



CFO emphasis on value-based management: Performance implications and the challenge of CFO succession

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ABSTRACT

Top management support is often proclaimed as a crucial factor for the successful use of value-based management (VBM). Moreover, recent research indicates that CFOs play a leading role in shaping management accounting and, particularly, VBM. Although this suggests that CFO emphasis has a positive impact on the successful use of VBM, empirical research that considers the differentiating elements of VBM adopters is scarce. Therefore, this study empirically investigates the performance implications of CFOs placing emphasis on VBM and the challenge of upholding VBM emphasis following CFO succession. To accomplish this, we focus on a longitudinal sample of VBM adopters and assess CFO emphasis on VBM based on his/her remarks made during company conference calls. Our analyses provide empirical evidence that CFO emphasis enhances the performance of VBM adopters. This phenomenon can, however, become a significant issue for organizations when new CFOs take up office, as our results show that successor CFOs, who were not in charge of the initial implementation, typically place less emphasis on VBM. Nevertheless, we find that the VBM emphasis of successor CFOs can be perpetuated by tying their compensation to VBM. In line with this, additional tests indicate a negative impact of successor CFOs on the effectiveness of VBM only when compensation is not tied to VBM.

1. Introduction

Proponents of value-based management (VBM) consistently stress that it helps to align organizational decision-making at all levels with the common goal of value creation (e.g., [Haspeslagh et al., 2001](#); [Rappaport, 1986](#); [Young and O'Byrne, 2000](#)). By means of a superordinate internal value-based metric (e.g., Economic Value Added [EVATM]) and the corresponding value drivers, VBM should enable managers at all levels of the organization to develop and operationalize value-creating strategies ([Ittner and Larcker, 2001](#); [Malmi and Ikäheimo, 2003](#)). However, several studies indicate that the way in which VBM fulfills this promise can vary greatly from one VBM adopter to another ([Claes, 2006](#); [Malmi and Ikäheimo, 2003](#); [McLaren et al., 2016](#)). VBM proponents, therefore, frequently highlight the support of top management as one of the most crucial factors for successful VBM implementation (e.g., [Ameels et al., 2003](#); [Haspeslagh et al., 2001](#); [Koller, 1994](#)). CFOs should even play a special role as they are considered to take the leading role in the adoption and configuration of VBM ([Burkert and Lueg, 2013](#)). While this suggests that CFO emphasis on VBM is crucial for the successful use of VBM, empirical evidence validating such claims is scarce.

VBM proponents further highlight that VBM implementation is not a “one-time thing”, but that it requires continued persistence with no

defined endpoint to manifest the notion of value creation ([Benson-Armer et al., 2004](#); [Haspeslagh et al., 2001](#)). CFOs therefore need to establish VBM within the organization and then preserve it in the everyday routines and decisions of the organization ([McLaren et al., 2016](#)). However, as most organizations “outlive” their temporary steersmen, they are challenged to find ways to sustain emphasis on VBM despite CFO turnover. This matter is particularly pressing for VBM users, where the majority of VBM-adopting CFOs have already left their adopting companies. Specifically, it is questionable whether successor CFOs will continue on the same track as their predecessors and place their emphasis on a practice that they did not implement. While this challenge of keeping a management accounting practice viable has not been a focal point of empirical research thus far, we believe that it warrants more attention given its potential significance. Based on this, we aim to shed more light on the following research questions: *Does CFO emphasis on VBM lead to superior firm performance among VBM adopters and how can it be perpetuated following CFO succession?*

To answer these questions, we need to assess the emphasis that CFOs place on VBM. Research on the CFO's role mostly relies on demographic variables such as age, tenure, and educational background to explain his/her inclination toward certain practices (e.g., [Burkert](#)

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and Lueg, 2013; Hiebl et al., 2017; Naranjo-Gil et al., 2009). Although these variables might be good indicators as to why certain practices are adopted or preferred by particular CFOs, they do not sufficiently explain whether these CFOs also emphasize the actual use of a particular practice. Hence, a more direct proxy could better capture CFO emphasis on a specific practice. Given this, we account for CFO emphasis on VBM by relying on the CFOs' remarks during regular earnings conference calls. We focus on conference calls mainly for two reasons. First, they provide a setting where management discusses the company's strategy and performance with invited analysts, and second, several researchers have documented the manager-specific styles reflected in these calls (Davis et al., 2015; Gow et al., 2016; Li et al., 2014).

We examine CFO emphasis on VBM in a sample of VBM-using companies, which we identify by discernible value-based metrics as their key financial performance indicators based on the companies' annual reports (Firk et al., 2016; Hogan and Lewis, 2005; Knauer et al., 2018; Lovata and Costigan, 2002; Rapp et al., 2011). Our final longitudinal sample of VBM adopters comprises 888–925 firm years of VBM adopters. We start our analysis by predicting that CFO emphasis on VBM induces successful use and, hence, leads to superior performance among VBM adopters. Our results validate the perception that CFO emphasis on VBM is associated with superior performance among VBM adopters. Subsequently, we analyze the challenge faced by organizations in upholding CFO emphasis on VBM. We first investigate a potential cause for the lack of CFO emphasis by analyzing whether successor CFOs, who were not originally in charge of the VBM adoption, place less emphasis on VBM. Indeed, our results document that successor CFOs place less emphasis on VBM. Second, we examine whether tying CFO compensation to VBM can counteract this phenomenon. We find support that VBM compensation increases CFO emphasis on VBM in the case of successor CFOs. In line with this, additional tests indicate a negative impact of successor CFOs on the effectiveness of VBM and a positive influence of VBM compensation in the case of successor CFOs.

We contribute to VBM and management accounting research in several ways. First, we confirm the overall importance of management support for the effectiveness of VBM by showing that CFO emphasis on VBM has a positive impact on firm performance for VBM adopters. Thereby, we contribute to the call for investigating the differences in the implementation and use of VBM that drive its subsequent success (e.g., Burkert and Lueg, 2013; Firk et al., 2018; Lueg and Schäffer, 2010; Malmi and Granlund, 2009; Malmi and Ikäheimo, 2003). Additionally, we shed more light on the role of compensation for the use of VBM. Our results indicate that successor CFOs who were not in office during VBM implementation place less emphasis on VBM. However, consistent integration of VBM within CFO compensation increases the emphasis that successor CFOs place on VBM, whereas the impact on VBM-adopting CFOs is insignificant. These findings might help to contextualize previous results that were unable to support the importance of compensation for the effectiveness of VBM use (e.g., Ryan and Trahan, 2007), because those studies focus on the burgeoning VBM period when most adopting CFOs were still in office.

Second, our study contributes to the literature by illustrating that organizations face a major challenge in upholding the effective use of a management accounting practice over time. While the initial adoption process of management accounting practices is frequently investigated (e.g., Al-Sayed and Dugdale, 2016; Malmi, 1999; Malmi and Ikäheimo, 2003; Shields, 1995; Woods et al., 2012), literature on the challenge of keeping management accounting practices viable over time is limited. Our results indicate that leader (i.e., CFO) successions can endanger the ongoing success of a management accounting practice. In addition, we also show that tying incentives to the management accounting practice may uphold its successful use despite succession events.

Third, we substantiate the recent findings on the significance of the CFO for management accounting practices (Naranjo-Gil et al., 2009) and VBM (Burkert and Lueg, 2013) by showing that his/her emphasis is a strong indicator of successful VBM implementation. In this context, we provide a way to assess CFO emphasis on VBM through conference calls.

This may enable further comprehensive empirical investigations on the significance of CFO emphasis on VBM and also on related topics of interest.

The remainder of this paper is structured as follows. In Section 2, before we present the arguments leading to our hypotheses, we provide a short literature overview focusing on the role of management support and the significance of the CFO in management accounting and VBM research. Subsequently, we detail our research design and explain how we measure CFO emphasis (Section 3). We present the results of our study in Section 4, followed by robustness and additional tests in Section 5, before we conclude with a discussion of our findings in Section 6.

2. Literature review and hypotheses development

2.1. The role of management support for management accounting practices

Management support could fulfill two important roles for the successful use of management accounting practices: (1) encourage institutionalization and (2) prevent deinstitutionalization of the practice over time. The relevance of managers for the institutionalization process is frequently echoed in management accounting research (Argyris and Kaplan, 1994; Brown et al., 2004; Burns and Scapens, 2000; Cooper et al., 1992; Shields, 1995). Specifically, managers set the rules for the new practices and are able to promote their use within the organization. In line with this, Cooper et al. (1992) observe that the most successful implementations among eight adopters of Activity-based Costing (ABC) occurred when the projects had a sponsor who was a member of the top management. McLaren et al. (2016) also points to management support as one of the factors driving the institutionalization of VBM in their case firms. Similarly, advocates of VBM argue that “it is vital for top management to understand and support the implementation of VBM” (Koller, 1994, p. 100). However, even institutionalized practices can be highly susceptible to dissipation and suffer from the process of deinstitutionalization (Becker, 2014; McLaren et al., 2016; Oliver, 1992). In this context, Oliver (1992) suggests that one of the main drivers of the deinstitutionalization of a formerly institutionalized practice are a lack of management support or a change of emphasis. The case study of McLaren et al. (2016) supports this view by indicating that absent management support encouraged one case firm to discard routines associated with their VBM system. Thus, managers who emphasize a management accounting practice in their everyday routines and decisions can support the continued success of the management accounting practice.

2.2. The significant role of CFOs for value-based management

Recent studies have narrowed the role of the top management team to the particular influence of the CFO on management accounting practices (e.g., Burkert and Lueg, 2013; Naranjo-Gil et al., 2009). Since the CFO typically oversees the firm's finance and accounting processes, it is argued that the CFO has the most direct influence on matters in these areas (e.g., Ge et al., 2011; Hoitash et al., 2016; Indjejikian and Matějka, 2009; Li et al., 2014; Mian, 2001; Naranjo-Gil et al., 2009). Therefore, CFOs should play a crucial role in both the implementation process of VBM and its continuous use. During the initial implementation, the CFO should have a major influence on setting the “rules of the game.” For example, one of the key elements of VBM is the implementation of an overarching value-based metric that makes value creation explicit (Dekker et al., 2012; Ittner and Larcker, 2001; Malmi and Ikäheimo, 2003; Morin and Jarrell, 2001). The CFO will most likely oversee the calculation of the chosen metric and also its subsequent integration into the financial reporting and information systems. However, as “value-based management is not a quick fix but a path requiring persistence and commitment” (Boulos et al., 2001), the CFO should also be responsible for upholding the continuous use of VBM. For example, the CFO has to continuously control how the value-based metric is broken down into the business segments to enable transparency of the company's overall value creation (e.g., Ameels et al., 2003; Stewart, 2009). In addition to that, VBM proponents stress the need to

continuously identify and configure a coherent set of value drivers beyond the adopted value-based metric (e.g., [Ittner and Larcker, 2001](#); [Malmi and Ikäheimo, 2003](#)), which is another element that has to be managed by the CFO. Finally, by overseeing regular performance reviews, the CFO is also able to instill and ensure the relevance of the adopted value-based metric within the organization. In line with these arguments, [Burkert and Lueg \(2013\)](#) provide empirical support for the significant role of CFOs for VBM.¹ Specifically, [Burkert and Lueg's \(2013\)](#) results indicate the substantial impact of the CFO on the sophisticated use of VBM, while CEOs only have a minor influence.

