_i^{ORG} and z_i^{EXP} constitute sets of exogenous variables that influence the organizational choice of the endogenous variables, *MBA*, *ORG*, and *EXP*, respectively. Extant research suggests that organizational and environmental characteristics influence the hiring decision (e.g., Kesner & Sebora, 1994); for example, poorly performing firms likely bring in an external successor to initiate fresh strategies and change the organization's course (e.g., Lauterbach et al., 1999). Similarly, firms operating in an unstable industry may seek experienced executives who can handle environmental challenges (e.g., Haleblian & Finkelstein, 1993). However, the hiring decision reflects overall assessments of candidates, rather than their individual attributes (e.g., Zeleny, 1982), so we anticipate that the same set of organizational and environmental variables influences choices regarding our potentially endogenous variables. Accordingly, we include as instruments year-specific fixed effects, as well as position-specific (e.g., newly created, already in the C-suite), firm-specific (e.g., customer power, sales, age, total assets, return on assets [ROA]), environmental (e.g., industry growth, industry dynamism), and variables related to the CEO at the time of succession (education, origin, and experience of the current CEO) that may influence the choice of the CMOs' education, origin and experience, such that z_i^{MBA}, z_i^{ORG} and z_i^{EXP} are the same (Luan & Sudhir, 2010). Thus, we specify:

$$MBA_i^* = z_i^{MBA}\lambda^{MBA} + \eta_i^{MBA} \tag{3}$$

$$ORG_i^* = z_i^{ORG}\lambda^{ORG} + \eta_i^{ORG}, \text{ and} \tag{4}$$

$$EXP_i = z_i^{EXP}\lambda^{EXP} + \eta_i^{EXP} \tag{5}$$

where MBA_i^* and ORG_i^* denote the latent measurement, and the observed binary response for the ith observation is the indicator $MBA_i = I\{MBA_i^* > 0\}$ and $ORG_i = I\{ORG_i^* > 0\}$; λ^{MBA}, λ^{ORG} and λ^{EXP} are unknown parameter vectors; z_i^{MBA}, z_i^{ORG} and z_i^{EXP} are sets of exogenous variables; and the random errors η_i^{MBA}, η_i^{ORG} and η_i^{EXP} are assumed to be normally distributed.

We first obtain consistent estimates of λ^{MBA}, λ^{ORG}, and $\hat{\eta}_i^{EXP}$ from the above equations, then use the resultant estimates of $z_i^{MBA}\lambda^{MBA}$ and $z_i^{ORG}\lambda^{ORG}$ to compute the inverse Mills ratio (correction term; IMR) for each observation in the internal origin (IMR_0) and external origin (IMR_1) subsample, as follows:

$$IMR_1^{ORG} = \phi\left(z_i^{ORG}\lambda^{ORG}\right)/\Phi\left(z_i^{ORG}\lambda^{ORG}\right), \text{ and} \tag{6}$$

$$IMR_0^{ORG} = -\phi\left(z_i^{ORG}\lambda^{ORG}\right)/\left[1 - \Phi\left(z_i^{ORG}\lambda^{ORG}\right)\right], \tag{7}$$

where ϕ and Φ are the probability density function and cumulative distribution function of the standard normal distribution, respectively; we follow the same approach to compute IMR_1^{MBA} and IMR_0^{MBA}.

Finally, we substitute the correction terms, IMR_i^{MBA} for education, IMR_i^{ORG} for origin, and the residuals $\hat{\eta}_i^{EXP}$ for experience in Eq. (2) as additional explanatory variables. For model identification purposes, we exclude total assets and variables related to the CEO (education, origin, and experience) from the second stage. Total asset, an indicator of firm size, is a measure of the amount of productive capacity that is available without regard to the efficiency and effectiveness of management in operating that capacity (Ecker, Francis, Olsson, & Schipper, 2009). The amount of resources should influence the choice of incoming executives as the managerial characteristics impact the efficiency of organizational production capacity utilization. However, investors are likely to be concerned with how the firm utilizes its production capacity, i.e., the ultimate sales that it generates, and hence we only retain sales (which is also a good proxy of firm size) in the second stage regression. Similarly, education, origin, and experience of the current CEO should influence the choice of incoming CMOs. Research on homophily highlights that individuals like to associate with others who are similar to themselves, suggesting that CEO characteristics should influence hiring decisions (McPherson, Smith-Lovin, & Cook, 2001). However, CEO characteristics are not likely to explain the abnormal returns associated with the succession.[7] The complete model thus is:

$$y_{it} = \sum_{k=1}^{K}\pi_k I\{f \in k\} + X_i\alpha + \delta_t + \gamma^{MBA}IMR_i^{MBA} + \gamma^{ORG}IMR_i^{ORG} + \gamma^{EXP}\hat{\eta}_i^{EXP} + \widetilde{\varepsilon}_{it} \tag{8}$$

where γ^{MBA}, γ^{ORG}, and γ^{EXP} are the coefficients for the correction terms.

