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CFO role and CFO compensation: An empirical analysis of their implications[☆]Ariela Caglio^a, Andrea Dossi^a, Wim A. Van der Stede^{b,*}^a Bocconi University – SDA Bocconi School of Management, Via Roentgen 1, 20136 Milan, Italy^b London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK

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ABSTRACT

Given concerns over CFO pay, especially incentives, and considering the tension between a CFO's fiduciary responsibility and being a key member of the firm's executive team, we examine the determinants and effects of CFO compensation amount, incentive intensity, and proximity to CEO compensation in a sample of European companies (FTE 500, 2005–2009). First, we focus on the CFO role as a determinant of CFO compensation. Like prior work, we proxy for CFO roles by using hand-collected public data on education and past professional experience, but we supplement these proxies with proprietary data to more directly capture the firm-specific nature of the CFO job in term of its similarity with that of the CEO. We thus argue how CFOs can have varied roles characterized by different levels of financial expertise and CEO-likeness, and document that it is this latter aspect that is associated with CFO compensation. Second, we study the effects of CFO compensation design on outcomes in the CFO's realm related to financial reporting. We find that CFO financial expertise is positively associated with financial reporting quality, while a CFO's pay long-term incentive intensity and a CFO's incentive compensation proximity with the CEO are negatively associated with financial reporting quality. Overall, then, our results suggest that CFOs get rewarded for their CEO-likeness, and particularly for their being similar to the CEO in terms of tasks and decision making authority. But it is their financial expertise that is positively related to financial reporting quality. At the same time, using compensation that is more incentive intensive and more similar to that of the CEO appears to be potentially detrimental to the quality of financial reporting. These results are relevant for boards involved in selecting highly expert CFOs, and their compensation committees charged with defining subsequently effective incentive compensation plans for those CFOs.

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* Corresponding author at: Department of Accounting, London School of Economics, Houghton Street, London WC2A 2AE, UK.

E-mail addresses: ariela.caglio@sdabocconi.it (A. Caglio), andrea.dossi@sdabocconi.it (A. Dossi), w.van-der-stede@lse.ac.uk (W.A. Van der Stede).

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1. Introduction

In many companies, CFOs are second in command to the CEO,¹ where both commonly appear in public together to comment on company developments beyond the required periodic disclosures of financial performance (Hoitash et al., 2016). This is not surprising as nowadays companies often seek CFOs who are actively involved in major business decisions and not just in financial reporting and other CFO functional duties. Unlike other finance and accounting positions who are mainly in charge of the technical aspects of accounting and financial reporting, CFOs are increasingly becoming involved in shaping and executing corporate strategy (Datta and Datta, 2014). They participate in decision making as members of the senior executive team, are involved in strategy and operations as business partners of the CEO, and also often sit on the board.² At the same time, due to their specialized expertise and unique technical knowledge, CFOs have more influence than CEOs over the firm's financial reports (e.g., Mian, 2001; Aier et al., 2005; Geiger and North, 2006) and they are expected to be the gatekeepers or watchdogs of financial information accuracy. This is akin to characterizing the CFO role as a peculiar mix of fiduciary duties over financial reporting and managerial involvement in decision-making (Indjejikian and Matějka, 2009).

Given that firms inevitably must handle such CFO “role duality” judiciously, our study contributes to the literature by considering CFO role characteristics as well as the determinants and effects of CFO compensation. Specifically, we address two research questions. First, we investigate whether differences in CFO role characteristics are associated with differences in CFO compensation, including CFO compensation relative to that of their CEO. Second, in line with prior work (e.g., Graham et al., 2005; Mergenthaler et al., 2012), and echoing concerns of policy makers and regulators, we examine whether CFO compensation has an effect on the propensity of CFOs to monitor and fulfill their fiduciary obligations (Li, 2014), which we proxy in terms of financial reporting quality. In this second part, we also include in our tests the effect of CFO role characteristics directly on financial reporting quality.

Our operationalization of “CFO role” constitutes an extension of prior work. As in prior work, we proxy for CFO roles by using hand-collected public data on education and past professional experience and skills, but additionally, we supplement these proxies with proprietary data to more directly capture the firm-specific nature of the CFO job and responsibilities. These data were entrusted to us by one of the major global compensation consulting firms and allow us to consider different manifestations of firm-specific CFO jobs and tasks through a “CEO-CFO distance” measure of the extent to which the CFO job is more or less similar to that of their CEO. In this way, we identify two key role dimensions through factor analysis which we label “financial expertise” and “CEO likeness”.

Regarding the association between CFO role and compensation, we focus on compensation levels in line with prior work (e.g., Jiang et al., 2010). But since regulators are questioning whether CFOs should be rewarded similarly to other top executives, particularly their CEOs to recognize their different roles, we also analyze CFO compensation relative to that of their CEO, including in terms of incentive intensity. Prior work suggests that incentive intensity may most markedly drive behavior (Milgrom and Roberts, 1992; Milkovich and Newman, 2002). It should not be surprising then that the common debate suggests that incentive intensity is no innocent bystander to CFOs' propensity to allegedly engage in managing the financial information on which they are evaluated. Indeed, during testimony before the Senate Finance Committee, US IRS Commissioner Mark Everson suggested that CFOs who are in charge of “minding the cookie jars” should be paid by “fixed compensation for specified contract periods”. Similar calls have been made elsewhere, such as by the CONSOB in Italy (Art. 7 – Remunerazione degli amministratori, March 2010).