2.3. Performance implications of CFO emphasis on value-based management

Given the crucial role of CFOs for the use of VBM, the question arises as to whether CFO emphasis on VBM is a major lever for achieving VBM's promise of value creation. Although the majority of empirical studies analyzing the performance implications of VBM find a positive effect (e.g., [Firk et al., 2016](#); [Fiss and Zajac, 2006](#); [Ittner et al., 2003](#); [Rapp et al., 2011](#); [Ryan and Trahan, 2007](#)), recent research points out that the effect might be influenced by factors beyond the mere adoption of a value-based metric ([Lueg and Schäffer, 2010](#); [Malmi and Granlund, 2009](#); [Malmi and Ikäheimo, 2003](#)). For example, [Malmi and Ikäheimo \(2003\)](#) observe that VBM's effect on organizational decision-making processes differs considerably among its adopters, which leads them to propose that these differences could help to explain variations in the performance effect of VBM. We suggest that CFOs who emphasize VBM could induce its consistent use throughout their organizations, which should ultimately lead to superior performance compared to VBM-adopters with a CFO who is less focused on VBM.

Precisely, we suggest that CFO emphasis on VBM enhances the performance of VBM adopters in two major regards: (1) a CFO's individual actions in accordance with VBM principles and (2) a CFO's impact on the consistent use of VBM at lower organizational levels. First, a CFO who emphasizes VBM should make decisions in accordance with VBM principles, which should ultimately increase the organization's performance. A major channel through which a CFO affects organizational performance originates from his/her role as a financial steward. This role encompasses evaluations and recommendations on strategic decisions that should set the course for value creation, for example, portfolio adjustments, budget allocations, investments, mergers and acquisitions, or divestitures ([Hoitash et al., 2016](#)). A CFO who does place emphasis on VBM should evaluate the value-creation potential of such directional decisions with the help of the value-based metric and its underlying value drivers, thereby guiding top management toward making more value-based decisions.

Second, CFO emphasis is an important impetus for the consistent application of VBM throughout the organization. Proponents of VBM highlight the holistic nature of its management approach, which means that it is not only targeted at the strategic decisions of top management, but that it should also be embraced for operational decision-making in the lower levels of the organization ([Ameels et al., 2003](#); [Haspeslagh et al., 2001](#); [Ittner and Larcker, 2001](#); [Malmi and Ikäheimo, 2003](#)). In this context, CFO emphasis could play a key role in promoting the use of VBM by setting the “rules of the game.” Aside from overseeing the calculation of the value-based metric and the identification of value drivers for the company as a whole as well as any business segments, CFOs have to drive and uphold their connection to the company's planning, reporting, and review processes. A CFO who emphasizes value-based metrics by regularly showing, discussing, and requesting

¹ This importance of the CFO for VBM is also reflected in several research approaches that rely on the CFO and his/her department as the primary source of information on VBM (e.g., [Malmi and Ikäheimo, 2003](#); [Ryan and Trahan, 1999](#); [Stewart, 2009](#)).

their development, embeds and preserves VBM in the everyday routines and processes of the organization ([McLaren et al., 2016](#)). Thus, both at the point of initial implementation and consistently thereafter, the CFO represents an important factor for directing the attention and action of lower-level managers toward VBM (i.e., upholding VBM routines).

In conclusion, we expect that the CFO's emphasis on VBM will enhance the effectiveness of VBM, because it not only captures if he/she uses VBM to make decisions, but it also likely affects decision-making aligned with VBM throughout the organization. Therefore, we hypothesize:

H1. CFO emphasis on VBM leads to higher firm performance among VBM adopters.

2.4. The challenge of keeping a management accounting practice viable

[Oliver \(1992\)](#) suggests that institutionalized practices are less stable than predicted by institutional theory ([Meyer and Rowan, 1977](#); [Zucker, 1987](#)) but are highly susceptible to dissipation. Hence, even when the institutionalization of a new management accounting practice has taken place, it can suffer from deinstitutionalization ([McLaren et al., 2016](#)). The antecedents for the dissipation of routines could not only be explained by the poor performance of an institutionalized practice but also by social pressures ([Becker, 2014](#); [Oliver, 1992](#)). Such social pressures are typically inevitable over time as they are induced by disruptions in the historical continuity of routines, for example, in the case of leader successions, mergers and acquisitions, or employee turnover ([Oliver, 1992](#)). Hence, a gradual dissipation may progress, even though the organization intends to uphold the routines of a management accounting practice ([Oliver, 1992](#)). This instability of an institutionalized practice creates a major challenge for organizations that are aiming for long-term use of a management accounting practice. However, to obtain benefits from adopted management accounting practices, long-term use should be desirable, considering the costs involved in implementation efforts. Since managers' continuous emphasis on established routines is highlighted as a factor for strengthening the stability of an institutionalized practice ([Granlund, 2001](#); [McLaren et al., 2016](#)), the antecedents for losing or upholding a CFO's emphasis should also play a major role in VBM's continuous success.

2.4.1. Succession as a driver for losing CFO emphasis on value-based management

[Naranjo-Gil et al. \(2009\)](#) highlight that the willingness of the CFO is decisive for the adoption of a new management accounting practice. Hence, it is likely that CFOs will place emphasis on VBM in the early adoption phase. The CFO may, for example, be the management sponsor—or even the initiator—of the change. Even if another member of the management team or a dominant owner gives the initial impetus for the adoption of VBM, technically, the initial adoption will be in the hands of the CFO. Consequently, a failure in VBM adoption (and, thus, a waste of considerable resources)² will be associated with the CFO's efforts. Hence, it should be in the (career) interests of the adopting CFO to place a strong emphasis on VBM.³ However, the succession of a VBM-adopting CFO is inevitable over time and could, therefore, mark an important turning point for VBM adopters. [Oliver \(1992\)](#) suggests that leader succession creates historical discontinuities that may dissipate established routines. Hence, successor CFOs may not continue on the

² Implementation costs arise, for example, for the integration of the value-based metric into the enterprise resource planning system, the adaptation of remuneration systems, and the roll-out through company-wide communication and training initiatives.

³ As CFOs have certain styles that are relatively persistent over time ([Ge et al., 2011](#)), it is likely that a CFO who emphasizes VBM will stick to his/her style in the future. However, we cannot rule out that CFOs might change their emphasis over time.

same track as his/her predecessor who implemented VBM. This matter is even more pressing, as nowadays most VBM-implementing CFOs have already left or will soon leave the adopting companies.⁴

Executive research argues that successors are confronted with the pressure of proving the legitimacy of their appointments by leaving their “own mark” on the organization (Hambrick and Fukutomi, 1991; Ocasio, 1994; Ocasio and Kim, 1999; Quigley and Hambrick, 2012). For example, Quigley and Hambrick (2012) point out that “new leaders are under some pressure to demonstrate their efficacy and worthiness, and they typically cannot do this by simply maintaining the status quo” (Quigley and Hambrick, 2012, pp. 836–837). Geiger and North (2006) support this behavior in the case of CFOs by revealing the tendency of new CFOs to modify the pre-existing financial reporting. Baxter and Chua’s (2008) field study of new CFOs fosters this notion, as they highlight new CFOs’ efforts to initiate and implement significant new projects and new practices. This behavior and the pressure associated with the new role will likely induce successor CFOs to place a stronger emphasis on their own new projects and practices. Hence, although succeeding CFOs may not oppose VBM in general, their priorities for devoting their attention and energy may lie elsewhere. In conclusion, we expect that the emphasis on VBM is less likely for successor CFOs and hypothesize that:

H2. Successor CFOs of VBM adopters place less emphasis on VBM.

2.4.2. Compensation to uphold CFO emphasis on value-based management

Successor CFOs who reduce the emphasis placed on VBM could hamper the continuous and successful use of VBM. In particular, the reduced emphasis of CFOs could be an impetus for lower-level managers to discard VBM routines (McLaren et al., 2016). To counteract this tendency and to maintain the benefits of VBM, the organization needs to actively uphold the CFO’s emphasis on VBM despite turnover. To achieve this, an external impetus is required that channels the new CFO’s energy and attention toward VBM. One potential mechanism to stimulate successor CFOs to retain the emphasis on VBM is to establish the right incentives or rewards for doing so (e.g., Argyris and Kaplan, 1994).

Previous research frequently highlights that the implementation of management accounting practices could benefit from a linkage to compensation (Englund and Gerdin, 2008; Epstein and Manzoni, 1998; Kaplan and Norton, 2001; Shields, 1995). For example, Epstein and Manzoni (1998) emphasize the support of compensation systems for the consistent use of a balanced scorecard (BSC). In line with this, Englund and Gerdin (2008) point to multiple studies documenting the positive impact of compensation for implementing ABC. Proponents of VBM have argued in much the same way, as they consistently stress the importance of tying compensation to the development of the key value-based metrics (e.g., Ameels et al., 2003; Malmi and Ikäheimo, 2003; Morin and Jarrell, 2001; Young and O’Byrne, 2000). Nevertheless, empirical evidence supporting this role of compensation for VBM is rare (Blume, 2016). For example, while Ryan and Trahan (2007) find an overall positive performance effect of using value-based metrics, this effect is not enhanced when compensation is linked to value-based metrics. However, the study focuses on the burgeoning time of VBM, when most VBM-adopting CFOs were still in their positions. In contrast to the successor CFO, the VBM-adopting CFO is responsible for the success of VBM adoption and already has a strong personal incentive to place emphasis on VBM. Hence, while compensation may only incrementally enhance the adopting CFO’s emphasis and efforts on VBM, it may stimulate the successor CFO’s emphasis on VBM. A new CFO who aims to maximize his/her remuneration will consequently place more emphasis on VBM when compensation is tied to value-based metrics, even if he/she has not been familiar with VBM, has

⁴ We would expect a considerable number of VBM-implementing CFOs to have already left the adopting companies, as companies started to implement VBM in the early 1990s (Davies, 2000; Fiss and Zajac, 2004) with a peak of VBM diffusion in the mid-2000s (Firk et al., 2018).

been skeptical toward VBM, or has simply intended to focus on other topics.⁵ Hence, we expect that compensation could uphold the emphasis on VBM over CFO transitions and propose the following hypothesis:

H3. Tying compensation to VBM increases the likelihood that successor CFOs will place emphasis on VBM.

3. Research design

In this section we elaborate on the reasons behind our choices with regard to our sample selection (3.1), the data collection of key variables (3.2), especially in terms of CFO emphasis on VBM, and the methodological approaches employed to investigate our hypotheses (3.3).

3.1. Sample selection

In order to study CFO emphasis on a specific management accounting practice, we needed to resort to observations of firms that have implemented this particular management accounting practice. More precisely, only CFOs in firms using VBM have the choice to either place or refrain from placing an emphasis on VBM. As a result, this called for a two-step selection approach. (1) We needed to select a sample from which we identified VBM adopters. (2) We then needed to exclude observations of firms that refrain from adopting VBM to obtain our final sample of VBM adopters.

Given these arguments, we decided to start off with a sample that contained a critical mass of VBM adopters. Since previous research indicates relatively high VBM adoption rates in Europe (Bezemer et al., 2015; Firk et al., 2018, 2016; Fiss and Zajac, 2004), we opted for a European sample. Furthermore, it was important to choose an adequate timeframe for our analyses, considering that we wanted to analyze how CFO turnover impacts the emphasis on VBM. Hence, our sample needed to consist of both adopter CFOs and their successors. Early adopters of VBM in Europe, such as Cadbury Schweppes or Siemens, implemented VBM in the 1990s. However, previous studies have also found that a considerable number of VBM adoptions took place in the mid-2000s (Rapp et al., 2011). Based on these indications, we decided to concentrate on the timeframe between 2004 and 2014.

The starting point for our sample selection was the 500 largest non-financial firms based on the STOXX® Europe Total Market Index (TMI) in our starting year.⁶ Our starting sample, hence, comprised 4821 firm-year observations for which annual reports were available. In the first step, we went through all annual reports to identify VBM adopters. We followed the approach of previous research to define VBM adopters as companies that report a value-based metric as their key performance indicator (Firk et al., 2016; Knauer et al., 2018; Lovata and Costigan, 2002; Rapp et al., 2011).⁷ As a result, this left us with a potential sample of 1191 firm-year observations of VBM adopters. Finally, we only included firm-year observations that met the following criteria: (1) a conference call existed for the collection of information on CFO emphasis on VBM, (2) information on compensation allowed us to verify whether VBM is linked to CFO

⁵ In addition, including value-based metrics in the initial compensation contract could already direct the new CFO’s attention to VBM in the contract negotiations.