5. Methodology

To test our hypotheses, we must relate CMO managerial capital variables to firm value, due to CMO succession. Because the CMO is part of the top management team as well as the larger organizational fabric, we need to isolate the value created by CMO succession. Further, while it is worthwhile to evaluate the impact of CMOs on profitability or sales of the firm, the announcement of the new CMO alone should not influence any of the balance sheet based firm performance measure and hence we rule them out for this study.[8] Accordingly and following Boyd et al. (2010), we use an event study approach to compute the abnormal returns associated with CMO succession. An event study is a useful approach for isolating the impact of a specific event of interest from other background effects (McWilliams & Siegel, 1997); it also is a dominant methodology in managerial succession literature (Giambatista, Glenn Rowe, & Riaz, 2005; Kesner & Sebora, 1994). Event studies rely on the efficient market hypothesis (Fama, 1970) that states the price

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[6] Although related, the control function approach is distinct from the other popular approaches to correct for endogeneity − instrumental variables. Unlike the IV approach that relies on a good instrument, the control function approach relies on deriving a proxy variable that conditions on the part of the endogenous variable that is correlated with the error, such that the remaining variation in the endogenous variable is independent of the error and the traditional estimation approaches will be consistent (Petrin & Train, 2010). Control function approach requires modeling the endogenous variable (e.g., experience) using a set of exogenous variables, including the excluded variable, in the first stage regression and using the residuals from this stage in the second stage as a regressor with the assumption that the errors of the two stages follow a bivariate normal distribution (Luan & Sudhir, 2010; Wooldridge, 2010). Inclusion of the first stage residuals in the second stage "solves the endogeneity problem regardless of how the endogenous regressor appears" (Wooldridge, 2007, p. 12), offering distinct advantages for models nonlinear in endogenous variables.

[7] We thank an anonymous referee for this suggestion regarding the exclusion variables. Variables related to other members of the C-suite, such as CFO and COO, had extensive missing information (over 41% missing, on average) and hence were not usable.

[8] Nath and Mahajan (2011) used balance sheet based measure to investigate the influence of CMO power on firm performance. Our motivation of investigating CMO successions is closer to Boyd et al. (2010) who also use event study.

Table 2
Industry classification of 303 events in our sample.

SIC	Industry	# of events
13	Oil and gas extraction	2
20	Food and kindred products	2
23	Apparel and other textile products	5
24	Lumber and wood products	7
25	Furniture and fixtures	3
27	Publishing and printing	3
28	Chemicals and allied products	29
30	Rubber and miscellaneous plastic products	47
33	Primary metal industries	3
35	Industrial machinery and equipment	15
36	Electrical and electronic equipment	3
37	Transportation equipment	2
38	Instruments and related products	7
39	Miscellaneous manufacturing industries	2
41	Local and interurban passenger transit	2
45	Air transportation	2
47	Transportation services	5
48	Communications	10
49	Electric, gas, and sanitary services	7
50	Wholesale trade — durable goods	5
51	Wholesale trade — nondurable goods	3
53	General merchandise stores	2
56	Apparel and accessory stores	8
58	Eating and drinking places	12
59	Miscellaneous retail	13
60	Depository institutions	2
62	Security, commodity brokers, and services	2
63	Insurance carriers	10
67	Holding and other investment offices	3
72	Personal services	2
73	Business services	76
79	Amusement and recreational services	2
82	Educational services	2

of a security fully reflects all information available about the firm, and the market adjusts rapidly to new information. Thus, changes in a firm's stock price due to an event (e.g., CMO succession) reflect investors' estimates of the economic value of that event (Brown & Warner, 1985). More importantly, the event study approach allows us to delineate investor's response to CMO succession announcement.

To identify CMO succession events, we conducted a search of the Lexis–Nexis Wire Index (News Wire Library) using the keywords "new," "create," or "appoint as," along with the following position titles: chief marketing officer, CMO, president of marketing, director of marketing, and vice president of marketing. Our search produced an initial sample of 926 CMO successions between 1996 and 2009. Because we use abnormal returns to assess the value created by CMO succession, we excluded private and foreign firms, which reduced the sample to 436 observations. Following recommended event study practices (McWilliams & Siegel, 1997), we also excluded firms that made other significant announcements (e.g., earnings, dividends, new products, other top executive appointment announcements) during a three-day window ($t − 1$ through $t + 1$) around the CMO succession announcement, which resulted in our final sample of 303 CMO succession events. We provide a brief description of the type of firms or industries included in our sample in Table 2. We use this three-day event period to ensure an efficient estimation and reduce the possibility of other factors affecting the returns (Fornell, Mithas, Morgeson, & Krishnan, 2006).

5.1. Measures

5.1.1. Dependent variable

We use the four-factor model as developed by Fama and French (1996) and modified by Carhart (1997) to estimate abnormal stock returns.[9] The four-factor model has gained prominence among the market valuation models (Srinivasan & Hanssens, 2009) and has been used in recent marketing research (e.g., Swaminathan & Moorman, 2009). The four-factor model includes three factors in addition to the return (R_{mt}) to explain the excess returns R_{it}, as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + s_i SMB_t + h_i HML_t + u_i UMD_t + \varepsilon_{it}$$

where, R_{mt} is the market rate of return using the equally weighted Center for Research in Security Prices index (market index) on day t,[10] SMB_t is the return differential between portfolios of small capitalization and large capitalization stocks, HML_t is the return differential between portfolios of high and low book-to-market stocks, UMD_t is the differential between portfolios of stocks with high and low prior returns, α_i is an intercept, and ε_{it} is the disturbance term. We apply this model to a 255-day period prior to the event day to estimate the expected stock return ($\hat{R}_{it}$) for firm i on day t, then calculate the daily abnormal returns according to the formula $AR_{it} = R_{it} − \hat{R}_{it}$. We sum the daily abnormal returns over three days to arrive at the cumulative abnormal return (CAR) for every CMO succession event, $CAR_{i,t(−1,1)} = \sum_{t\,=\,-1}^{1} AR_{it}$. Fig. 4 provides the kernel density plot for our abnormal returns measure.