Our dataset is European. Commentators and policymakers have expressed growing concerns over CFO compensation in the US but also in Europe, where, in line with the spirit of Sarbanes-Oxley (SOX), a swathe of reforms has imposed more stringent fiduciary responsibilities on CFOs over financial reporting.³ This, in turn, has spawned concerns about compensation schemes for CFOs that are, for example, tied to their firms' financial performance. Moreover, studies of CFO compensation have hitherto been done mainly in the US (e.g., Indjejikian and Matějka, 2009; Chava and Purnanandam, 2010; Feng et al., 2011; Ge et al., 2011) although Europe is undoubtedly an equally pertinent setting to study compensation, due, in part, to the general debate about “American-style” executive

¹ To avoid the repetitive and cumbersome use of “her/his” or “she/he” gender-neutral terms, we consider the CEO to be female and the CFO to be male throughout the text without judgment or prejudice.

² Recent studies from practice suggest that the role of the CFO has expanded well beyond the traditional focus on accounting and finance. CFOs have become more involved in strategy and operations, with an increased expectation from the CEO and the board that the CFO provides input and leadership in all dimensions of the business. The global financial crisis may even have heightened this expectation, as well as the CFO's profile, where volatility and uncertainty has drawn CFOs into boardroom conversations about forecasts, profitability, risk management and a myriad of strategic decisions (e.g., IFAC, 2013; Agrawal et al., 2013).

³ The increased weight on the CFO fiduciary role has been apparent in the tightening of corporate governance regulations in Europe, the US (e.g., Sarbanes-Oxley Act) and elsewhere (Hoitash et al., 2012). For example, in Italy, the law (L.262/05) requires that firms identify the “dirigente preposto”—typically the CFO—to certify the accuracy and completeness of the financial reports. Similarly, in France, the “Code du Gouvernement d'Enterprise” (Chapter 14) establishes that the “directeur financier”—again, the CFO—is responsible for the completeness of external communication through financial reports, including specific risks. The Norwegian Code of Practice for Corporate Governance stipulates that the Finance Director/Head of Accounting testifies to the Board that the proposed annual accounts have been prepared in accordance with generally accepted accounting practice; that all the information included is in accordance with the actual situation of the company; and that nothing of material importance has been omitted. Similar provisions also appear to have been adopted outside Europe and the US (where certification by the CFO became a key part of SOX), such as in China, India, and Australia, where the CFO has to personally certify the financial reports, too. Regardless of variations across countries in the details of such provisions, these reforms tend to impose more consequential financial reporting responsibilities on CFOs (Wang, 2010).

compensation packages, as well as owing to different governance systems (Ferrarini et al., 2010).⁴

Our key findings suggest the following. First, controlling for a number of other possible determinants, we find that CEO-likeness is a significant predictor of differences in compensation across CFOs and relative to their CEOs. Specifically, we find that the more the CFO is CEO-like, the higher his compensation both in terms of total amount and in relative terms (proximity) to his CEO. In this respect, we support the findings of Datta and Datta (2014), but we also show that when the CFO role-type is more managerial-like and the CFO is regarded more as a “partner” of the CEO, he also earns compensation that is more similar to the CEO’s, which may raise concerns about the CFO’s independence and monitoring propensity (Li, 2014). This is the focus of our second research question about the effects of CFO compensation on outcomes in the CFO’s realm related to financial reporting, also considering the effects on that of the CFO role itself. Specifically, we find that CFO financial expertise is positively associated with financial reporting quality, while CFO pay’s long-term incentive intensity and CFO pay’s incentive compensation proximity to the CEO are negatively associated with financial reporting quality.

Overall, then, and in terms of CFO role characteristics, our results suggest that a CFO’s financial expertise is positively related to financial reporting quality. In term of CFO pay, our results suggest that CFOs get rewarded for their CEO-likeness, and particularly for their being similar to the CEO in terms of tasks and decision making authority. This in line with human capital theory (e.g., where generalist skills earn a premium). In line with agency theory, our findings also suggest, however, that firms may need to de-emphasize compensation for the CFO relative to the CEO to properly motivate the CFO to maintain a focus on his watchdog duties as, indeed, we find that using compensation that is more incentive intensive and more similar to that of the CEO is potentially detrimental to the quality of financial reporting.

Section 2 synthesizes the relevant literature underlying our hypotheses. Section 3 describes the research method. Section 4 presents the results. The final section concludes, discusses, and cautions.

2. Literature and hypotheses

2.1. Prior work

2.1.1. CFO role

We first draw on studies focused on analyzing the CFO role. The common thrust of these studies is that they conceptualize and operationalize the CFO role based on his educational/professional background and competences. One strand views CFOs mainly as financial experts and examines the effects of CFO “quality”—that is, his qualities or qualifications. In this vein, Li et al. (2010) focus on the effects of CFO expertise (measured by professional qualifications) and experience on adverse SOX 404 opinions. Based on the idea that the quality of the CFO’s performance should be a function of the quality of the CFO, the authors predict, and find, that firms with less-qualified CFOs—that is, CFOs whose financial accounting knowledge appears to be wanting (who have less expertise) and/or who have less experience—are more likely to receive adverse SOX 404 opinions.