⁶ The STOXX® Europe TMI comprises 95% of the free-float market capitalization of Europe. The selection was based on the index constituents of the starting year to avoid survivorship bias. Companies may drop out of the sample due to a delisting or disappearance of the firm; however, no new firms were allowed to enter the sample after our starting year.

⁷ We considered value-based metrics as metrics that account for both profitability and the cost of capital. Typically, these metrics can be subsumed under the three most-used frameworks for value-based metrics: Discounted Cash Flow, Economic Value Added, or Cash Value Added. Both relative as well as absolute forms of value-based metrics were considered. Since the relative metrics (e.g., ROCE) do not necessarily consider the costs of capital directly, we additionally verified whether they were compared to the cost of capital within the annual report.

compensation or not, (3) information on CFO control variables were available, and (4) all financial and other relevant data for regression analyses were available. The resulting sample comprised 888–925 firm years. Table 1 summarizes the sample selection. Moreover, Table 2 contains descriptive statistics, indicating the distribution over industries, countries, years, and between adopter CFOs and successor CFOs.⁸

Similar to other studies that employ a two-step sample-selection approach, we were confronted with the potential problem of a sample-selection bias. To address this issue, we used the commonly applied sample-selection correction suggested by Heckman (1979) by including a correction factor derived from a first-stage probit regression (Cao et al., 2015; Chen and Hambrick, 2012; Dhaliwal et al., 2011; Nath and Mahajan, 2011; Shi et al., 2014). The probit regression was based on our initial sample and our selection criterion (VBM adopter) was used as a dependent variable.⁹ Finally, we derived the inverse Mills ratio from the probit regression and included the ratio as the correction factor in all our second-stage regressions.

3.2. Data collection

3.2.1. Firm performance—dependent variable

VBM proponents suggest that VBM allows for better control of internal value creation, which should be reflected in increases in shareholder value (Koller, 1994; Morin and Jarrell, 2001; Rappaport, 1986). Hence, to test whether CFO emphasis on VBM helps to fulfill VBM's promise of superior value creation, we used both an operating and a market measure of firm performance as our dependent variable. Specifically, we selected *return on assets*¹⁰ as a commonly applied measure for operating performance (Firk et al., 2018; Isakov and Weiskopf, 2013; Thomsen and Pedersen, 2000) and *Tobin's Q*¹¹ as a common proxy for market performance (Gompers et al., 2010; Isakov and Weiskopf, 2013; Wintoki et al., 2012).

3.2.2. CFO emphasis on VBM—dependent and independent variables

CFO emphasis on VBM should capture if (how much) a CFO stresses the use of VBM.¹² Unfortunately, a measure of CFO emphasis on VBM

⁸ As most of our observations relate to Germany and the United Kingdom, we conducted additional analyses (untabulated) that included dummy variables for these countries. As these analyses yielded quantitatively and qualitatively similar results, we are confident that our results are not driven by the dominance of firms from Germany and the United Kingdom.

⁹ In the first-stage regression, we included all variables of the second stage that were available for our initial sample plus one exclusion criterion. As an exclusion criterion, we used capital intensity, as this is a major driver for VBM use (Dekker et al., 2012; Firk et al., 2018, 2016). However, we expected and tested that capital intensity did not impact a CFO's emphasis on VBM. We also verified our results by using an alternative exclusion criterion (i.e., having above median sales [size] before our starting year [i.e., 2003]), which also supported our upcoming results.

¹⁰ Some VBM studies use a value-based metric as the dependent variable to capture internal value creation (e.g., Balachandran, 2006; Ryan and Trahan, 2007). However, as a value-based metric considers the firm's cost of capital, the metric is affected by the perceptions of the capital market. Hence, to better distinguish internal performance from market performance, we decided on return on assets as an internal performance measure. Nevertheless, when using a firm's value spread (i.e., residual income scaled by total assets) as an alternative measure, we yielded similar results.

¹¹ In untabulated tests, we also ran analyses with an excess return (i.e., difference between a firm's total shareholder return and the return from a benchmark portfolio). We calculated this excess return based on firm-specific benchmark portfolios that were created via a propensity score matching. The results of these tests were similar to the upcoming analyses.

¹² Here, it is notable that we derived two variables of CFO emphasis on VBM. The first variable is binary and captures if a CFO puts emphasis on VBM, whereas the second variable captures how much emphasis a CFO puts on VBM. We decided to use the binary variable for our main analyses because a substantial number of CFOs place no emphasis on VBM; thus, we believe that a binary variable better captures differences between the emphases on VBM among CFOs. Nevertheless, we conducted a robustness analysis with the

Table 1
Sample Selection.

Sample Selection	
Firm-years of the 500 largest non-financial firms of the Europe STOXX TMI with annual reports (2004–2014)	4821
- firm-years without VBM	3630
- missing conference call transcripts	148
- insufficient information on CFO compensation	54
- insufficient CFO information	23
- firm-years with missing control or performance data	78–41
Final Sample	888–925

Table 2
Distribution over industries, countries, years and CFOs.

Panel A: Industry distribution			
Fama & French 5 industries	Obs.		Obs. %
Manufacturing	341		38%
Consumer	235		26%
Healthcare	72		8%
Hi-Tech	64		7%
Other	176		20%
Total	888		100%
Panel B: Country distribution			
Country distribution	Obs.		Obs. %
Germany	297		33%
United Kingdom	163		18%
Sweden	80		9%
Switzerland	70		8%
Netherlands	67		8%
Austria	43		5%
France	41		5%
Italy	36		4%
Denmark	26		3%
Finland	24		3%
Norway	23		3%
Belgium	8		1%
Greece	6		1%
Ireland	4		0%
Total	888		100%
Panel C: Sample distribution by year and adopter or successor CFO			
Year	Obs.	Adopter CFOs	Successor CFOs
2004	39	59%	41%
2005	58	50%	50%
2006	69	49%	51%
2007	78	42%	58%
2008	87	37%	63%
2009	95	32%	68%
2010	99	31%	69%
2011	103	30%	70%
2012	100	29%	71%
2013	87	22%	78%
2014	73	19%	81%
Total	888	34%	66%

from previous research is not available. In a recent study, Chadwick et al. (2015) developed a survey measure of CEO emphasis on strategic human resource management. However, a survey approach did not seem feasible in our context given the longitudinal nature of our analysis in combination with the number of individuals and career transitions as well as their positions in the organizations. Nevertheless, Chadwick et al. (2015)

(footnote continued)

alternative measure that distinguishes the extent of CFO emphasis on VBM.

highlight that a manager's emphasis can be decoded from his/her actions or utterances. In particular, we followed the idea to derive information on a manager's emphasis from his/her public presentations. To do so, it was important to find a credible source of information that (1) contained verbal or written CFO statements in a relatively unbound setting, (2) presumably may contain information on VBM, and (3) was publicly available over a long period of time. Similar to a growing number of studies (Davis et al., 2015; Gow et al., 2016; Larcker and Zakolyukina, 2012; Lee, 2016; Matsumoto et al., 2011), we deemed conference calls to be an adequate source because they address all three aspects: (1) most publicly traded companies host conference calls quarterly or half yearly during which managers elaborate on the strategy and performance of the firm (Kimbrough, 2005; Li et al., 2014). Moreover, several studies highlight the unstructured and unregulated nature of conference calls that provide manager-specific information (Davis et al., 2015; Gow et al., 2016; Larcker and Zakolyukina, 2012). Finally, the CFO is virtually always present, and according to Li et al. (2014), their results “also reveal the relatively significant role played by the CFO” (Li et al., 2014, p. 101). (2) It is plausible that a conference call will contain information on VBM, considering that these calls focus on the company's performance and strategy. As such, conference calls are a means of capital market communication via the analysts, who should have a prime interest in the company's value-creation efforts. (3) Transcripts of these calls are publicly available for listed companies (e.g., through Thomson Reuters Street Events) and the CFOs' contributions are clearly identified within the transcripts.

To decode the emphasis on VBM from the CFOs' presentations within the conference calls, we focused on the implemented value-based metric, which is highlighted as a cornerstone of VBM by its proponents (Ameels et al., 2003; Ittner and Larcker, 2001). We believe that the emphasis on the value-based metric within these calls provides an applicable assessment of CFO emphasis on VBM. We expected that if a company has implemented VBM and the CFO stresses the use of VBM within the firm, the CFO will most likely talk about the development of the value-based metric in a conference call given its importance for the firm's value creation and value-based strategy. In contrast, if the CFO puts no emphasis on the use of VBM, it is likely that the CFO will refrain from talking about the value-based metric. In particular, we expected that a CFO who does not place emphasis on VBM will refrain from addressing the value-based metric in order not to lead analysts to a topic where he/she has little to say. Nevertheless, it may be that the CFO will refrain from talking about VBM due to unfavorable results, which could potentially confound our measure. However, if the CFO has consistently expressed his/her emphasis on VBM by discussing the value-based metric within the conference calls, ignoring the matter in poor periods would only raise the analysts' suspicions and lead to further inquiries. Hence, an active confession in combination with an emphasis on countermeasures and long-term trends would seem a more likely reaction. Nevertheless, we attempted to account for this issue through the choice of our statistical models and control variables.

The decoding of CFO emphasis on VBM was done manually by three independent coders. To attest to CFO emphasis on VBM, we set distinct rules *ex ante* that required a discussion of the value-based metric as identified from the company's annual report of the corresponding year within the CFO's presentation part of the conference call. We did allow for the exact phrasing of the value-based metric to deviate to some extent from the original wording used in the annual report to account for abbreviations or other permutations of the name. However, it needed to be absolutely clear that it referred to the same value-based metric. We focused on the CFO's part within the opening presentation of the call because its content and foci are most likely determined by the CFO him-/herself and should, thus, best reflect his/her emphasis.¹³ The CFO's fielding of the analysts'

¹³ Although the conference calls are prepared and partly scripted well in advance by a whole team of people, we still believe that the CFO determines what is being said/stressed. For a more detailed overview of the timeline and process of a conference call, please see Li et al. (2014).

questions could, however, be influenced by the type and framing of the questions.¹⁴ Finally, the decoding by the three independent coders was highly congruent and resulted in a binary measure of *CFO emphasis on VBM*, which takes on the value of one if the CFO discussed the specific value-based metric within a conference call and zero otherwise. An overview of examples of CFO emphasis on VBM is provided in Appendix A. Moreover, the coders also counted the number of text passages where the CFO stressed the value-based metric. Based on this, we derived an alternative count measure that is used within our robustness analyses.

To indicate the validity of our measure of CFO emphasis on VBM, we aimed to address two questions that can arise in measures capturing manager behavior or characteristics: (1) whether the measure is relatively persistent for a specific manager, and (2) whether manager-specific or firm-specific tendencies are reflected (Chatterjee and Hambrick, 2007). First, Ge et al. (2011) highlight that CFOs have a certain style and assume that this style may be relatively consistent over time. Hence, although the emphasis on VBM might change, it should be relatively persistent over time. To examine this, we calculated the average likelihood of CFO emphasis on VBM for all upcoming years after a certain CFO had placed emphasis on VBM in a particular year. Table 3 shows that in 70% of all upcoming years, CFOs placed emphasis on VBM if they had placed emphasis on it previously. These results support the expectation of a relatively persistent CFO emphasis on VBM. Second, we aimed to evaluate whether the persistence of CFO emphasis is driven by CFO-specific tendencies or firm-specific tendencies. Although firm characteristics could impact CFO emphasis on VBM (e.g., VBM compensation), we would expect differences between the emphasis on VBM of different CFOs within a singular firm. Therefore, we compared the likelihood that a CFO who emphasizes VBM in a particular year will also place an emphasis on VBM over the next two years with the likelihood that a different CFO will emphasize VBM in a firm where his/her predecessor had placed an emphasis on VBM. Table 3 shows that 76% of CFOs emphasized VBM if they had done so in the previous year, whereas only 59% of successor CFOs did so if their predecessor had placed an emphasis on VBM. This difference is even higher when we look at the second year, where only 49% of successor CFOs emphasized VBM compared to 70% in the case of remaining CFOs. Hence, this pattern substantiates that the measure of CFO emphasis is somewhat related to CFO-specific tendencies. In conclusion, both univariate tests support the validity of our hand-collected measure of CFO emphasis on VBM.