5.1.2. Independent variables

We use content from news announcements in the Lexis–Nexis Wire Index and D&B Hoovers executive database to collect our measures of CMOs' managerial capital variables. This approach is in line with the event study approach that measures investors' response to information provided in the announcement. Education level (*MBA*) is a dummy variable that indicates whether new executives have MBA degrees (Barker & Mueller, 2002).[11] Our focus on business education and the MBA degree in particular reflects the argument that the pursuit of a higher education level should result in a learning and productivity advantage (Boyatzis, Stubbs, & Taylor, 2002). Formal professional education (and an MBA degree in particular) thus may serve as a filtering device for hiring decisions (Hambrick & Mason, 1984). Professional management education also should endow managers with the ability to deal with the "administrative complexity and sophistication of firm due to the emphasis placed on complex administrative systems in business schools" (Hambrick & Mason, 1984, p. 201). We measure CMOs' prior work experience (*EXP*) as the total number of years the new CMO has worked in any position or organization before taking the new position. To collect this measure, we again turn to news announcements and validate them with the Hoovers database. Fig. 5 provides the kernel density plot for CMO experience. To measure new CMOs' origin (*ORG*), we determine if they came from internal or external organizations (Finkelstein & Hambrick, 1996). For each event, we use the content of the news announcement to classify the new CMO as an internal or external hire (Zhang & Rajagopalan, 2010). If the CMO was not previously employed by the firm or its subsidiaries, we classify the hiring as external and code the successor origin equal to 1; successor origin instead equals 0 (internal) if the CMO was previously employed by the firm or its subsidiaries. Table 3 provides the frequency distributions for MBA and origin.

5.1.3. Moderation variables

For the firm-level variables, we use the number of years since incorporation to measure firm age and firm sales to measure firm size. We assess the two environmental moderators (industry dynamism and

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[9] We also used the market model and the Fama–French three factor model and the results are identical to the ones reported here.

[10] Results using value weighted index closely conform to those we report.

[11] Only 36% of the announcements in our sample disclosed the undergraduate degree. In these 36% disclosures, 40% of the CMOs had a business undergraduate degree and in the remaining 60%, 52% got an MBA. None of the CMOs had a Ph.D. degree. Thus, the only significant signal of education in our sample seems to be that of an MBA degree.
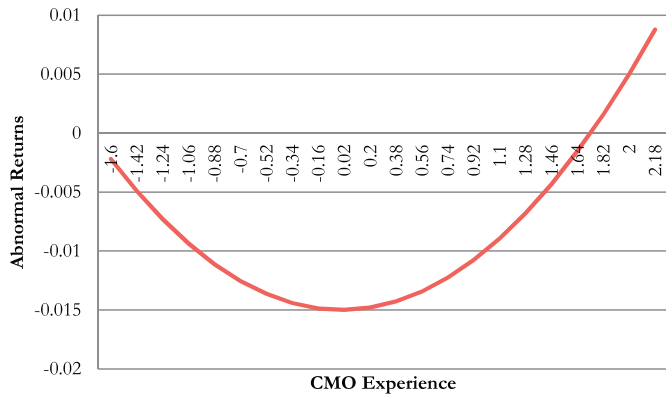
Fig. 2. Nonlinear effect of CMO experience. *Notes*: CMO experience is mean centered.

Fig. 4. Kernel density plot: cumulative abnormal return.

growth) with aggregate firm-level data for the different four-digit standard industrial classification codes as in the COMPUSTAT database. In line with Hambrick and Cannella (2004), we define industry growth (*GWT*) as the average rate of sales growth (annualized) between $t-2$ and t; because industry demand can grow (or shrink) unpredictably, we also calculate industry dynamism (*DYN*) as the absolute difference in the industry growth rate from $t-2$ to $t-1$ versus that from $t-1$ to t. For example, an industry that grew 2% from 1999 to 2000 and then shrank by 3% from 2000 to 2001 achieves an industry dynamism score of 5 and an industry growth score of $-.5$.
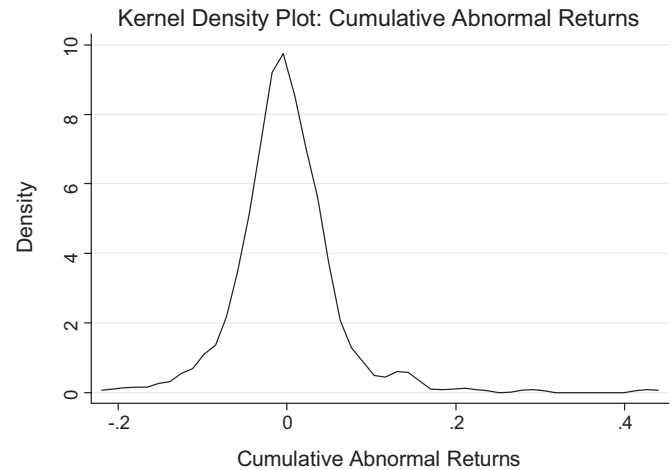
5.1.4. Control variables

To rule out other explanations, we include three control variables associated with CMOs' impact in prior literature. Position is a dummy variable that takes the value one when the CMO position has been newly created and zero when the position already existed (e.g., Boyd et al., 2010; Nath & Mahajan, 2008). In line with Boyd et al. (2010), we use the absence or presence of a major customer to capture the firm's customer power. We also include a dummy variable for the CMO's title that indicates whether new CMOs are actually in the C-suite as chief marketing officers or take some other title (e.g., vice president of marketing); those who gain top management team status should have influence over a broader range of decisions (Nath & Mahajan, 2011). Like firm-specific knowledge, industry experiences of incoming CMOs may also influence their impact (Shen & Cannella, 2002). To control for CMO's industry background, we also include a dummy variable industry outsider that takes the value one when the CMO's prior experience is in the same industry and zero otherwise.