Along the same lines, Hoitash et al. (2016) distinguish between “accountant” and “non-accountant” CFOs. Based on the idea that accountant types are more risk averse, they examine the performance of accountant CFOs with respect to a broad set of firm outcomes (R&D and capital investments, external financing, cash management and cost control), and they do this separately for firms in high- and low-growth industries. Similar to previous research (e.g., Bédard et al., 2014; Li et al., 2010), Hoitash et al. (2016) designate a CFO as an “accountant” if he is a CPA or has worked as an auditor or controller. They find that in high-growth industries, accountant CFOs are associated with lower levels of investment in R&D and capital expenditures and a lower likelihood of engaging in external financing, where such alleged conservative behavior appears to negatively affect firm value. In contrast, for low-growth industries where risk aversion appears to enhance value creation, they document a positive contribution of accountant CFOs.

Taking a broader view of CFO background to include generalist/managerial competences, Datta and Datta (2014) draw on human capital theory to suggest that CFO compensation must reflect their managerial skills. In this vein, education and professional background are considered a signal of an individual’s human capital. Specifically, Datta and Datta (2014) find that “strategic” CFOs with an elite MBA earn a total pay premium (1) relative to those without an elite MBA degree; (2) relative to “accounting” CFOs with a specialized accounting background; and (3) relative to those with a non-MBA master’s degree. Moreover, CFO qualifications drive the components of their pay packages as well, as “strategic” CFOs with an elite generalist training are awarded both higher salaries and higher levels of equity-based pay, and thus, higher total compensation. For all MBA CFOs in general (i.e., elite and non-elite), there is only a salary premium over non-MBA CFOs. The authors conclude that firms with an “accounting” CFO recognize the limitations of specialized skills at the corporate apex (consistent with other work on so-called “upper echelon” roles, e.g., Beyer et al., 1997; Geletkanycz and Black, 2001) and, hence, offer lower compensation. An additional explanation for these results, however, is that functional skills can be obtained from lower-level employees, and therefore, do not command a premium in the C-suite (Datta and Datta, 2014).

These prior contributions rest on two assumptions. First, prior conceptualize the two roles of CFOs (“accounting” or financial expert vs. “strategic” or managerial) as being opposites, or if not that, as somehow implicitly incompatible. If a CFO is a financial expert, he cannot be “strategic” and vice versa. Hence, they presume a rather simplistic “either/or” framework that to some extent

⁴ To address this deficit, several studies have investigated the determinants and effects of compensation practices outside of the US. However, these contributions have focused mainly on CEO, not CFO, compensation issues (Muslu, 2010), or are mainly descriptive (Conyon and Schwalbach, 2000a, 2000b; Conyon and Murphy, 2000; Ferrarini et al., 2010).

fails to capture the very real complementarities of the CFO role in practice (Byrne and Pierce, 2007; Chang et al., 2014). Second, the operationalization of the role has hitherto only been related to a CFO's educational and professional background, i.e., to their individual characteristics. This is at best partial because a given position like that of a CFO is defined also by what role the organization expects the incumbent to play (Davies, 1976)—that is, as a *function* or *position* that has a set of parameters within which some set of tasks must be completed (e.g., Chang et al., 2014; Krantz and Maltz, 1997). Formal roles delegated to CFOs carry authority and power to work on certain tasks in certain ways, affect the nature of their collaboration with other executives, mainly CEOs, and the scope of their organizational contributions.

Therefore, our aim is to complement prior literature on CFO roles by conceiving the various aspects of CFO role duality as potentially complementary and by considering the different roles in context—that is, by complementing a CFO's professional characteristics with the type of job assigned and the extent of decision authority bestowed. This is consistent with the call that, to understand the CFO role, an analysis of the different manifestations of firm-specific CFO jobs is pivotal (Bédard et al., 2014).

2.1.2. CFO compensation

The second key component of our study is to consider CFO compensation, both its determinants and effects. In terms of the determinants of CFO compensation, the closest prior studies are Hoitash et al. (2012) and Bédard et al. (2014). Hoitash et al. (2012) find that the negative association between internal control weaknesses and the change in CFO bonus is stronger in firms with better governance oversight and with higher costs of misreporting, suggesting that the fiduciary duties of CFOs are ostensibly emphasized more in such firms. Interestingly for our purposes, Hoitash et al. (2012) thus suggest CFO-specific compensation features related to a CFO's fiduciary duties. Bédard et al. (2014) start from the idea that individuals in different executive roles bring different skills to the table. Their findings show that companies whose CFO has a seat on the board are associated with higher financial reporting quality (i.e., a lower likelihood of reporting a material weaknesses in internal controls or having a financial restatement, and better accruals quality). Yet, they also find that CFOs with a board seat tend to have higher excess compensation signaling possible agency concerns.

In terms of the effects of CFO compensation design features, Chava and Purnanandam (2010) find that, while CFO incentives do not have a detectable effect on corporate leverage decisions for example, they do have a significant effect on some aspects of corporate financial decision making, such as earnings management decisions. To add, studies that examine both CEO and CFO compensation in comparison (e.g., Jiang et al., 2010; Kim et al., 2011) indicate that CFOs are possibly even more influential in their firms' information manipulation behaviors than their CEOs, thus driving home the importance of the design of their compensation plans to appropriately mitigate this. In line with this, Indjejikian and Matějka (2009) find that in the post-SOX period, public (relative to private) companies appear to have reduced the relative importance of CFO bonuses based on firm financial performance, signifying that concerns over CFO fiduciary responsibilities indeed play a role. Balsam et al. (2012) observe that CFOs receive higher bonuses when their companies meet or beat earnings forecasts. Specifically, their evidence suggests that when a firm meets or just beats its earnings target, CFOs are incrementally rewarded if they manage earnings expectations and/or discretionary accruals to presumably help achieve this result.