3.2.3. Successor CFO—*independent variable*

To differentiate the VBM-adopting CFO from a successor CFO, we examined whether the CFO had held his/her position during the initial adoption of VBM. Information on the CFOs' length of time in their roles was obtained from BoardEx and was supplemented by hand-collection where needed. To determine the year of VBM adoption, we followed previous research and analyzed the annual reports of each VBM adopter for either a direct mention of the starting year of implementation, or, if this was not available, we went back in time until VBM was mentioned for the first time in an annual report (Balachandran, 2006; Rapp et al., 2011). Finally, we coded CFOs as successor CFOs if he/she was appointed after the adoption of VBM, and as adopter CFOs if the CFO was in office during the VBM implementation. Hence, the variable *successor CFO* took the value of one if the CFO was not in office during the initial VBM adoption and zero otherwise.

3.2.4. VBM compensation—*independent variable*

To analyze a potential driver for CFO emphasis on VBM in situations where the CFO has not been responsible for the initial adoption of VBM

¹⁴ We also cut out the CFO's Q&A text and coded CFO emphasis on VBM within this part of the conference call. An alternative measure of CFO emphasis based on both the CFO's presentation and answers in the Q&A led to similar results.

Table 3
CFO emphasis measure—Validity checks.

Persistence of CFO emphasis on VBM after a CFO placed emphasis on VBM in $t = 0$	
Likelihood of CFO emphasis on VBM in all years after $t = 0$	70.10%
Likelihood that the same CFO places again emphasis on VBM in $t = 1$	76.12%
Likelihood that the same CFO places again emphasis on VBM in $t = 2$	70.59%
Likelihood that a different CFO of the same firm places again emphasis on VBM in $t = 1$	59.25%
Likelihood that a different CFO of the same firm places again emphasis on VBM in $t = 2$	49.30%

(*successor CFOs*), we investigated the role of compensation. To identify whether CFO compensation is linked to VBM, we searched through the company's annual report and examined whether the adopted value-based metric was included in the CFO's compensation plan. As our sample was restricted to VBM adopters, we expected that firms were likely to disclose the link with compensation as this may support their intention to focus on value creation. In line with this, several companies explicitly highlight that the value-based metric is linked to executive and senior management compensation when presenting their VBM system. In all other cases, we searched for information on the performance criteria that determine the variable compensation for CFOs.¹⁵ Based on the performance criteria, we coded the variable *VBM compensation*, which took the value of one if the criteria included the adopted value-based metric and zero if the criteria did not include the adopted value-based metric. In a few cases, we could not clearly identify the performance criteria. For example, sometimes a firm did not disclose any information on compensation in a certain year or just referred to a generic term, such as, for example, financial indicators. In these cases, we could not clearly assert if the value-based metric was linked with compensation or not; hence, we decided to exclude these firm years from our analyses. Given the rather small number of excluded firm years (see Table 1), we expect that this approach did not bias our analyses.

3.3. Control variables

We included a broad set of control variables on different levels to control for other effects that may confound our empirical results. At the firm level, we included control variables for potential extraordinary situations in which the CFO may focus on topics other than VBM. In detail, we controlled for the firm's *leverage*, as high leverage may cause liquidity problems, *cash volatility*, as the perceived uncertainty could prevent CFOs from expressing their emphasis, and the firm's *sales growth*, as high growth rates or declines may shift the focus away from VBM. Additionally, we included firm *size* to control for differences in the resource availability of firms. Moreover, we included the firm's *return on assets* within our regression analyses to account for CFOs being potentially more inclined to stress VBM in years of good performance. We also accounted for the time since the initial adoption of VBM (*time since VBM adoption*) given our focus on VBM adopters. In addition, we included a dummy variable (*adoption year*), indicating if a certain year was the initial adoption year of VBM. As CFO emphasis is decoded from conference calls, we further included a control variable measuring the length of the presentation section of a conference call (*length of call*). Furthermore, CFO emphasis on VBM may also be influenced by the company's respective ownership structure, which may result in varying degrees of pressure exerted on management to stress VBM. Hence, we

¹⁵ Some firms did not disclose the individual CFO compensation but did disclose the compensation system for the executive team, committee, or senior management that included the CFO.

controlled for active *institutional ownership*, which may result in increased pressure for value creation, and *ownership concentration* to capture power differentials between managers and owners.

On the level of the individual, we also needed to control for personal CFO characteristics that may impact our results. Therefore, we included *CFO age*, *CFO tenure* (years the CFO has held his/her role), and *CFO education* (in business), which are commonly used in studies examining the role of the CFO in VBM or management accounting in general (Burkert and Lueg, 2013; Hiebl et al., 2017; Naranjo-Gil et al., 2009). Moreover, we included control variables capturing the reasons why the adopting CFO had left the company. We included a variable capturing whether the adopter CFO was forced to leave the company (*predecessor forced*), because the negative perception of a predecessor could underpin the legitimacy of the successor CFO's appointment. Moreover, we captured whether the adopter CFO had been promoted to CEO or chairman (*predecessor promoted*), as this could prevent a successor CFO from not emphasizing VBM. For a similar reason, we included a control variable that captured the CEO's emphasis on VBM (*CEO emphasis on VBM*).

External factors are another source that could impact a CFO's preferences toward VBM. For example, the legitimacy of VBM in the institutional context may play a vital role (Firk et al., 2018; Messner et al., 2008; Sanders and Tuschke, 2007). To account for this influence, we calculated the diffusion rate of VBM within the firms' industries and the countries' shareholder value orientation. To account for *VBM industry diffusion*, we calculated the average percentage of VBM adopters within the same industry based on our initial sample. Similarly, the national shareholder value orientation (*national SVO*) was calculated as the average percentage of firms within a country who specifically express their espousal of the objective of shareholder value creation within their annual reports (Bezemer et al., 2015; Firk et al., 2018; Fiss and Zajac, 2004). CFOs in industries or countries with high diffusion rates may be more inclined to emphasize VBM.

Finally, we accounted for yearly fixed effects to control for the potential effects of external shocks by including a dummy for each year of observation and for differences on the industry level by including a set of five Fama and French industry dummies. As mentioned in the sample-selection section, we also included the *inverse Mills ratio* to control for potential selection biases in all our regressions.

3.4. Methodology

In order to examine both the performance implications of CFO emphasis on VBM and the challenges in upholding this emphasis, we needed to address different challenges in our regression analyses. In the following, we elaborate on our reasoning behind our chosen regression methods.

3.4.1. Hypothesis 1—performance implications of CFO emphasis on VBM

The examination of the performance implications of CFO emphasis caused several empirical challenges. First, the unbalanced structure of our panel dataset of VBM adopters required the use of dynamic panel-data techniques. Second, the effect of CFO emphasis on firm performance may be constrained by reverse causality. VBM aims to increase company value; therefore, CFO emphasis on VBM may be more likely in situations of good firm performance. Hence, we decided to run generalized methods of moments (GMM) regressions for the following reasons: first, GMM addresses reverse causality through instrument variable estimations by retrieving instruments from the lagged values within the panel itself, thus eliminating the need for external instruments (e.g., Roodman, 2009; Wintoki et al., 2012). Second, while retrieving instruments from the history of the panel, it allows all observations to be kept in unbalanced panels such as ours (Roodman, 2009). Third, GMM allows for the inclusion of the lagged dependent variable, whereas for other regression methods, this can cause a correlation bias (e.g., Girod and Whittington, 2016; Hillier et al., 2011).

Based on these advantages, recent research has highlighted GMM regressions as an ideal choice for tackling reverse causality and unbalanced panel datasets (e.g., Falk, 2007; Fremeth and Shaver, 2014; Wintoki et al., 2012).

In our analyses, we used the robust two-step GMM estimator, instead of the first difference or one-step estimator, as the one-step estimator could be constrained by weak instruments when variables vary little over time, which is the case for CFO emphasis (Arellano and Bover, 1995; Blundell and Bond, 1998). Specifically, we estimate the following GMM regression to test Hypothesis 1:

$$\text{Firm performance}_{t+1} = \alpha + \beta(\text{CFO emphasis on VBM})_{it} + \gamma(\text{CONTROLS})_{it} + Y_t + I_i + \eta_i + \varepsilon_{it} \quad (1)$$

The items beside the dependent (*firm performance*_{t+1}), independent (*CFO emphasis on VBM*)_{it}, and control variables (*CONTROLS*)_{it} comprise year dummies (*Y*_t), industry dummies (*I*_i), the constant term (α), the firm-specific effects (η_i), and the error term (ε_{it}).

3.4.2. Hypotheses 2 and 3—the challenge of CFO succession for emphasis on VBM

In order to investigate the drivers of CFO emphasis on VBM, we had to account for the binary scale of our dependent variable. Additionally, the panel structure of our data allowed us to control for unobserved heterogeneity in our empirical analysis. Based on this, we decided to run a general estimating equations (GEE) regression model with a logit link function and a conditional (firm fixed effects) logit model.

We used the GEE method as it accounts for both within and between firm variance to calculate robust estimates, while allowing us to apply a logit link function, considering the binary nature of our dependent variable (Ballinger, 2004; Liang and Zeger, 1986). Moreover, as our independent variable *successor CFO* varied little over time, a pure within estimation may not have sufficiently captured the impact of successor CFOs on CFO emphasis on VBM. For a similar reason, previous research on the effect of executive succession has opted to use the GEE method (Chen and Hambrick, 2012; Quigley and Hambrick, 2012).¹⁶ However, to complement our investigation with an analyses on the individual firm level, we also estimated a conditional (firm fixed effects) logit model. The conditional logit model estimates the impact of within-firm changes on the dependent variable; hence, how the change from a VBM-adopting CFO to his/her successor affects CFO emphasis on VBM. However, as the conditional logit model only considers within-firm differences, firms without any change in the dependent variable were dropped from the sample. In conclusion, we expected that the estimation of both a GEE logit and a conditional logit regression would allow us to test our hypotheses more comprehensively. Specifically, we tested the following model to analyze our second hypothesis:

$$\text{CFO emphasis on VBM}_i = [\alpha] + \beta(\text{successor CFO})_{it} + \gamma(\text{CONTROLS})_{it} + Y_t + [I_i] + [\eta_i] + \varepsilon_{it} \quad (2)$$

While the conditional logit model excludes time invariant variables such as industry effects [*I*_i] or the constant [α], the firm-specific effects [η_i] are only relevant for the conditional logit model. To test our third hypothesis, we included an interaction term between our variables for *successor CFO* and *VBM compensation*, expecting a positive effect of the interaction term. Moreover, we included the VBM compensation variable in the regression model. Hence, Hypothesis 3 is tested by running the following model:

$$\begin{aligned} \text{CFO emphasis on VBM}_i &= [\alpha] + \beta_1(\text{successor CFO})_{it} \\ &+ \beta_2(\text{VBM compensation})_{it} \\ &+ \beta_3(\text{successor CFO} * \text{VBM compensation})_{it} \\ &+ \gamma(\text{CONTROLS})_{it} + Y_t + [I_i] + [\eta_i] + \varepsilon_{it} \end{aligned} \quad (3)$$

4. Results

4.1. Descriptive results

Table 4 shows the means, standard deviations, as well as the values for the first and third quartile of all our regression variables. We further display these values for the full sample as well as for the subsamples of adopter CFOs and successor CFOs. The results of this univariate analysis provide the first signs of the limited emphasis of successor CFOs on VBM by indicating a considerably lower average CFO emphasis when compared to the full sample.