Firm performance also can drive executive succession (Shen & Cannella, 2002), so we use return on assets (ROA) in the year prior to the news announcement to measure firm performance before the CMO succession. As a commonly used and well-understood measure of firm performance (Shen & Cannella, 2002), ROA indicates how well a firm's assets generate revenue. We also include the gender of the new CMO as an individual-level control variable (where male is coded as 1 and female as 0), in addition to year-level dummy variables
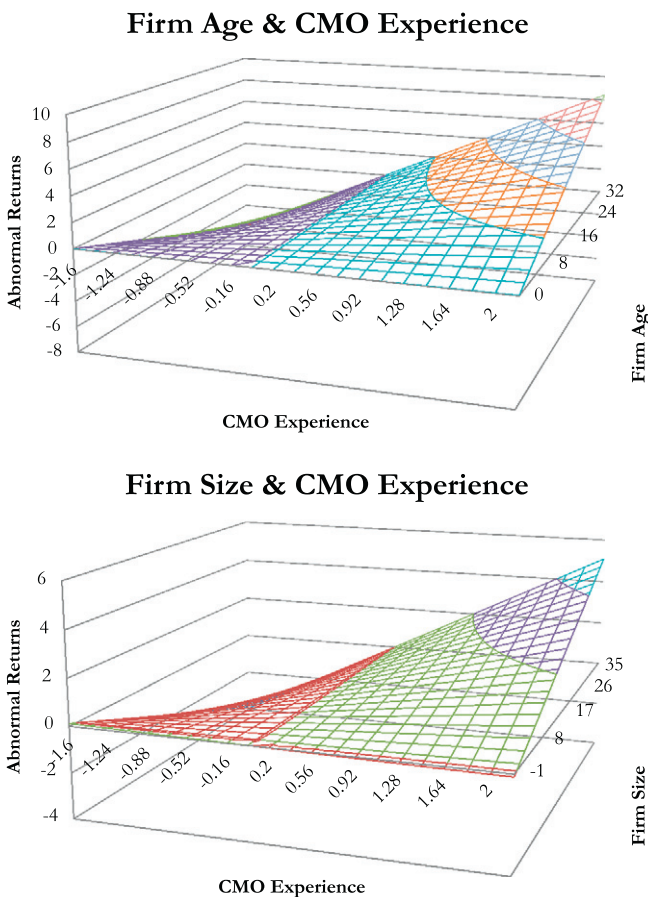

Fig. 3. Interaction between CMO experience and organizational variables. *Notes*: CMO experience is mean centered.
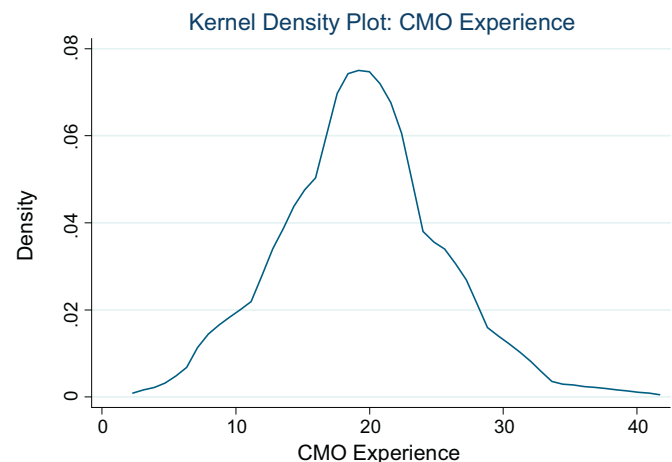

Fig. 5. Kernel density plot: CMO experience.

Table 3
Frequency distribution for MBA and origin.

	MBA		Origin	
	Frequency	Percent	Frequency	Percent
0 (no MBA/internal)	191	63.04%	80	26.4%
1 (MBA/external)	112	36.96%	223	73.6%
Total	303	100	303	100

(i.e., year of the CMO succession event). Finally, we include variables related to education level, origin, and total experience of the CEO, obtained from the company filings (DEF 14A). CEO's education background (*CEOEdu*) is a dummy variable, where those having an MBA are coded as 1 and 0 otherwise; CEO's origin (*CEOOrigin*) is a dummy variable, where outsider CEO is coded as 1 and 0 otherwise; and CEO experience (*CEOExperience*) indicates the total number of years of work experience of the firm's CEO. Thus we control for environmental, individual-, position-, and firm-specific effects.

6. Results

We provide the descriptive statistics and correlation matrix in Table 4. The highest value of the condition index of 8.85 suggests that collinearity is unlikely to be an issue. As suggested by Albers (2012), we present the results of first stage regression meant to obtain endogeneity correction terms in Table 5. The results from the first stage suggest that the likelihood of hiring a CMO with an MBA education increases with an increase in ROA, total assets, sales, industry dynamism, and if the position is newly created or is part of the C-suite, whereas it decreases with an increase in firm age, industry growth rate, and if the firm has dominant customers or a CEO with an MBA education. Similarly, firms are more likely to hire an external CMO as industry dynamism and total assets increase or if the CMO position is part of the C-suite; whereas the likelihood of hiring an external CMO decreases with increase in ROA, sales, industry growth rate, and if the CMO position is newly created or the current CEO was also an external hire. Finally, CMO experience is valued when the industry is growing fast, CMO position is part of the C-suite, and the CEO has little experience. Next, we use the correction terms for the three variables (origin, education, and experience) from this stage in the second stage (as shown in Eq. (8)).[12]