2.2. Hypotheses

The above-reviewed studies, and human capital theory generally, suggest that compensation should reflect CFO skills, where generalist skills should or appear to command a pay premium (Datta and Datta, 2014). Thus, if the CFO job, or set of tasks, is similar to the CEO's, then the CFO, as a C-suite executive, should be compensated similarly to the CEO, based on overall firm performance (Balsam et al., 2012). Incentive compensation commensurate to that of the CEO may be needed to motivate the CFO to perform well in his managerial role and work well with and serve “on” the senior management team by undertaking important executive decision-making tasks. Therefore, we expect that the CFO role will affect both (a) the level and (b) the proximity of CFO compensation to that of his CEO, as follows:

H1a. As the CFO is more “CEO-like”, the higher will be his level of compensation

H1b. As the CFO is more “CEO-like”, the closer his compensation will be to that of his CEO

In particular, “CEO-like” CFOs, as we will explain further below, are CFOs with a managerial/generalist background and whose tasks are similar to those of their fellow CEOs. And as we will define in more detail below, we refer to the closeness of CFO and CEO compensation in terms of “compensation proximity”.

That said, given the specificities of the CFO role, firms should calibrate CFO incentive compensation to ensure that the CFO also maintains an appropriate focus on his fiduciary tasks. As such, and as the above-reviewed studies suggest, the need to maintain proper financial reporting quality implies that CFO incentive compensation is both calibrated and differentiated from the CEO's in order to alleviate a CFO's incentives to manipulate the financial information on which they are both evaluated (Indjejikian and Matějka, 2009: 1065). Hence, from a governance perspective and consistent with agency theory, we expect that firms that deemphasize CFO incentives should be able to mitigate earnings management behaviors and to motivate, on balance, CFOs to maintain an uncompromised fiduciary responsibility over accurate financial reporting (Graham et al., 2005).

This premise is in line with two insights from prior work. On the one hand, the CFO is an executive in a particular position in terms of unique knowledge and relative influence over financial reporting (Indjejikian and Matějka, 2009; Maas and Matějka, 2009;

Jiang et al., 2010). Consistent with agency-type arguments, the CFO might thus exploit his differential knowledge of, and influence over, financial matters to his personal advantage, for example, by making decisions that are aimed at increasing pay (Graham et al., 2005). This self-interested behavior should be more prominent when incentive intensity is stronger; i.e., in cases where a higher proportion of pay can be impacted by manipulation.⁵

On the other hand, Feng et al. (2011) suggest that CFOs may become involved in accounting manipulations under pressure from the CEO. Therefore, it is reasonable to anticipate that the more similar a CFO's compensation is to that of his CEO, the more muted the incentives for the CFO will be to act as a guardian over financial reporting quality. The degree of proximity of the compensation incentives for the CEO and CFO is thus plausibly indicative of the likelihood that the CFO acts in alignment with the CEO (Graham and Harvey, 2001) rather than as the guardian or “watchdog” of financial reporting quality. This reasoning is also in line with Li (2014) who uses the compensation gap between the CEO and the “No. 2” as a proxy for the relative monitoring capacity of the No. 2 or CFO. High CFO incentive intensity, possibly similar to that of the CEO, is likely to increase the alignment, if not the risk of collusion, between the CFO and CEO as they both stand to benefit from the outcomes of managed earnings.

Both explanations—CFO self-interested behavior and pressure from or collusion with the CEO—suggest de-emphasizing CFO incentive intensity and incentive compensation proximity relative to that of the CEO to preserve or enhance a focus on financial reporting quality. Thus, we predict that:

H2a. CFO compensation that is stronger in terms of both short-term and long-term incentive intensity will be associated with lower financial reporting quality

H2b. CFO incentive compensation that is closer to that of his CEO will be associated with lower financial reporting quality

3. Method

3.1. Sample

We focus on FT Europe 500 firms in a proprietary database from a global compensation consulting firm for the period 2005–2009. In addition, we obtained financial data from Compustat and hand-collected further data from various public sources, such as *Who's Who*, annual reports, and the corporate governance sections of company websites. Our initial sample contains 659 observations with complete data on CFO/CEO compensation and trademark CFO/CEO job evaluation metrics. For the same reasons as in prior research, we eliminate financial services, yielding a final sample of 450 CFO observations. Table 1 presents the distribution of our sample of 450 CFO observations across years (Panel A), countries (Panel B), and industries (Panel C). Our sample is reasonably evenly distributed across years, and is also proportionally representative of the distribution of firms across industries and countries in the FT Europe 500, as well as Compustat in respect of industries.

3.2. Measures

The core of our analyses is based on the variable definitions shown in Table 2. As discussed in Section 2 above, our main focus is on CFO role as the primary explanatory variable of CFO compensation. Consistent with previous work (Datta and Datta, 2014; Bédard et al., 2014) and using public sources, we hand-collected information about the educational (MBA or not) and professional (consulting or auditing) background of the CFOs in our sample together with whether he is a CPA. Drawing on these data, it is possible to distinguish CFOs with or without managerial competences/background (Datta and Datta, 2014) and with or without accounting background (Bédard et al., 2014).