The pairwise correlations of our regression variables are presented in Table 5. The matrix exhibits a positive relationship between *CFO emphasis* and our variables of firm performance (*return on assets* and *Tobin's Q*). Additionally, a negative/positive relationship between *CFO emphasis* and *successor CFO* and *CFO emphasis* and *VBM compensation*, respectively, can also be observed.¹⁷

4.2. Results of hypotheses testing

4.2.1. Hypothesis 1—performance implications of CFO emphasis on VBM

Our first hypothesis suggests that CFO emphasis leads to a successful implementation of VBM and, hence, increases its efficacy; that is, it enhances firm performance. To test this relationship, we ran GMM regressions with *return on assets* and *Tobin's Q* as dependent variables and *CFO emphasis on VBM* as the independent variable. The results from the GMM regressions (Model 1.1 and Model 1.2) are presented in Table 6. We observed a positive and significant coefficient for *CFO emphasis on VBM* on the dependent variable for *return on assets* in Model 1.1 and also a positive and slightly significant coefficient for *CFO emphasis on VBM* on *Tobin's Q*. Hence, our results indicate that CFO emphasis on VBM enhances the performance of VBM adopters, thus supporting our first hypothesis.

4.2.2. Hypothesis 2—successor CFOs of VBM adopters are less likely to emphasize VBM

Our second hypothesis posits that successor CFOs who were not in charge of the implementation of VBM place less emphasis on VBM. To test this relationship, we investigated GEE logit regressions (Model 2.1) and conditional logit regression (Model 2.4). Table 7 displays the results of our analyses. We find a significant coefficient with the anticipated negative sign of our independent variable *successor CFO* in both the GEE logit estimation (Model 2.1) and the within-firm analysis operationalized by a conditional logit regression (Model 2.4). The interpretation of this analysis suggests that successor CFOs who were not in office during the adoption of VBM are less likely to emphasize VBM. Therefore, the results support our second hypothesis.

4.2.3. Hypothesis 3—the impact of compensation on successor CFO emphasis on VBM

Finally, we propose in our third hypothesis that, in the case of

¹⁶ We specified a GEE with a logit link function of the binomial family. To account for within-firm correlation, we employed the autoregressive within-group correlation of the first order (ar1) with standard errors cluster at the firm-level.

¹⁷ The relatively high correlations between the variables *VBM industry diffusion*, *national SVO*, and the *inverse Mills ratio* stem from the relatively strong effect of these variables on VBM adoption. Hence, if we exclude the inverse Mills ratio, these variables also exhibit a positive and significant impact on CFO emphasis on VBM.

Table 4
Descriptive statistics.

Variables	Full sample				Adopter CFOs				Successor CFOs			
	mean	std.	Q1	Q3	mean	std.	Q1	Q3	mean	std.	Q1	Q3
Return on assets _{t+1} ^a	5.86	6.43	3.00	8.57	6.38	5.72	3.63	8.86	5.60	6.76	2.38	7.85
Tobin's Q _{t+1} ^a	1.54	0.98	1.07	1.61	1.55	0.63	1.08	1.79	1.53	1.11	1.03	1.55
CFO emphasis on VBM	0.37	0.48	0.00	1.00	0.46	0.50	0.00	1.00	0.32	0.47	0.00	1.00
CFO emphasis on VBM (count) ^a	0.93	1.41	0.00	2.00	1.11	1.43	0.00	3.00	0.83	1.39	0.00	1.00
Successor CFO	0.66	0.48	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00
VBM compensation	0.52	0.50	0.00	1.00	0.50	0.50	0.00	1.00	0.53	0.50	0.00	1.00
CEO emphasis on VBM	0.32	0.46	0.00	1.00	0.34	0.48	0.00	1.00	0.30	0.46	0.00	1.00
Adoption year	0.04	0.19	0.00	0.00	0.11	0.32	0.00	0.00	0.00	0.00	0.00	0.00
Time since implementation ^b	6.76	4.22	3.00	10.00	4.05	3.25	1.00	6.00	8.17	3.97	5.00	11.00
predecessor forced	0.03	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.19	0.00	0.00
predecessor promoted	0.14	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.41	0.00	0.00
CFO age ^b	50.04	6.13	46.00	54.00	50.04	6.89	45.00	55.00	50.00	5.70	46.00	54.00
CFO tenure	4.30	3.64	1.70	6.00	6.69	4.37	3.10	9.10	3.10	2.40	1.00	4.20
CFO education	0.91	0.28	1.00	1.00	0.89	0.31	1.00	1.00	0.92	0.26	1.00	1.00
National SVO	0.79	0.16	0.70	0.90	0.77	0.16	0.67	0.89	0.79	0.16	0.71	0.90
VBM industry diffusion	0.24	0.09	0.18	0.31	0.23	0.09	0.17	0.31	0.25	0.08	0.19	0.31
Institutional ownership	0.22	0.16	0.09	0.33	0.24	0.18	0.10	0.35	0.20	0.15	0.09	0.31
Ownership concentration	0.36	0.20	0.21	0.48	0.36	0.20	0.21	0.46	0.36	0.20	0.21	0.49
Size	16.19	1.24	15.34	17.08	16.02	1.27	15.14	16.87	16.28	1.22	15.46	17.13
Leverage ^a	0.26	0.12	0.18	0.34	0.25	0.12	0.17	0.34	0.27	0.12	0.19	0.34
Growth ^a	0.13	0.29	-0.04	0.27	0.21	0.29	0.03	0.34	0.09	0.28	-0.06	0.22
Return on assets ^a	6.03	6.52	3.00	8.57	6.82	5.43	3.86	9.07	5.62	6.99	2.32	7.99
Cash volatility ^a	0.03	0.03	0.01	0.03	0.02	0.02	0.01	0.03	0.03	0.03	0.01	0.03
Length of call	8.41	0.60	8.18	8.77	8.40	0.57	8.15	8.74	8.41	0.61	8.19	8.78
N			888				305				583	

^a Winsorized at 1st and 99th percentiles.

^b Displayed as full years, but used as natural logarithm in the regression models to limit multicollinearity.

successor CFOs who are appointed after the adoption of VBM, CFO emphasis on VBM is more likely if their compensation is tied to VBM. Therefore, we ran GEE logit and conditional logit regressions to examine the effect of the interaction term between *VBM compensation* and *successor CFO* (Model 2.3 and Model 2.6). We also investigated the role of VBM compensation without adding the interaction term between *VBM compensation* and *successor CFO* (Model 2.2 and Model 2.5). The results are presented in Table 7.¹⁸ In Model 2.2 and Model 2.5, we observed a significant and positive effect of VBM compensation as well as a negative and significant effect of successor CFOs on CFO emphasis on VBM. When we added an interaction term between *VBM compensation* and *successor CFO* (Model 2.3 and Model 2.6), we no longer find a significant direct effect for VBM compensation;¹⁹ however, the interaction term between *VBM compensation* and *successor CFO* exhibited the anticipated positive and significant coefficient in the GEE logit and the conditional logit regressions. In conclusion, our results support the prediction of our third hypothesis that compensation can perpetuate the emphasis on VBM by successor CFOs.

5. Robustness and additional tests

To validate the results of our preceding analyses, we conducted several robustness and additional tests. First, we verified the reliability of our binary measure of CFO emphasis on VBM by using an alternative count measure for CFO emphasis on VBM. Second, we tested the

¹⁸ We also tested the impact of VBM compensation separately only for adopter CFOs and successor CFOs. In line with our results on the full sample, we observed a positive and significant effect of VBM compensation in the subsample of successor CFOs and an insignificant impact of VBM compensation in the case of VBM adopters.

¹⁹ Due to the inclusion of an interaction term of the dummy variables *successor CFO* and *VBM compensation*, the direct effect of VBM compensation in Model 2.3 and Model 2.5 can be interpreted as the impact of VBM compensation in the case of adopter CFOs.

challenge of CFO succession in more detail by verifying if our results remain stable when we only focus on VBM adopters where the adopting CFO has emphasized VBM. Third, we directly tested the impact of CFO succession and VBM compensation on the performance of VBM adopters. Finally, we also investigated the relationship between VBM adopters and firm performance while considering CFO emphasis as a VBM success factor.²⁰

5.1. Robustness test—alternative measure of CFO emphasis on VBM

As our binary measure of CFO emphasis could suffer from not accounting for the level of emphasis a CFO places on VBM, we derived an alternative measure where we counted the number of text passages in which a CFO stresses the value-based metric in a conference call. We used this alternative count measure to rerun the analyses regarding all three of our hypotheses.²¹

In Panel A of Table 8, we provide the results of the alternative estimations for our first hypothesis. Again, we used GMM regression models to estimate the impact of the alternative count variable of CFO emphasis on the internal performance of VBM adopters (*return on assets*) in Model 3.1 and the external performance (*Tobin's Q*) in Model 3.2. In both models, the coefficients of the alternative measure of CFO emphasis are positive. However, while the coefficient of CFO emphasis is statistically significant in Model 3.1, it falls below the significance level in Model 3.2.

In Panel B of Table 8, we present robustness checks where we use the

²⁰ In addition to these robustness tests, we also validated the choice of our regression methods. Specifically, we ran a pooled OLS and a firm-fixed effects regression to validate Hypothesis 1 and a pooled and random-effects logit regression to validate Hypotheses 2 and 3. The results (untabulated) show the anticipated signs for all coefficients and mostly statistical significance. Hence, this consistent empirical picture indicates that our results are not driven by the choice of our regression models.

²¹ 99% of the count measures range between values from 0 to 5, whereas the remaining 8 values were outliers (e.g., 17). Hence, we decided to winsorize the measure at the 99th percentile.

Table 5
Correlation matrix of all regression variables.