Consistent with research in latent class analysis (e.g., Wedel & Kamakura, 2000), we estimated our model while assuming a fixed number of support points (segments) for the intercept term. As per Andrews and Currim (2003), we determined the appropriate number of segments on the basis of AIC3 statistics (i.e., Akaike information criterion with a per-parameter penalty factor of 3); a five-segment solution emerged as optimal (AIC3 values of -447.72, -547.75, -542.12, -571.96, -604.23, -594.29, and -591.95 for one to seven segments, respectively).[13] We find evidence of endogeneity as all the three correction terms are statistically significant ($\gamma^{MBA} = -.034$, $p < .01$; $\gamma^{ORG} = -.037$, $p < .01$; $\gamma^{EXP} = -.003$, $p < .1$).[14] The negative signs of

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[12] To rule out the alternate explanation that CMO experience (*EXP*) may capture the effects of CMO age (as pointed out by one of the reviewers), we estimated another model where we include CMO age as an additional control variable. As one would expect, CMO age has a positive effect on the abnormal returns ($\beta = 0.001$, $p < .01$). More importantly, results of our original variables remain unchanged; CMO experience continues to have a non-linear effect on firm value even after we control for the age of the CMO.

[13] Other information criteria (e.g., AIC, BIC) provide the same conclusion. Specifically, we obtain AIC values of -491.72, -594.75, -592.12, -624.96, -660.24, -653.29, and -653.95 and BIC values of -344.45, -437.43, -424.76, -455.82, -472.79, -455.81, and -445.95 for one to seven segments, respectively.

[14] As our dependent variable is an estimated quantity, there are good chances that the error term is not homoskedastic, which would require correction for heteroskedasticity. However, visual inspection of residuals plotted against fitted values and the Breusch–Pagan test failed to reject the assumption of homoskedasticity, indicating that we do not have heteroskedasticity.

Table 4
Descriptive statistics and bivariate correlation coefficients.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Abnormal returns	−.001	.062																	
2. Education (MBA)	.37	.484	.032																
3. Origin (ORG)	.736	.442	.034	.071															
4. Experience (EXP)	19.416	5.91	−.010	−.114[b]	.013														
5. Firm age	31.297	36.175	.033	.032	−.080	.165[a]													
6. Size (Sales)	7334.258	27,839.9	−.014	.090	−.182[a]	.104[c]	.170[a]												
7. Industry dynamism	46.507	113.015	−.082	.085	.062	.111[c]	−.058	−.055											
8. Industry growth	1.443	16.363	.011	.070	−.092	−.135[b]	−.003	−.019	.008										
9. Total assets	16,014.563	113,331.694	−.036	.106[c]	−.021	.054	−.017	.081	−.029	.028									
10. Customer power	0.307	0.462	.041	−.020	.009	.000	−.105[c]	−.126[b]	.072	−.036	−.062								
11. Position	.294	.456	−.021	.077	−.025	.093	.051	−.044	.182[a]	−.026	−.030	.042							
12. Title	.452	.499	−.081	.129[b]	−.073	.315[a]	.261[a]	.180[a]	.218[a]	−.030	.107[c]	.028	.302[a]						
13. Gender	.719	.45	−.094	−.054	−.041	.048	−.095[c]	−.038	−.044	−.030	.023	.049	−.017	−.082					
14. ROA	−.207	1.973	−.065	.054	−.041	.007	.036	.030	.017	−.107[c]	.016	.034	.052	−.037	−.036				
15. Industry outsider	.36	.481	−.049	.073	.016	.033	.001	−.128[b]	−.025	.009	−.056	.014	.032	.008	−.027	.050			
16. CEO education	.349	.478	.025	.021	.061	−.075	−.109[c]	.030	−.106[c]	.066	.063	−.012	−.100[c]	−.114[c]	−.018	−.080	−.043		
17. CEO origin	.431	.496	.002	−.005	.009	.056	.068	.080	−.062	.073	−.052	.050	−.005	.028	.033	−.053	.085	.011	
18. CEO experience	27.539	7.333	.093	−.016	.045	.060	−.014	−.041	.072	.020	−.033	.043	.169[a]	.126[b]	.017	−.032	−.059	.009	−.054

[a] Significant at .01.
[b] Significant at .05.
[c] Significant at .10.

Table 5
First stage regression results.

Parameter	MBA	Origin	Experience
Title	0.184***	0.130***	0.188*
Customer power	−0.046***	−0.004	−0.064
ROA	0.100***	−0.089***	0.011
Position	0.016**	−0.079***	−0.073
Firm age	−0.011***	−0.007	0.005
Total assets	0.003***	0.0003***	−0.001
Sales	0.002**	−0.011***	0.001
Industry growth	−0.03***	−0.0074***	−0.004***
Industry dynamism	0.088***	0.143***	0.038
CEO education	−0.195***		
CEO origin		−0.088***	
CEO experience			−0.008**
Intercept	0.216	0.441	−0.235

***Significant at .01; **significant at .05; and *significant at .1 (two tailed t-tests).

the correction terms indicate that the parameter estimates without the Heckman correction would be biased downwards suggesting that the abnormal returns are lower for internal CMOs, those without an MBA, and those with less experience.[15]