To expand the analysis of CFO-role in prior work that focuses on the incumbent's expertise or experience, we also consider firm-level elements of the CFO's job, responsibilities, authority, and so on (see below). Through our access to the proprietary data, we can complement public data with what we term the “CEO-CFO distance” measure, a more substantive and firm-specific role measure that is based on a job evaluation methodology used for decades by a global compensation consulting firm and applied to thousands of jobs over time. This job evaluation methodology adopts a systematic approach for ranking and comparing executive jobs by company, considering the requirements of the role instead of the individual characteristics of the job holder, recognizing and assessing both job content and context, essentially capturing eight different variables, seven of which related to management duties and one to practical know-how. The evaluation method focuses on decision-making scope, managerial involvement, communication abilities, capacity to exert influence, as well as degree of autonomy. The methodology assigns a job score using a 14-tier grading system (A to N). The higher the tier (A), the more “managerial” the job; the lower the tier (N), the more “specialized” the job, requiring specific (single, technical) know-how. The CEO has the highest job evaluation score in the organization, hence the notion of “distance” because it is possible to calculate the distance of an executive position from the CEO as the difference between the respective job evaluation scores. Following this approach, the CEO-CFO distance measure, in our sample ranging from 0 to 8, indicates the extent to which the CFO job designed by the company is “CEO-like” (our term). The lower the distance (0), the higher the CFO's managerial scope, i.e., the more the CFO is akin to a “business partner” of the CEO. Conversely, the higher the distance (8), the higher the CFO's professional

⁵ This idea was very powerfully expressed in the above-mentioned quote attributed to US IRS Commissioner Mark Everson during his testimony before the Senate Finance Committee, suggesting that CFOs who are in charge of “minding the cookie jars” should be paid by “fixed compensation for specified contract periods.”

Table 1
Sample distribution.

Panel A: Distribution by Year					
Year		Observations		Sample proportions	
2005		107		23.78%	
2006		73		16.22%	
2007		78		17.33%	
2008		95		21.11%	
2009		97		21.56%	
Total		450		100%	
Panel B: Distribution by Country					
Country		Observations		Sample proportions	FTE 500 Proportions
Austria		5		1.11%	2.0%
Belgium		18		4.00%	2.9%
Finland		27		6.00%	2.6%
France		42		9.33%	16.7%
Germany		78		17.33%	10.7%
Greece		8		1.78%	1.5%
Ireland		10		2.22%	1.1%
Italy		22		4.89%	5.5%
Luxembourg		1		0.22%	0.0%
Netherlands		43		9.56%	4.4%
Norway		21		4.67%	2.0%
Poland		2		0.44%	2.0%
Portugal		3		0.67%	1.8%
Russia		5		1.11%	7.0%
Spain		10		2.22%	5.5%
Sweden		11		2.44%	6.4%
Switzerland		19		4.22%	7.2%
United Kingdom		125		27.78%	20.8%
Total		450		100%	100%
Panel C: Distribution by Two-Digit SIC Industry					
SIC Codes	Industry	Observations	Sample proportions	Compustat Proportions	FTE 500 Proportions
10–19	Mining and Construction	27	6%	9.95%	14%
20–39	Manufacturing	235	52.22%	43.40%	27%
40–48	Transportation	65	14.44%	7.14%	7%
49	Utilities	41	9.11%	3.87%	19%
50–59	Wholesale and Retail	44	9.78%	8.77%	15%
70–89	Services	28	6.22%	24.77%	16%
99	Non classifiable	10	2.22%	0.83%	2%
10–99	Total	450	100%	100%	100%

scope; i.e., the more the CFO is akin to be (only a) financial expert.⁶

We also create a dummy variable when the CFO is a member of the board. Prior work (e.g., Bédard et al., 2014) suggests that CFOs who are board members potentially exert greater influence and, therefore, possibly greater latitude in choices about their compensation plans as well as accounting methods. From an agency perspective, CFOs with board membership might exploit their more powerful position to their advantage. We include this variable in our analyses also for a reason that is more pertinently related to the tenor of our argument, notably, that CFOs sitting on the board are possibly more “managerial” and more similar to their CEOs, and thus, also more likely to have more similar compensation as well. In other words, both the CFO “power” and “managerial role” arguments, which are plausible but empirically hard to distinguish through this proxy, warrant inclusion of the board membership variable in our analysis.

In total, we have six variables that describe the various elements of a CFO role: four related to CFO competences—i.e., an *Education* variable, a qualification (*CPA*) variable, and two background (*Experience in Auditing* and *Consulting*) variables—one related

⁶ It is important to underline that this variable is not a proxy for the hierarchical distance between the CEO and the CFO, as indeed the measure captures multiple managerial dimensions of the job. In fact, given that the CFO reports directly to the CEO in nearly all firms implies that the hierarchical distance in terms of organizational levels would be invariantly equal to one. CEO-CFO distance as measured here, however, varies between 0 and 8.

Table 2

Variable definitions.