No.	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
(1)	Return on assets _{t+1} ^a	1.00																								
(2)	Tobin's Q _{t+1} ^a	0.61	1.00																							
(3)	CFO emphasis on VBM	0.09	0.12	1.00																						
(4)	CFO emphasis on VBM (count)	0.06	0.08	0.86	1.00																					
(5)	Successor CFO	-0.05	-0.04	-0.14	-0.09	1.00																				
(6)	VBM compensation	0.02	0.03	0.13	0.11	0.03	1.00																			
(7)	CEO emphasis on VBM	0.03	-0.03	0.21	0.28	-0.05	0.09	1.00																		
(8)	Adoption year	0.05	0.00	0.07	0.03	-0.28	-0.05	0.04	1.00																	
(9)	Time since implementation	-0.10	0.10	-0.06	-0.07	0.46	0.11	-0.03	-0.33	1.00																
(10)	Predecessor forced	0.01	-0.02	0.05	0.06	0.12	0.08	0.09	-0.03	-0.04	1.00															
(11)	Predecessor promoted	-0.06	-0.04	-0.03	-0.02	0.30	-0.03	-0.04	-0.08	0.11	-0.07	1.00														
(12)	CFO age	-0.06	0.00	-0.05	-0.06	0.00	-0.16	-0.06	-0.08	0.22	-0.08	-0.01	1.00													
(13)	CFO tenure	0.00	0.12	0.08	0.04	-0.47	-0.02	0.02	-0.08	0.17	-0.08	-0.18	0.42	1.00												
(14)	CFO education	-0.03	-0.02	-0.01	0.01	0.05	-0.04	-0.01	-0.06	0.13	-0.03	-0.13	0.02	0.04	1.00											
(15)	VBM industry diffusion	0.05	0.07	-0.02	0.00	0.12	0.01	0.03	-0.06	0.17	0.02	0.09	0.11	-0.02	0.05	1.00										
(16)	National SVO	0.03	-0.07	0.14	0.13	0.06	0.15	0.05	-0.01	-0.01	0.05	0.02	-0.02	-0.08	0.05	0.15	1.00									
(17)	Institutional ownership	0.11	0.05	0.18	0.17	-0.11	0.10	0.10	0.00	0.01	0.05	-0.11	-0.16	0.03	0.03	0.09	0.22	1.00								
(18)	Ownership concentration	-0.04	-0.06	-0.07	-0.04	0.01	-0.09	-0.11	-0.01	-0.03	0.01	-0.01	0.00	-0.09	-0.03	-0.13	-0.13	-0.23	1.00							
(19)	Size	-0.25	-0.31	-0.05	-0.04	0.10	-0.07	-0.01	-0.06	0.19	-0.02	0.06	0.21	0.04	0.04	0.02	0.00	-0.32	0.04	1.00						
(20)	Leverage ^a	-0.21	-0.31	-0.14	-0.13	0.06	-0.20	-0.08	0.00	-0.05	0.11	0.01	0.07	-0.05	0.05	-0.09	-0.07	-0.20	0.20	0.28	1.00					
(21)	Growth ^a	0.12	0.14	0.13	0.08	-0.20	0.06	0.05	0.00	-0.07	0.03	-0.08	0.01	0.16	0.03	-0.05	-0.01	-0.11	0.15	0.05	-0.05	1.00				
(22)	Return on assets ^a	0.56	0.60	0.14	0.12	-0.09	0.02	0.07	0.08	-0.09	0.02	-0.06	-0.08	0.05	-0.03	0.06	0.03	0.13	-0.05	-0.25	-0.28	0.22	1.00			
(23)	Cash volatility ^a	0.00	0.01	-0.07	-0.07	0.10	0.03	-0.06	0.03	0.09	0.02	-0.04	0.00	-0.07	0.00	0.01	-0.06	-0.05	0.00	-0.11	0.08	0.00	0.01	1.00		
(24)	Length of call	-0.03	0.02	0.06	0.03	0.00	-0.02	-0.04	0.02	0.01	-0.04	-0.06	0.02	-0.01	0.11	-0.03	0.06	0.10	0.02	0.09	-0.03	-0.05	-0.04	0.00	1.00	
(25)	Inverse Mills ratio	0.16	0.20	0.05	0.01	-0.32	0.03	-0.02	0.09	-0.21	-0.06	-0.14	-0.14	0.26	-0.21	-0.60	-0.41	-0.12	0.06	-0.32	-0.04	0.24	0.10	-0.04	0.10	1.00

N = 888. ^a: Winsorized at 1st and 99th percentiles.

Table 6
GMM regressions—Hypothesis 1.

Model	Model 1.1		Model 1.2	
	GMM		GMM	
Dependent variable	Return on Assets _{t+1}		Tobin's Q _{t+1}	
<i>Independent variable</i>				
CFO emphasis on VBM	3.196 *	(2.161)	0.133 †	(1.720)
<i>Control variables</i>				
Lagged dependent variable	0.362 ***	(4.804)	0.280 ***	(9.427)
CEO emphasis on VBM	0.621	(1.305)	−0.006	(−0.224)
Adoption year	−0.570	(−0.900)	0.080	(0.995)
Time since VBM adoption	−0.098	(−0.188)	−0.045	(−0.824)
CFO age	0.181	(0.040)	−0.256	(−0.786)
CFO tenure	−0.341 †	(−1.745)	0.004	(0.301)
CFO education	4.540 *	(2.097)	0.186 †	(1.684)
VBM industry diffusion	10.093	(1.088)	1.197 †	(1.863)
National SVO	2.379	(0.786)	0.172	(0.786)
Institutional ownership	−1.812	(−0.380)	−0.261	(−0.820)
Ownership concentration	2.995	(0.799)	0.111	(0.429)
Size	−0.415	(−0.383)	0.080	(0.838)
Leverage	−9.173	(−1.261)	−0.990 †	(−1.863)
Growth	−1.448	(−1.400)	−0.007	(−0.125)
Cash volatility	−6.482	(−0.401)	−0.421	(−0.452)
Inverse Mills ratio	4.925	(1.372)	0.407 †	(1.863)
Constant	0.362 ***	(4.804)	0.280 ***	(9.427)
<i>Industry & year effects</i>				
<i>Model fit</i>				
Model chi-square	353.00	***	757.91	***
Arellano-Bond test (AR ₁)	−3.33	[0.00]	−3.23	[0.00]
Arellano-Bond test (AR ₂)	1.57	[0.12]	0.19	[0.85]
Hansen J-Statistic	16.13	[0.85]	28.32	[0.78]
N	920		925	

***, **, * and † indicate significance at the 0.1%, 1%, 5%, and 10% level (two-tailed), respectively. Z-statistics are provided in parentheses P-values are displayed in square brackets. For detailed information on all regression variables see Appendix B. Industry effects comprise of five Fama & French industry dummies. For year effects a dummy variable for each year is integrated. The Arellano-Bond tests for first-order (AR₁) and second-order (AR₂) autocorrelations and the Hansen's J statistic support the validity of the system GMM.

alternative count variable of CFO emphasis as the dependent variable to validate our second and third hypotheses. As our alternative measure of CFO emphasis is operationalized as a count variable, we used a GEE model with a negative binomial distribution (Models 4.1–4.3) and a conditional (firm-fixed effects) negative binomial model (Models 4.4–4.6) to rerun our previous analyses. The results display the anticipated negative coefficient for the *successor CFO* variable and the anticipated positive coefficient for the interaction term between *successor CFO* and *VBM compensation* in all models. Moreover, except for insignificant coefficients for the *successor CFO* variable in Model 4.4, the results also exhibit statistical significance.

In sum, the test with our alternative CFO emphasis provided relatively similar results to our preceding analyses. However, we have to acknowledge that some coefficients did not exhibit the expected statistical significance.

5.2. Robustness test—CFO succession in the case of adopter CFOs who emphasized VBM

In our second hypothesis, we suggest that, compared to the VBM-adopting CFOs, successor CFOs are less likely to emphasize VBM. While our previous results supported this notion, adopting CFOs may also refrain from emphasizing VBM over time in our sample. Hence, if the adopting CFO had already stopped emphasizing VBM, it is quite likely that the successor CFO will place no emphasis on VBM. Moreover, we were particularly interested in whether VBM compensation could uphold CFO emphasis over CFO transitions, which assumes that the adopting CFO has placed emphasis on VBM. To address these concerns, we reran our previous analyses on a sample that was restricted to firms where the adopter CFO placed emphasis on VBM. The results of these regressions are presented in Panel C of Table 8. The negative and significant coefficients of successor CFO in all models indicate that successor CFOs place less emphasis on VBM even if their predecessor has emphasized VBM (see Models 5.1–5.6). The positive and significant coefficient of the interaction term between *successor CFO* and *VBM compensation* further supports that VBM compensation is a crucial driver to uphold a successor CFO's emphasis on VBM (see Model 5.3 and Model 5.6). Therefore, the results in Panel C of Table 8 substantiate our previous results.

5.3. Additional test – CFO succession, VBM compensation and firm performance

We started our research by highlighting the crucial role of CFO emphasis for the successful use of VBM. In this context, our results highlight CFO emphasis on VBM as a channel whereby CFO succession might endanger the success of VBM. To further investigate this crucial role of the CFO, we tested the direct impact of CFO succession and VBM compensation on the performance of VBM adopters. This test could help us to better indicate if indeed the CFO is the channel behind the observed performance effect among VBM adopters or whether the impact simply reflects the level of VBM integration (i.e., VBM compensation) in the firm. Specifically, we ran three different GMM regressions on each of our performance variables (i.e., *return on assets* and *Tobin's Q*). First, we used *successor CFO* as the independent variable. Second, we only tested the direct impact of *VBM compensation*. Third, we included both *successor CFO* and *VBM compensation* as well as an interaction term between these variables. Based on our previous results, we expected a negative impact of successor CFOs on the performance of VBM adopters, and a positive effect of VBM compensation in the context of successor CFOs. However, from our previous results, we did not expect an impact of VBM compensation independent from the CFO.

Panel A of Table 9 displays the results of these regression. We find negative and mostly significant coefficients for the impact of successor CFOs on the two measures of firm performance (Model 6.1 and Model 6.4). While the direct effect of VBM compensation is insignificant in both models (Model 6.2 and Model 6.5), we find a positive and significant impact of VBM compensation in the context of successor CFOs with regard to Tobin's Q (Model 6.6) and a positive but insignificant coefficient with regard to return on assets (Model 6.3).²² The tests support our argumentation that CFO succession provides a challenge for VBM adopters. We further find some signs that tying VBM to a CFO's compensation could be an adequate mechanism to cope with this challenge. In sum, the results are mostly in line with our findings on the

²² We further reran the regressions in Panel A of Table 9 and included the independent variable of *CFO emphasis on VBM*. While CFO emphasis on VBM was still positive and significant in these regressions (untabulated), the interaction term between *VBM compensation* and *successor CFOs* fell below the significance level. Moreover, the *successor CFO* variable remained significant in the regression model (but at a lower level). In conclusion, these results support the idea that the route for the estimated effects in Panel A of Table 9 is the CFO's emphasis on VBM.

Table 7
GEE regressions—Hypothesis 2 and Hypothesis 3.

Model	Model 2.1	Model 2.2	Model 2.3	Model 2.4	Model 2.5	Model 2.6
Method	Logit (GEE)	Logit (GEE)	Logit (GEE)	Logit (fixed-effects)	Logit (fixed-effects)	Logit (fixed-effects)
Dependent variable	CFO emphasis on VBM	CFO emphasis on VBM	CFO emphasis on VBM	CFO emphasis on VBM	CFO emphasis on VBM	CFO emphasis on VBM
<i>Independent variables</i>						
Successor CFO	−0.594 † (−1.791)	−0.578 † (−1.693)	−1.347 ** (−3.289)	−1.037 † (−1.900)	−1.036 † (−1.860)	−1.622 ** (−2.626)
VBM compensation		0.691 ** (2.833)	−0.269 (−0.802)		0.926 ** (2.617)	0.369 (0.918)
VBM compensation*Successor CFO			1.534 *** (3.718)			1.410 ** (2.914)
<i>Control variables</i>						
CEO emphasis on VBM	0.406 * (2.106)	0.398 * (2.068)	0.452 * (2.259)	0.870 *** (3.551)	0.814 ** (3.276)	0.775 ** (3.084)
Adoption year	0.792 * (2.154)	0.734 * (1.990)	0.676 † (1.870)	0.812 (1.325)	1.058† (1.671)	0.851 (1.351)
Tine since VBM adoption	0.183 (0.963)	0.077 (0.388)	0.060 (0.297)	0.217 (0.465)	0.061 (0.130)	0.099 (0.205)
Predecessor forced	0.414 (0.809)	0.394 (0.827)	0.172 (0.367)	1.416 (1.286)	1.236 (1.127)	0.615 (0.544)
Predecessor promoted	0.200 (0.722)	0.180 (0.679)	0.281 (0.923)	1.158 * (2.062)	1.163 * (2.061)	1.229 * (2.116)
CFO age	−0.978 (−1.250)	−0.572 (−0.718)	−0.298 (−0.356)	−4.352 * (−2.258)	−3.752 † (−1.870)	−3.695 † (−1.780)
CFO tenure	0.008 (0.214)	0.002 (0.041)	0.022 (0.549)	0.039 (0.546)	0.031 (0.420)	0.059 (0.753)
CFO education	−0.407 (−1.531)	−0.455 (−1.642)	−0.401 (−1.467)	−1.208 * (−2.093)	−1.234 * (−2.146)	−1.278 * (−2.184)
VBM industry diffusion	−0.431 (−0.238)	−0.604 (−0.366)	−1.195 (−0.670)	1.661 (0.596)	1.348 (0.480)	0.409 (0.145)
National SVO	0.956 (1.176)	0.338 (0.396)	0.471 (0.544)	0.870 (0.373)	1.533 (0.653)	0.725 (0.300)
Institutional ownership	1.492 * (2.047)	1.481 * (2.074)	1.813 * (2.408)	2.002 (1.309)	1.510 (0.967)	1.618 (1.011)
Ownership concentration	−0.211 (−0.376)	−0.095 (−0.162)	−0.251 (−0.422)	−1.503 (−0.943)	−0.916 (−0.569)	−0.609 (−0.362)
Size	0.046 (0.344)	0.040 (0.298)	0.002 (0.014)	0.158 (0.300)	0.199 (0.376)	0.312 (0.568)
Leverage	−1.277 (−1.494)	−1.205 (−1.332)	−1.189 (−1.260)	−0.114 (−0.053)	−0.705 (−0.321)	−1.115 (−0.492)
Growth	0.696 † (1.718)	0.592 (1.354)	0.784 † (1.894)	1.232 * (1.992)	1.204 † (1.922)	1.187 † (1.886)
Return on assets	0.034 † (1.958)	0.038 * (2.249)	0.037 * (1.986)	0.067 * (2.195)	0.066 * (2.155)	0.067 * (2.172)
Cash volatility	−3.811 (−1.113)	−4.825 (−1.276)	−3.977 (−1.130)	−19.940 ** (−2.988)	−19.870 ** (−2.978)	−18.371 ** (−2.744)
Length of call	0.151 (1.032)	0.147 (1.129)	0.172 (1.228)	0.046 (0.181)	0.126 (0.488)	0.101 (0.385)
Inverse Mills ratio	0.007 (0.013)	−0.127 (−0.228)	−0.161 (−0.296)	0.568 (0.653)	0.483 (0.550)	0.293 (0.331)
Constant	1.124 (0.255)	0.351 (0.080)	0.047 (0.011)	− (−)	− (−)	− (−)
Industry effects	yes	yes	yes	no	no	no
Year effects	yes	yes	yes	yes	yes	yes
<i>Model fit</i>						
Model chi-square	125.74	112.22	140.92	91.56	98.61	107.85
N	888	888	888	631	631	631