In Table 6 we present the results of our focal model linking CMO managerial capital to firm value and several alternate specifications.[16] Model 1 is the full proposed model; model 2 includes the main effects only; model 3 includes all the variables except those related to *MBA*; model 4 includes all the variables except those related to origin (*ORG*); model 5 includes all the variables except those related to experience (*EXP*); model 6 includes all the variables but does not account for unobserved heterogeneity (i.e., singe class); model 7 includes all the variables but does not account for the endogeneity of our focal variables; and model 8 includes all the variable but does not account for both endogeneity of our focal variables and unobserved heterogeneity. We also report three different measures that document the improvement in model fit: mean absolute deviation (MAD), AIC values, and likelihood-ratio (LR) test statistic.[17] In line with Ebbes, Papies, and Van Heerde (2011), we compare the fit statistics of the endogeneity corrected models (models 1 through 6 in Table 6) and select the proposed model based on superior fit statistics.[18] Results from alternate models provide further confidence in our model that highlight the significant influence of our focal variables on firm value, in support of the assertion that CMOs help drive firm performance (e.g., Boyd et al., 2010). As we propose in H1a, the new CMO's MBA education positively

influences firm value ($b = .008$, $p < .01$). We do not find support for H1b, regarding the negative moderating effect of firm age ($b = .006$, n.s.). We also do not find support for the negative moderating effect of size (H1c), yet the sign of our estimate is consistent with Boyd et al. (2010) who find that as firm size increases, the magnitude of the positive effect of CMO education on firm value decreases ($b = −.004$, n.s.). We find support for H1d and H1e, in that as industry dynamism ($b = .013$, $p < .01$) and growth ($b = .138$, $p < .05$) increase, so does the positive effect of CMO education on firm value.

We find support for H2a; consistent with Boyd et al. (2010), we find that external CMOs create more value than internal CMOs ($b = .01$, $p < 0.01$). Consistent with H2b and H2d, respectively, we find that as firm age ($b = −.288$, $p < .01$) or industry dynamism ($b = −.718$, $p < .01$) increases, an internal CMO is preferred to an external CMO. We do not find support for H2c, industry dynamism does not influence the preference for an internal or an external CMO ($b = −.007$, n.s.). Similarly, we do not find support for H2e, which pertained to the moderating influence of industry growth ($b = .023$, n.s.).

For experience, we find that the linear term is negatively significant ($b = −.015$, $p < .05$), whereas the quadratic term is positively significant ($b = .005$, $p < .01$), suggesting a U-shaped relationship between experience and firm value, providing partial support for H3a (see Fig. 2). Our results suggest that investors penalize firms that hire CMOs with low levels of experience, highlighting the importance of the marketing function and the individual occupying the CMO position. Contrary to H3b and H3d, we find that as firm age increases, the positive effect of CMO experience increases ($b = .119$, $p < .01$; see Fig. 3), but as industry dynamism increases, the positive effect of CMO experience decreases ($b = −.007$, $p < .01$). Our results suggest that compared to an inexperienced CMO, an experienced CMO may be better able to navigate organizational structures and processes and fight organizational inertia to bring about strategic change. However, in dynamic environments that require dynamic and fresh thinking, investors undervalue CMO experience. We do find support for H3c regarding the moderation effect of firm size on CMOs' experience ($b = .065$, $p < 0.01$; see Fig. 3). Finally, in support of H3e, as industry growth increases the positive effect of CMO experience also increases ($b = 1.107$, $p < .01$).

In terms of control variables, unlike Boyd et al. (2010) who do not find significance for new CMO position, we find that in CMO succession events, shareholders react differently to a newly created versus existing CMO position ($b = .006$, $p < 0.01$) such that shareholders react favorably to a newly created CMO position. The firm value for a CMO succession event actually is lower when the position title refers to a CMO rather than another title ($b = −.017$, $p < .01$), perhaps because of the high expectations that the CMO title creates (Nath & Mahajan, 2008). Unlike Boyd et al. (2010) who find a negative effect for customer power (measured as a presence of major customers), we find a statistically significant positive effect for customer power ($b = .005$, $p < .01$). Our findings support the arguments of several scholars, including Kalwani and Narayandas (1995) and several others (Kinney & Wempe, 2002; Kumar, 1996), who argue that long-term relationships with major customers can result in operational efficiencies that yield abnormally high returns. Our results are also in line with a recent accounting study based on 45,442 B2B relationships by Patatoukas (2011) who finds a positive association between customer concentration and accounting rates of return, suggesting that efficiencies accrue to suppliers with concentrated customer base. Whereas differences in sample size (88 in the case of Boyd et al., 2010 vs. 304 in our research), variables, and estimation approach (accounting for unobserved heterogeneity; see Table 1 for details) could explain the differences in the results across the two studies, the opposite effects for customer power presents a fertile avenue for future scholars to reconcile the differences. Further, as firm profitability (ROA) increases, the value created by a CMO succession decreases ($b = −.005$, $p < .01$) and shareholders seem to react more enthusiastically to a female successor relative to a male successor ($b = −.015$, $p < .01$). Finally, an industry insider is valued more than an outsider ($b = −.01$, $p < .01$).

[15] The correction terms provide an insight into the correlation between the errors across the first and second stage models. Intuitively, the correction term corrects for all the missing variables O. In the absence of the correction term, the modeled variable, X, represents the omitted variables O as well, i.e., the effect of X is the aggregation of both X and O. Consider, for example, *ORIGIN*. Firms may lack internal management talent and hence may hire an external CMO; thus *ORIGIN* may also mask the effects of ignoring the lack of managerial talent, biasing the estimates of *ORIGIN* downwards.

[16] The objective of presenting results from multiple models was to rule out the concern of multicollinearity and highlight the robustness of our results. In sum, results from alternate models provide justification for the proposed model and highlight the importance of accounting for both endogeneity and heterogeneity. Results from models that do not account for these issues or that do not include all the variables are misleading and hence we do not discuss the specific results from alternate models.

[17] For large sample (such as ours), the LR test statistic is approximately χ^2 distributed with degrees of freedom equal to the difference of the dimensions of the two models (Bloemer, Brijs, Vanhoof, & Swinnen, 2003; Holt & Macready, 1989; Lin and Dayton, 1997).