<i>Compensation variables</i>	
CFO compensation amount	Sum of salary, bonus, and long-term incentives (log)
CFO compensation proximity with CEO	CFO total compensation divided by CEO total compensation
CFO incentive compensation proximity with CEO	CFO total incentive compensation divided by CEO total incentive compensation
CFO short-term incentive intensity	Bonus divided by total cash compensation
CFO long-term incentive intensity	Long-term incentives divided by total compensation
<i>CFO-roles variables</i>	
CEO-CFO distance	Ordinal variable ranging from 0 to 8 (see text, Section 3)
CPA	Indicator variable equal to 1 if the CFO is a Chartered Public Accountant, 0 otherwise
Experience in Auditing	Indicator variable equal to 1 if the CFO has some experience in an audit company during his/her career, 0 otherwise
Education	Indicator variable equal to 1 if the CFO has an MBA, 0 otherwise
Experience in Consulting	Indicator variable equal to 1 if the CFO has some experience in a consulting company during his/her career, 0 otherwise
Director	Indicator variable equal to 1 if the CFO sits on the Board, 0 otherwise
<i>Financial reporting quality</i>	
DAJ	We estimate discretionary accruals (DAJ) based on the Jones modol (1991) as follows: $(TA_{it}/A_{it-1}) = \beta_0 + \beta_1 (1/A_{it-1}) + \beta_2 (\Delta REV_{it}/A_{it-1}) + \beta_3 (PPE_{it}/A_{it-1}) + e_{it}$ (1) Where: TAit = Total accruals Ait-1 = Lagged total assets ΔREV_{it} = Change in current revenues PPEit = Net property, plant and equipment
	We estimate the normal accruals (NAit) using the coefficients calculated in Eq. (1): $NA_{it} = \hat{\beta}_1 (1/A_{it-1}) + \hat{\beta}_2 ((\Delta REV_{it} - \Delta REC_{it})/A_{it-1}) + \hat{\beta}_3 (PPE_{it}/A_{it-1})$ (2) Where: NAit = Normal accruals ΔREC_{it} = the change in accounts receivables from the prior year The measure of discretionary accruals (DAJ) is the difference between total accruals and normal accruals as follows: $DAJ = (TAit/Ait-1) - NAit$
DAMJ	We estimate discretionary accruals (DAMJ) based on the modified-Jones model in Dechow et al. (1995) which follows the estimation procedure of the Jones model reported above and simply modifies equation (1) in the following way: $(TA_{it}/A_{it-1}) = \beta_0 + \beta_1 (1/A_{it-1}) + \beta_2 (\Delta REV_{it} - \Delta AR_{it}/A_{it-1}) + \beta_3 (PPE_{it}/A_{it-1}) + e_{it}$ (1) Where: TAit = Total accruals Ait-1 = Lagged total assets ΔREV_{it} = Change in current revenues ΔAR_{it} = Change in accounts receivable PPEit = Net property, plant and equipment
DAK	We estimate discretionary accruals (DAK) following Kothari et al. (2005) as follows: $(TA_{it}/A_{it-1}) = \beta_0 + \beta_1 (1/A_{it-1}) + \beta_2 (\Delta REV_{it}/A_{it-1}) + \beta_3 (PPE_{it}/A_{it-1}) + \beta_4 (ROA_{it}/A_{it-1}) + e_{it}$ (1) Where: TAit = Total accruals Ait-1 = Lagged total assets ΔREV_{it} = Change in current revenues PPEit = Net property, plant and equipment ROAit = Return on total assets We estimate the normal accruals (NAit) using the coefficients calculated in Eq. (1): $NA_{it} = \hat{\beta}_1 (1/A_{it-1}) + \hat{\beta}_2 ((\Delta REV_{it} - \Delta REC_{it})/A_{it-1}) + \hat{\beta}_3 (PPE_{it}/A_{it-1}) + \hat{\beta}_4 (ROA_{it}/A_{it-1})$ (2) Where: NAit = Normal accruals ΔREC_{it} = the change in accounts receivables from the prior year The measure of discretionary accruals (DAK) is the difference between total accruals and normal accruals as follows: $DAK = (TAit/Ait-1) - NAit$
<i>Control variables</i>	
Tenure	Number of years the CFO has been in that company as a CFO
Gender	Indicator variable equal to 1 if the CFO is male, 0 otherwise
Former CEO	Indicator variable equal to 1 if the CFO was a CEO in his previous jobs, 0 otherwise
Same job/same individual	Indicator variable equal to 1 if the CFO is the same person in year t as in year (t-1), 0 otherwise
Board size	Number of directors

(continued on next page)

Table 2 (continued)

Financial expert on Audit Committee	Indicator variable equal to 1 if there is a financial expert (a CPA, a CFA, an auditor, directors with a CPA or CFA designation, or experience serving as a CFO, controller, treasurer, vice president of finance, or experience working for a financial services firm or auditing firm) on the Audit Committee
Presence of the Remuneration Committee	Indicator variable equal to 1 if there is a Remuneration Committee, 0 otherwise
Total assets	Total assets (log) in the same fiscal year
Return on assets	Return on assets of the firm in the same fiscal year
Leverage	Equity on total assets in the same fiscal year
Cash flow from operations	EBITDA divided by sales in the same fiscal year
Regulated industry	Indicator variable equal to 1 if the firm operates in a regulated industry (two-digit SIC code 40-49)
CEO compensation amount	Sum of salary, bonus, and long-term incentives (log)
Legal origin	Categorical variable based on La Porta et al. (1998) and Leuz et al. (2003) ranging from 1 to 4 (English = 1, German = 2, Scandinavian = 3, French = 4)
Legal tradition	Dummy variable based on La Porta et al. (1998) and Leuz et al. (2003) equal to 1 for common law countries and 0 otherwise
Outside investor rights	Anti-director rights index created by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from 0 to 5
Legal enforcement	The mean score across three legal variables used in La Porta et al. (1998) as in Leuz et al. (2003)
Importance of equity market	The mean rank across three variables used in La Porta et al. (1998) as in Leuz et al. (2003)
Ownership concentration	The median percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998; Leuz et al., 2003).
Disclosure index	Inclusion or omission of 90 items in the annual reports based on La Porta et al. (1998) and Leuz et al. (2003)

to CFO job-type (the *CEO-CFO distance* variable), and one related to CFO power (the *Director* variable).