***, **, * and † indicate significance at the 0.1%, 1%, 5%, and 10% level (two-tailed), respectively. Z-statistics are provided in parentheses. For detailed information on all regression variables see Appendix B. Industry effects comprise of five Fama & French industry dummies. For year effects a dummy variable for each year is integrated. Models 2.1–2.3 are estimated using a GEE model with binomial distribution, a logit link function and autoregressive within-group correlation (ar1). Models 2.4–2.6 are estimated using a conditional (firm fixed-effects) logit model. Note that the reduction in observations in Models 2.4–2.6 is due to the fact that firms without any change in CFO emphasis on VBM are dropped out in the conditional fixed effects models.

Table 8
Robustness tests.

Panel A: Alternative CFO emphasis variable (H1)				
Model	Model 3.1		Model 3.2	
Method	GMM		GMM	
Dependent variable	Return on Assets _{t+1}		Tobin's Q _{t+1}	
<i>Independent variable</i>				
CFO emphasis on VBM (count)	0.698 † (1.761)		0.034 (1.407)	
<i>Control variables</i>				
Industry & year effects	yes		yes	
<i>Model fit</i>				
Model chi-square	356.54		956.22	
Validity tests	supportive		supportive	
N	920		925	
Panel B: Alternative CFO emphasis variable (H2 & H3)				
Model	Model 4.1	Model 4.2	Model 4.3	Model 4.4
Method	nbinomial (GEE)	nbinomial (GEE)	nbinomial (fixed effects)	nbinomial (fixed effects)
Dependent variable	CFO emphasis on VBM (count)	CFO emphasis on VBM (count)	CFO emphasis on VBM (count)	CFO emphasis on VBM (count)
<i>Independent variables</i>				
Successor CFO	-0.453 † (-1.796)	-0.907 ** (-2.990)	-0.365 (-1.409)	-0.685 * (-2.451)
VBM compensation		-0.004 (-0.017)		-0.028 (-0.152)
VBM compensation*Successor CFO		0.860 ** (3.261)		0.870 *** (3.735)
<i>Control variables</i>				
Industry effects	yes	yes	yes	yes
Year effects	yes	yes	no	no
<i>Model fit</i>				
Model chi-square	222.82	330.05	109.63	125.61
N	888	888	649	649
Panel C: CFO succession in the case of adopter CFOs who emphasized VBM				
Model	Model 5.1	Model 5.2	Model 5.3	Model 5.4
Method	Logit (GEE)	Logit (GEE)	Logit (fixed-effects)	Logit (fixed-effects)
Dependent variable	CFO emphasis on VBM	CFO emphasis on VBM	CFO emphasis on VBM	CFO emphasis on VBM
<i>Independent variables</i>				
Successor CFO	-0.971 * (-2.280)	-2.148 *** (-3.927)	-2.516** (-2.929)	-3.496 ** (-2.956)
VBM compensation		0.262 (0.624)		0.826 (1.382)
VBM compensation*Successor CFO		2.426 *** (3.685)		3.683 *** (3.351)
<i>Control variables</i>				
Industry effects	yes	yes	yes	yes
Year effects	yes	yes	no	no
<i>Model fit</i>				
Model chi-square	222.76	257.79	86.33	111.15
N	415	415	374	374

***, **, * and † indicate significance at the 0.1%, 1%, 5%, and 10% level (two-tailed), respectively. Z-statistics are provided in parentheses. For detailed information on all regression variables see [Appendix B](#). Industry effects comprise of five Fama & French industry dummies. For year effects a dummy variable for each year is integrated. The GMM validity tests of Models 3.1–3.2 consist of the Arellano-Bond tests for first-order (AR₁) and second-order (AR₂) autocorrelations and the Hansen's J statistic. Models 4.1–4.2 are estimated using a GEE model with negative binomial distribution, a log link function and autoregressive within-group correlation (ar1). Models 4.3–4.4 are estimated using a conditional (firm fixed-effects) negative binomial regression model. Models 5.1–5.2 are estimated using a GEE model with binomial distribution, a logit link function and autoregressive within-group correlation (ar1). Models 5.3–5.4 are estimated using a conditional (fixed-effects) logit model. Note that the reduction in observations in Models 4.3–4.4 and Models 5.3–5.4 is due to the fact that firms without any change in CFO emphasis on VBM are dropped out in the conditional fixed effects models.

Table 9
Additional tests.

Panel A: CFO succession, compensation and firm performance						
Model Method	Model 6.1 GMM	Model 6.2 GMM	Model 6.3 GMM	Model 6.4 GMM	Model 6.5 GMM	Model 6.6 GMM
Dependent variable	Return on Assets _{t+1}	Return on Assets _{t+1}	Return on Assets _{t+1}	Tobin's Q _{t+1}	Tobin's Q _{t+1}	Tobin's Q _{t+1}
<i>Independent variables</i>						
Successor CFO	-1.906 † (-1.688)		-3.004 † (-1.835)	-0.134 (-1.645)		-0.246 ** (-2.771)
VBM compensation		0.519 (0.553)	-2.609 (-1.147)		0.008 (0.136)	-0.145 (-1.580)
VBM compensation*Successor CFO			4.154 (1.590)			0.186 † (1.877)
<i>Control variables</i>						
Industry & year effects	yes	yes	yes	yes	yes	yes
<i>Model fit</i>						
Model chi-square	312.51	364.29	269.87	1143.31	1121.60	1142.40
Validity tests	supportive	supportive	supportive	supportive	supportive	supportive
N	920	920	920	925	925	925
Panel B: VBM use and firm performance						
Model Method	Model 7.1 GMM	Model 7.2 GMM	Model 7.3 GMM	Model 7.4 GMM		
Dependent variable	Return on Assets _{t+1}	Return on Assets _{t+1}	Tobin's Q _{t+1}	Tobin's Q _{t+1}		
<i>Independent variables</i>						
VBM	0.228 (0.574)		0.012 (0.346)			
VBM without CFO emphasis		-0.637 (-1.209)		0.008 (0.269)		
VBM with CFO emphasis		1.200 * (2.062)		0.061 † (1.916)		
<i>Control variables</i>						
Industry & year effects	yes	yes	yes	yes		
<i>Model fit</i>						
Model chi-square	2165.49	2328.47	2474.57	2790.04		
Validity tests	supportive	supportive	supportive	supportive		
N	3736	3736	3764	3764		

***, **, * and † indicate significance at the 0.1%, 1%, 5%, and 10% level (two-tailed), respectively. Z-statistics are provided in parentheses. For detailed information on all regression variables see Appendix B. Industry effects comprise of five Fama & French industry dummies in Panel A and ten Fama & French industry dummies in Panel B. For year effects a dummy variable for each year is integrated. The GMM validity tests consist of the Arellano-Bond tests for first-order (AR₁) and second-order (AR₂) autocorrelations and the Hansen's J statistic.

drivers of CFO emphasis on VBM. However, we acknowledge that the empirical evidence from this test is rather scarce.

5.4. Additional test –VBM use and firm performance

In a final test, we aimed to investigate the impact of VBM on firm performance in a sample of both VBM adopters and non-adopters. Moreover, we analyzed how this impact differs among VBM adopters with a CFO emphasizing VBM and adopters without CFO emphasis on VBM. Therefore, we first ran GMM regressions relating VBM use on both of our performance variables. Second, we ran a test where we divided VBM adopters into adopters with a CFO emphasizing VBM and those without. Panel B of Table 9 displays the results of these regressions. We find a positive but insignificant effect of VBM with regard to return on assets and Tobin's Q. When we split VBM adopters into adopters with a CFO emphasizing VBM and without, we find a positive and significant effect of VBM adopters with a CFO emphasizing VBM with regard to both performance variables. The coefficients for VBM

adopters without a CFO emphasizing VBM are not significant. These results indicate that positive performance effects of VBM are limited to VBM adopters with a CFO placing emphasis on VBM. Hence, this additional test further supports our preceding analyses.

6. Conclusion and discussion

Previous research has emphasized that VBM's impact could vary greatly from one VBM adopter to another (Claes, 2006; Malmi and Ikäheimo, 2003). Proponents of VBM have often claimed that top management support and emphasis is a key success factor (e.g., Haspeslagh et al., 2001; Koller, 1994). In this context, scholars have recently highlighted that especially the CFO plays a leading role in terms of VBM and management accounting practices (Burkert and Lueg, 2013; Naranjo-Gil et al., 2009). This expected importance of the CFO as an individual leaves companies with the challenge of preserving the emphasis on VBM despite personnel turnover. Hence, we empirically examined the role of CFO emphasis for the successful use of VBM and the challenge of CFO

successions for upholding a continuous emphasis on VBM.

To study CFO emphasis on VBM, we introduced a measure for emphasis based on the CFO's statements within the firm's conference calls. Based on a longitudinal sample of about 900 firm years of VBM adopters, our empirical results reveal that CFO emphasis is a key success factor for the implementation of VBM as it leads to increased performance among VBM adopters. However, our results indicate that CFO transition marks a critical crossroads for VBM, since CFOs who succeed the CFO who had been in charge of the initial VBM adoption place less emphasis on VBM. In order to perpetuate the emphasis on VBM when new CFOs take office, we suggest that an external impetus is required, since successor CFOs tend to focus on their own topics. This assumption is supported by our finding that successor CFOs place more emphasis on VBM if their compensation is tied to VBM. In line with this, additional tests indicated a negative impact of successor CFOs on the performance of VBM adopters when compensation is not tied to VBM.