[18] Fit statistics such as the ones we use here are based on predictive performance of the model. However, as suggested by Ebbes et al. (2011), the uncorrected (OLS) model has the same underlying data generation mechanism and hence offers superior predictive ability. The correction terms from the first stage, which are imperfect instruments, increase the "noise" and hence the overall fit reduces in models that correct for endogeneity. Biased OLS estimates predict better than consistent parameters estimated through endogeneity correction (Ebbes et al., 2011). Indeed, if we were interested in making predictions, we would pick the model that does not correct for endogeneity. However, since we are interested in the theory, we pick the model that is corrected for endogeneity and then use the fit statistics to compare across models that correct for endogeneity.

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Table 6
Parameter estimates for the hypothesized model.

Predictors	Hypothesized effects	Model 1: full model	Model 2: main effects only	Model 3: no MBA	Model 4: no origin	Model 5: no experience	Model 6: no heterogeneity correction	Model 7: no endogeneity correction	Model 8: no heterogeneity & endogeneity correction
Main effects									
Education (*MBA*)	H1a (+)	.008[a]	.019[a]		.009[c]	.002[a]	−.005	.004[c]	.000
Origin (*ORG*)	H2a (+)	.010[a]	.004	.023[a]		−.001	.003	.007[a]	.001
Experience (*EXP*)		−.015[b]	.011[a]	−.008	.046		.022	.000	−.011
EXP × *EXP*		.005[a]		.002	−.009		−.003	.002	.006
Moderator main effects									
Firm age (*AGE*)		.003[a]	.000	.001	.001	.002	.000	.001[a]	.002
Size		−.004	−.014[b]	.000	−.039[c]	−.029[b]	.018	−.039[a]	.009
Industry dynamism (*DYN*)		.002	−.002[c]	.011	−.004	−.002	−.007	.000	−.006
Industry growth (*GWT*)		.000	.000[b]	.002[c]	.000	−.002	.001	−.001[c]	.000
Interactions terms									
MBA × AGE	H1b (−)	.006			.053	.111	.226	.179[a]	.071
MBA × Size	H1c (−)	−.004			.024	−.001	−.032	.005	−.034
MBA × DYN	H1d (+)	.013[a]			.010[b]	.002	.012	.021[a]	.010
MBA × GWT	H1e (+)	.138[b]			.183	.163	.279	.159[b]	.378
ORG × AGE	H2b (−)	−.288[a]		−.151		−.250[c]	−.180	−.080[c]	−.267
ORG × Size	H2c (+)	−.007		−.020		.023[c]	−.031	.020[a]	−.018
ORG × DYN	H2d (−)	−.718[a]		−1.193		−.388[b]	−.223	−1.275[a]	−.436
ORG × GWT	H2e (−)	.023		−.165		.228	−.017	.147[b]	.082
EXP × AGE	H3b (−)	.119[a]		.147	.235		.085	.066	−.150
EXP × Size	H3c (+)	.065[c]		.018	.073[b]		.027	.055[a]	.014
EXP × DYN	H3d (+)	−.007[a]		−.004	−.005		−.005	−.007[a]	−.005
EXP × GWT	H3e (+)	1.107[a]		1.357[c]	1.352		2.247	.395	2.237
Control variables									
Customer power		.005[b]	.002	−.006	.002	−.002	.006	.002	.004
Position		.006[a]	.001	−.005	.006	−.004	.001	.007[a]	.005
Title		−.017[a]	−.019[a]	−.017[b]	−.021[a]	−.029[a]	−.038[a]	−.020[a]	−.032[a]
Gender		−.015[a]	−.001	−.003	.000	.001	−.020[c]	−.001	−.020[b]
ROA		−.005[a]	−.007[a]	−.001	−.003[b]	−.004[a]	−.003	−.003[a]	−.002
Industry outsider		−.010[a]	−.014[a]	−.004	−.009[c]	−.012[a]	−.008	−.014[a]	−.009
Correction terms									
γ^{MBA}		−.034[a]	−.065[a]		−.006	−.027[b]	−.017		
γ^{ORIG}		−.037[a]	−.006	.001		−.018	−.023		
γ^{EXP}		−.003[c]	−.065[a]	−.011[b]	−.003		−.009		
Log likelihood		386.12	352.63	361.2931	362.60	359.9	289.85	435	349.7
AIC		−660.23	−619.27	−622.586	−625.21	−621.806	−491.72	−759.375	−617.4
MAD		0.016	0.017	0.023	0.022	0.023	0.039	0.011	0.041
LR-test statistic		NA	66.97[a]	49.65[a]	47.03[a]	52.43[a]	192.53[a]	NA	72.83[a]

Notes: γ^{MBA}, γ^{ORIG}, and γ^{EXP} are the correction terms from Eq. (8). The intercept term varies across the five segments ($b_1 = .02$, $p < .05$; $b_2 = .06$, $p < .01$; $b_3 = −.01$, ns; $b_4 = .13$, $p < .01$. $b_5 = .11$, $p < .10$). We include the year dummies in the model but suppress them in the discussion of the results, to conserve space. [a]Significant at .01; [b]significant at .05; and [c]significant at .1 (two tailed *t*-tests). LR-test statistic indicates the relative improvement in fit provided by the proposed model (model 1) as compared to the model in the corresponding column.

7. Discussion

Recognizing the importance of top managers, marketing literature is beginning to investigate the implications of marketing leadership (e.g., Boyd et al., 2010; Nath & Mahajan, 2011; Verhoef & Leeflang, 2009). We build on this emerging literature to focus on the impact of marketing leadership succession on firm value; specifically, we study the value created by CMO managerial capital variables, i.e., CMO's education, origin, and experience.

Data about 303 CMO succession events largely support our framework; specifically, CMOs' education positively influences firm value, whereas CMO experience has a nonlinear effect, such that there is a U-shaped relationship between CMO experience and firm value. This nonlinear effect suggests that prior marketing experience endows CMOs with tacit knowledge and strategic insights that enable them to enrich the organization with fresh ideas, perspectives, and routines (Giambatista et al., 2005).