Regarding CFO compensation, we also have several variables. In line with previous work, we use the (log of) *CFO compensation amount*, which is the sum of salary, bonus, and long-term incentives, where the latter is provided by the consulting company—defined as the total value of long-term incentives estimated using the binomial method.⁷ In addition, we construct *CFO compensation proximity with the CEO* for each CFO-CEO pair by company as CFO total compensation divided by CEO total compensation. Regarding the incentives part of compensation, we define *CFO short-term incentive intensity* as CFO bonus divided by total cash compensation, and *CFO long-term incentive intensity* as the amount of his long-term incentives divided by total compensation. We also analyze *CFO incentive compensation proximity with the CEO*, calculated as CFO total incentive compensation divided by CEO total incentive compensation.

Similar to prior studies in CEO and CFO compensation, we control for CFO individual-level variables—*CFO tenure* and *CFO gender* as well as newly-hired CFOs (with the dummy variable *same job/same individual*); for corporate governance monitoring environment—*Board size*, the presence of a *financial expert on the audit committee*, and the *presence of the remuneration committee*; as well as for firm size (*total assets*), firm performance (*ROA*), and industry (*regulated industry*). To control for country effects, we use the country legal and institutional variables from La Porta et al. (1998) and Leuz et al. (2003) (*legal origin*, *legal tradition*, *outside investor rights*, *legal enforcement*, *importance of equity market*, *ownership concentration*, and *disclosure index*). In addition to previous literature, we use CEO total compensation (*CEO compensation amount*) as a control variable for the analyses on *CFO compensation amount* because CEO pay tends to be used to benchmark the compensation of other C-suite executives. Finally, we control for whether the CFO has been a CEO before (*Former CEO*) because *CFO compensation proximity* might depend not only on the similarity within the current CFO-CEO dyad, but also on the compensation over time related to the CFO's own career (e.g., or especially, as a former CEO). Table 2 provides detailed variable definitions for all these variables.

For the second part of our study that analyzes the effects of CFO role and CFO compensation on the quality of financial reporting, we draw on prior work (e.g., Jiang et al., 2010) that examines CFO-related outcome measures in terms of properties of earnings that are likely the result of CFO monitoring of the accounting system. Given that the CFO has the opportunity and ability to make accounting decisions that change reported income, we focus on discretionary accruals to proxy for our notion of reporting quality. The larger the value of discretionary accruals, the lower the quality of earnings and thus financial reporting (e.g., Dechow et al., 1995). Specifically, and as shown in Table 2, to capture accrual-based earnings management, we follow prior studies that use the cross-sectional Jones (1991) model (*DAJ*) and the performance-matched discretionary accruals model (*DAK*) in Kothari et al. (2005).⁸ In addition, we use the modified-Jones model (*DAMJ*), as described in Dechow et al. (1995), for our additional analyses. Similar to previous studies (Feng et al., 2011; Dechow et al., 2010; Jiang et al., 2010) our control variables for financial reporting quality include firm *leverage* and firm cash performance (*Cash flow from operations over sales*). In addition, we use the relevant control variables related to CFO characteristics, firm corporate governance, firm size, firm performance, and country discussed above.

⁷ The binomial method (Cox, Ross and Rubinstein, 1979) has been shown to give the same results for traded options as the Black-Scholes method. Long-term incentives include stock option plans, phantom option plans, performance share plans, restricted share plans, and long-term cash plans.

⁸ Discretionary accruals are estimated by country, industry (Fama-French classification) and year, and by considering the whole population of companies in Compustat related to the countries included in our database.

Table 3
Descriptive statistics.

Compensation variables	N	Mean	Median	Std. dev.	25%	75%
CFO compensation amount	450	1,507.61	1,246.00	1,187.45	605.00	2,040.00
CFO compensation proximity with CEO	450	0.57	0.54	0.46	0.40	0.67
CFO incentive compensation proximity with CEO	450	0.62	0.50	0.96	0.33	0.66
CFO short-term incentive intensity	450	0.40	0.39	0.20	0.25	0.54
CFO long-term incentive intensity	450	0.24	0.22	0.19	0.09	0.36
CFO-role variables						
CEO-CFO distance	450	3.63	4	1.38	3	4
CPA	412	0.33	0	0.47	0	1
Experience in Auditing	432	0.26	0	0.44	0	1
Education	410	0.47	0	0.50	0	1
Experience in Consulting	414	0.17	0	0.38	0	0
Director	432	0.41	0	0.49	0	1
Financial reporting quality						
DAJ	315	−0.015	−0.014	0.070	−0.045	0.018
DAMJ	315	−0.016	−0.015	0.071	−0.046	0.018
DAK	260	−0.004	−0.002	0.070	−0.036	0.032
Control variables						
CFO tenure (years)	432	4.57	4	4.10	2	6
CFO gender (1 = male)	433	0.96	1	0.19	1	1
CFO as former CEO	428	0.08	0	0.28	0	0
Same job/same individual	450	0.91	1	0.25	1	1
Board size	430	12.40	11.00	4.47	9.00	15.00
Financial expert on Audit Committee	450	0.29	0	0.45	0	1
Presence of the Remuneration Committee	427	0.88	1	0.32	1	1
Total assets	447	31,265.28	13,944.00	48,166.92	5,202.86	30,527.00
Return on assets	447	0.08	0.07	0.07	0.04	0.11
Leverage	447	0.35	0.35	0.16	0.23	0.46
Cash flow from operations on sales	450	5.26	0.14	102.46	0.03	0.35
Regulated industry	450	0.24	0	0.42	0	0
CEO compensation amount	450	3,080.64	2,397.00	2,987.12	1,185.00	3,826.00
Legal origin	450	2.51	2	1.24	1	4
Legal tradition	450	0.30	0	0.46	0	1
Outside investor rights	450	2.93	3	1.62	1	5
Legal enforcement	450	9.13	9.20	0.81	9.10	10.00
Importance of equity market	450	15.84	16.70	8.12	7.20	25.00
Ownership concentration	450	0.34	0.31	0.16	0.15	0.50
Disclosure index	450	69.58	69.00	7.73	62.00	78.00