This study contributes to VBM and management accounting research in several ways. First, we contribute to a better understanding of the reasons for performance differences among VBM adopters by providing empirical evidence on the role of CFO emphasis and compensation. While several studies called for additional research on this issue (Burkert and Lueg, 2013; Firk et al., 2016, 2018; Lueg and Schäffer, 2010; Malmi and Granlund, 2009; Malmi and Ikäheimo, 2003), empirical evidence is still limited. Our findings suggest that CFO emphasis is a crucial success factor for the implementation of VBM. This supports the normative claims that stress the important role of management support (e.g., Ameels et al., 2003; Koller, 1994). The integration of value-based metrics within compensation has similarly been highlighted as an important element of VBM (Malmi and Ikäheimo, 2003); however, empirical evidence does not support this normative claim (e.g., Hogan and Lewis, 2005; Ryan and Trahan, 2007). Our findings suggest that compensation has a positive effect on the efficacy of VBM in the case of successor CFOs by increasing successor CFO's emphasis on VBM. As prior studies on the impact of VBM compensation focus on the burgeoning VBM period when most implementing CFOs were still in office, our findings might help to contextualize these results (e.g., Hogan and Lewis, 2005; Ryan and Trahan, 2007).

Second, our study contributes to the literature by drawing more attention to the challenge of organizations to keep a management accounting practice viable. While there is a considerable amount of research on the initial adoption process of management accounting practices (e.g., Al-Sayed and Dugdale, 2016; Malmi, 1999; Malmi and Ikäheimo, 2003; Shields, 1995; Woods et al., 2012), only limited attention has been paid to the challenge of keeping a practice viable over time. Our findings illustrate the relevance of this topic by indicating that leader successions endanger the continuous success with a management accounting practice. Specifically, our findings suggest that successors tend to place less emphasis on practices adopted by their predecessors, which reduces the effectiveness of the implemented practice. At the same time, our study indicates that compensation, as an external impetus, can help to guide the attention of the successor in the desired direction.

Third, we contribute to a growing body of research highlighting the significance of the CFO for accounting, management accounting, and VBM (Burkert and Lueg, 2013; Feng et al., 2011; Ge et al., 2011; Geiger and North, 2006; Naranjo-Gil et al., 2009). In this context, our results substantiate the importance of the CFO in terms of shaping management accounting practices by providing empirical evidence for the positive effect of CFO emphasis on the effectiveness of VBM. We further extend research focusing on the influence of CFOs on the adoption (implementation) of certain accounting practices (Burkert and Lueg, 2013; Hiebl et al., 2017; Naranjo-Gil et al., 2009) by examining the challenge of CFO successions for the continued success of a practice. In this context, we also introduce a measure of CFO emphasis on VBM derived from statements made during company conference calls. In doing so, we provide a potential path for further studies to account for the effect of CFO emphasis. This approach may not be limited to VBM and may also be used to study the role of the emphasis of other management accounting practices.

Apart from these contributions, several issues warrant a discussion. First, questions may arise as to whether the CFO statements only reflect the level of VBM integration in the firm. While we could not completely rule out that the level of VBM integration is related to CFO emphasis on VBM to some extent (i.e., compensation in the case of successor CFOs), we observed several indications suggesting a CFO-specific impact.²³ A second limitation concerns CFOs who may have refrained from expressing their emphasis on VBM due to unfavorable results or external shocks, although they may have indeed emphasized VBM within the firm. We aimed to address this issue through the choice of our control variables and regression models but acknowledge this issue as a potential limitation. Third, CFOs may have appeared to emphasize VBM from their statements in conference calls, although they may not have actively applied VBM for decision-making or did not foster its use throughout the organization. We believe that this behavior can be countered by analysts who possess both financial expertise as well as in-depth knowledge about the companies, allowing them to expose and penalize such behavior. However, we are not able to rule out that CFOs' emphasis in conference calls may overestimate their emphasis within the organization. A final limitation is that we were not able to fully control for the personal VBM experience of CFOs gained during their education or work experience that may affect CFO emphasis on VBM.²⁴

Despite these limitations, our findings enable fruitful avenues for future research. First, future research could try to develop a more comprehensive picture of the causes behind emphasizing VBM. For example, a more comprehensive analysis of the role of owners, the supervisory board, or the institutional environment could provide further insights. Additionally, further factors on the individual level could be investigated in more detail. For example, our analyses indicate the potential impact of the reasons for the predecessor's departure on CFO emphasis, which could be studied in more detail. Second, the challenge of keeping management accounting practices viable over time warrants more attention. While our research is limited to VBM, future research could study the effects of CFO turnover on the use of other management accounting practices (e.g., ABC or BSC) and how to best deal with these incidents. Moreover, in addition to CFO turnover, future research might also explore additional factors that endanger the continued success of a management accounting practice. Third, in light of companies stopping the use of VBM recently, studying the impact of CFO successions on VBM abandonment could also help to better understand these incidents.

Finally, our study also provides valuable practical implications for the design and implementation of VBM and management accounting practices in general. First, we substantiate the significance of CFO emphasis for the successful use of a management accounting practice. Second, we show that organizations can actively influence executives' emphases when confronted with career transitions by means of

²³ First, we document that the CFO emphasis measure is more persistent for an individual CFO than for an individual firm. Second, our robustness results indicate that CFO succession also reduces CFO emphasis when the previous CFO has placed emphasis on VBM. Finally, the performance effect of VBM compensation is limited to successor CFOs who tend to reduce emphasis on VBM. Based on this, we expect a CFO-specific rather than a firm-specific impact.

²⁴ In an additional (untabulated) analysis, we included a variable capturing whether the successor CFO worked for a VBM adopter prior to his/her appointment. While the results remain stable, we had to exclude several observations where we could not verify this information (e.g., there was no annual report). Moreover, VBM experience may also come from other sources such as workshops, specific postgraduate education or particular consulting projects. Hence, as we had to further reduce our sample and were not convinced of fully capturing VBM experience, we decided not to include this control variable in our main analyses. Instead, we acknowledge that we cannot fully rule out that our analyses may be affected by the VBM experience of successor CFOs to some extent.

congruent compensation. Hence, emphasis on a management accounting practice can be perpetuated across individuals by setting adequate incentives.

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Appendix A. Exemplary CFO statements highlighting CFO emphasis on VBM

Company	CFO	Year	Example
BBA Aviation [United Kingdom]	Andrew Wood	2009	Our Group return on invested capital reduced to 8.4% from 9.9% and we believe that this is likely to represent the return at the bottom of the cycle. We remain confident that as market activity increases, we can deliver through-cycle returns above our pre-tax cost of capital target of 12%.
Coca-Cola Hellenic Bottling Company S.A. [Greece ^a]	Nik Jhangiani	2006	So in summary, our long-term growth model remains intact, and we continue to be confident in our ability to drive value creation for our shareholders with a further improvement of approximately 75 basis points in our return on invested capital and an economic profit achievement in excess of [EUR90] million in 2007.
Continental AG [Germany]	Wolfgang Schäffer	2014	I mentioned already the highlights, on page 10 shown in more detail, sustainable value creation. The ROCE achieved in 2014 20%, 60 base points up compared to already a strong 2013.
Finmeccanica SPA [Italy]	Alessandro Pansa	2007	EVA is basically in line, keeping into account that both these figures has been calculated with the new working – or even the WACC of Finmeccanica Group, which is [8.97]. If you adjust – if you want to have a look in a nutshell of the single sectors, I think that we can be fairly optimistic about all sectors where we are present.
Kingfisher PLC [United Kingdom]	Karen Witts	2012	Then we've got four agreements signed up with other retailers. Planning is a part of the conversation, landlords is a part of the conversation. Just those five represent a GBP30 million reduction in net debt and a significant improvement in the returns there. Very KEP [Kingfisher Economic Profit] attractive indeed, relative to the total KEP generated by the Group last year.
Metro AG [Germany]	Thomas Unger	2007	EVA amounted to EUR538 m; an improvement of EUR112 m year on year. Our two growth drivers, again, improved set EVA figures. The highlight, however, is Galeria Kaufhof. Galeria not only improved EVA significantly by EUR33 m, but fully earned its cost of capital and even turned EVA positive.

Source: CFO part of presentation section of conference call transcripts provided by Thomson Reuters Street Events. a: Note that Coca-Cola Hellenic Bottling Company has transferred their headquarters to Switzerland by the end of 2012.

Appendix B. Variable descriptions and data sources

Variable	Description	Source
Main variables		
CFO emphasis on VBM	Dummy variable that takes the value of one if the CFO discusses the specific value-based metric of the company within the conference call and zero if that is not the case.	Hand-collected
Return on assets	The variable is calculated as: $100 * ((\text{Net income} + (\text{interest expense on debt} - \text{interest capitalized})) * (1 - \text{tax rate})) / \text{average of last year's and current year's total assets}$. Winsorized at the 1st and 99th percentiles.	Datastream
Tobin's Q	The variable is calculated as the sum of the book value of total assets less the book value of equity plus the market value of equity divided by the book value of total assets. Winsorized at the 1st and 99th percentiles.	Datastream
Successor CFO	The variable takes the value of one if the CFO was not in office during the initial adoption of VBM and zero otherwise.	Hand-collected
VBM compensation	The variable VBM compensation takes the value of one if the company's value-based metric is integrated into the CFOs compensation plan and zero otherwise.	Hand-collected
Control variables		
Adoption year	Dummy variable that takes the value of one if a year is the initial adoption year of VBM.	Hand-collected
Time since implementation	Time since the initial implementation of VBM measured as the natural logarithm of full years.	Hand-collected
CEO emphasis on VBM	Dummy variable that takes the value of one if the CEO discusses the specific value-based metric of the company within the conference call and zero if that is not the case.	Hand-collected
CFO age	Natural logarithm of the age of the CFO.	BoardEx and partly hand-collected
CFO tenure	Time a CFO has held his/her role.	BoardEx and partly hand-collected
CFO education	Educational background of the CFO. The variable takes the value of one if the CFO holds a degree in business or economics (BA, MA, MBA, PhD etc.) or if he/she is a Chartered Accountant or Chartered Financial Analyst and zero otherwise.	Hand-collected
Predecessor forced	Dummy variable that takes the value of one if the adopting CFO was forced to quit his/her position.	Hand-collected
Predecessor promoted	Dummy variable that takes the value of one if the adopting CFO was promoted to CEO or Chairman of the Board.	Hand-collected
National SVO	Average percentage of firms within a country espousing to increase shareholder value within their annual reports based on our initial sample.	Hand-collected
VBM industry diffusion	Average of firms using a value-based metric within a Fama and French 12 industry based on our initial sample.	Hand-collected
Institutional ownership	The variable is measured as the sum of fractional holdings by institutional investors.	Thomson ONE Banker
Ownership concentration	The variable is measured as the sum of fractional holdings of the five largest shareholders.	Thomson ONE Banker

Size	Natural logarithm of the company's total assets.	Datastream
Leverage	Ratio of total debt to total assets. Winsorized at the 1st and 99th percentiles.	Datastream
Growth	Three-year growth in net sales. Winsorized at the 1st and 99th percentiles.	Datastream
Return on assets	$100 * ((\text{Net income} + (\text{interest expense on debt} - \text{interest capitalized})) * (1 - \text{tax rate})) / \text{average of last year's and current year's total assets}$. Winsorized at the 1st and 99th percentiles.	Datastream
Cash volatility	Standard deviation of cash-flows divided by mean sales over three year timeframe. Winsorized at the 1st and 99th percentiles.	Datastream
Length of call	Natural logarithm of the average number of words in the yearly conference call presentations of a firm.	Datastream
Industry effects	Five dummy variables classifying firms into industry sectors.	Website of Kenneth French
Year effects	Dummy variables for each year.	
Robustness checks		
CFO emphasis (count)	Variables that counts the number of text passages, where a CFO discusses the value-based metric of the company. Winsorized at the 99th percentile	Hand-collected
VBM	Dummy variable that indicates whether a firm uses a value-based metric.	Hand-collected
VBM without CFO emphasis	Dummy variable that takes the value of one if a firm is a VBM user and CFO emphasis on VBM is equal to zero.	Hand-collected
VBM with CFO emphasis	Dummy variable that takes the value of one if CFO emphasis on VBM is equaling to one.	Hand-collected

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