As proposed, these effects of managerial capital variables vary with organizational and environmental factors. Firm age increases the value of CMO's experience and decreases the value of an external CMO, confirming our beliefs that the organizational inertia and routines prevent young CMOs and those without organizational knowledge (i.e., outsiders)

from implementing their innovative strategies. Similarly, as firm size increases, the value created by CMO experience increases as well.

As industry dynamism increases, the magnitude of the positive effect of a CMO's education also increases. However, contrary to our expectations, as industry dynamism increases, the value of CMO experience decreases, suggesting that the industry dynamism renders CMO experience less valuable as the accumulated wisdom may be rendered less useful in the face of new environmental changes. Similarly, as industry dynamism increases, an internal CMO is preferred over an external one, suggesting that investors value internal CMO's abilities to navigate organizational structures and processes to respond to environmental uncertainties. As industry growth increases, the magnitude of the positive effect of a CMO's education and experience on firm value also increases. Thus, the knowledge and resources that education and prior experience confer may be exploited better in industries that are relatively unstable and offer a multitude of growth opportunities relative to industries that are stable.

7.1. Implications

From a theoretical standpoint, we contribute to emerging literature on CMOs and extant literature on succession in the C-suite. In particular,

our research highlights the significance of CMO managerial capital perspective. Our findings highlight the importance of the person who occupies the CMO position. Extant research on CMOs has highlighted several contingencies that may influence their value; for example, Nath and Mahajan (2008) find no effect of the presence of CMOs, but they subsequently note that CMOs' influence is contingent on their power in the top management team (Nath & Mahajan, 2011). Boyd et al. (2010) find that CMOs' influence is contingent on the amount of discretion (as indicated by the lack of customer power) they have. We add to this stream of research (see Table 1 for a summary of extant research on the influence of CMO on firm value) by highlighting the importance of the individual who occupies the position, beyond the effect of firm-level variables. Our proposed managerial capital variable captures the characteristics of executives, and our managerial capital perspective thus offers a theoretical lens for studying the value of top executives in an organization.

We also add to empirical research on managerial succession, which has focused largely on CEOs (e.g., Giambatista et al., 2005; Kesner & Sebora, 1994), by demonstrating the relevance of CMO succession. For this broader succession literature stream, we highlight the importance of considering all members of the C-suite to obtain a holistic understanding of the executive succession phenomenon; our (managerial capital) perspective can capture this phenomenon effectively. By demonstrating the value of the top marketing executive in organizations, we also respond to calls in upper echelons literature to study individual members of the top management team (e.g., Carpenter, 2011). Our study demonstrates that a lot remains to be learned about the top management team, through investigations of its individual components.

Finally, our research adds to the body of literature that studies corporate-level marketing strategy issues (e.g., Verhoef & Leeflang, 2009). By highlighting the value of marketing at the top of the organization, we hope to make a stronger case for the "marketing enterprise" in the organization (Rust, Moorman, & Bhalla, 2010) and counter claims in popular and scientific press that marketing is losing ground (e.g., Webster, Malter, & Ganesan, 2005). Our results also underscore the need of further research in this domain. Future research must examine the sources of discrepancy between some of our results and those of other scholars. Specifically, the differences in the effects of customer power (or CMO power) on firm value deserve further investigation.[19] Nath and Mahajan (2011) find no effect of CMO power on firm value (measured as sales growth and return-on-sales), Boyd et al. (2010) find a negative effect of customer power on abnormal returns, and we find a positive effect for the same relationship. Empirical details aside, there may be other factors that could explain these differences, an area that we hope will receive attention from scholars. Scholars may also benefit from examining alternative performance outcomes (e.g., balance-sheet based measures) or other succession characteristics (e.g., frequency of turnovers, recency of the previous turnovers, and change in characteristics from previous CMO). Finally, one may also explore quadratic moderation effects of environmental variables (e.g., growth).

From a practice perspective, in addition to being statistically significant, our results are managerially pertinent. For example, hiring a CMO with a MBA (as opposed to one without an MBA) in a high growth industry[20] can boost abnormal returns from by more than four hundred times (i.e., from 0.05% to 2.16%). Hiring an external CMO, as opposed to an internal CMO, in a mature firm can reduce abnormal returns to −1.04% from .01%. Similarly, hiring an MBA in a dynamic industry can increase the abnormal returns by over 1000% to 2.5% from .18%. Thus,

firms must consider individual-specific factors before hiring a new CMO. Positive shareholder evaluations can facilitate the execution of firm strategies and enable the firm to realize its objectives. Similarly, CMOs should keep these factors in mind before making a decision to join a new firm. Our results provide insights into the ease with which CMOs may be able to execute their preferred strategies, as well as the evaluation standards that their shareholders are likely to apply.

7.2. Conclusion

As we continue to improve our understanding of the role of marketing within the firm, it is imperative to develop our understanding of the role of marketing leadership as well. With this research, we take several crucial steps to explore the implications of changes in the marketing leadership of a firm. We hope the importance of CMOs for firms and their role in establishing the marketing function spur further research into CMO-related issues.

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[19] Our operationalization of customer power (presence of dominant customers) is similar to the one used by Boyd et al. (2010); Nath and Mahajan (2011) use the label CMO power to refer to the amount of CMO's influence on TMT decisions.

[20] For assessing managerial implications, we define high industry growth as one standard deviation above the mean industry growth rates, mature firm as standard deviation above the mean firm age, and an experienced CMO as one with work experience one standard deviation above the mean of work experience in our sample.

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