3.3. Descriptive statistics

Table 3 reports descriptive statistics on CFO compensation (in €000) for 2005–2009. The data show the amount of CFO total compensation, which is on average about €1.5m. In terms of proximity of CFO compensation to that of the CEO, CFO total compensation is, on average, 57% of CEO total compensation. CFO short-term [long-term] incentive intensity is 0.40 [0.24], meaning that CFO bonuses [long-term incentives] are 40% [24%] of [total] CFO cash compensation. Comparing means, and compared to CEOs (untabulated *t*-test), CFOs earn significantly lower compensation in both amount as well as expressed in terms of incentive intensity. Overall, this is descriptively in line with prior work (i.e., Jiang et al., 2010; Aggarwal and Samwick, 2003).

Table 3 also reports the descriptive statistics for the CFO role variables. The data show a mean (median) distance between the CEO and CFO of 3.63 (4) over a range from 0 to 8. Comparing means (untabulated *t*-test) of low-distance CFOs and high-distance ones, low-distance CFOs earn significantly higher compensation in both amount as well as in terms of incentive intensity. The data in Table 3 also indicate that 33% of the CFOs possess a CPA qualification whilst 26% have an auditing background, with 17% having some consulting experience. 47% of the CFOs in our sample have an MBA or equivalent, and 41% sit on their company's board. Firms in our sample exhibit discretionary accruals that, on average, represent circa −1.5% of total assets according to the Jones and modified-Jones model, and average performance-matched discretionary accruals of −0.4% over the sample period.

Regarding the control variables and the individual-level variables, CFOs in our sample are mostly males (96%) and have an average tenure of 4.5 years. A small number of the CFOs in our sample (8%) were a CEO previously.

Turning to the corporate governance variables, the average board in our sample has about 12 members. 29% of the sample companies have a financial expert on the Audit Committee.⁹ Nearly all companies (88%) have a Remuneration Committee. Average

⁹ There is quite some variation across countries in this respect: there are countries (e.g., Ireland, United Kingdom, Switzerland), where the financial expert is present in more than 50% of the cases, while there are other countries in which the presence is quite rare (e.g., Italy and Portugal, with around 9%).

Table 4
CFOs role: factor analysis.

	Factor pattern		Factor pattern with varimax rotation	
	Factor 1 Financial expertise	Factor 2 CEO-likeness	Factor 1 Financial expertise	Factor 2 CEO-likeness
CPA	0.844	−0.060	0.794	0.292
Experience in auditing	0.683	−0.295	0.744	0.012
Education	−0.554	0.171	− 0.575	−0.073
Director	0.551	0.484	0.303	0.668
Experience in consulting	−0.124	0.707	−0.404	0.593
CEO-CFO distance	−0.372	−0.451	−0.154	− 0.564
Eigenvalue	1.943	1.057	1.793	1.207

This table provides the results of a factor analysis (principal component) of the six items potentially related to different CFO role-types. We present both the raw factor patterns as well as the patterns generated after a varimax rotation. The two factors (highlighted in bold) are consistently retained with an eigenvalue above 1.0.

total assets of about €31bn suggest that the sample consists of reasonably large firms (sales exceed €50bn in the top decile). Mean returns (ROA) are 8% across firms and years. Returns are quite stable over time, ranging between 9.9% in 2005 and 6.4% in 2009. Leverage, calculated as equity over total assets, and cash flow from operations over sales, are 35% and 5.26 respectively on average. 24% of the firms in our sample operate in regulated industries.

Because we allow the various aspects of the CFO role to be potentially complementary (i.e., each CFO is expected to exhibit varying levels of financial expertise and CEO-likeness), we do not classify CFOs as either fiduciary or managerial in type. Instead, we employ factor analysis to combine the six variables related to these aspects of the CFO role. Table 4 shows how the different items that proxy for these various aspects of the CFO role relate to each other. Both models (with and without factor rotation) extract two factors with eigenvalues exceeding 1. We use this consistent factor-based grouping to create our empirical analogues of the *Financial Expertise* and *CEO-likeness* constructs.¹⁰

3.4. Correlations

Table 5 reports the correlation coefficients among the main variables of interest, which appear to be consistent with intuition and our expectations. CFO compensation amount is positively related with all the other compensation variables and also with both CEO-likeness and financial expertise, although less strongly with the latter. Compensation proximity, on the contrary, is positively and significantly correlated only with CEO-likeness. Several compensation variables related to proximity and incentive intensity are positively correlated with different measures of discretionary accruals. The positive and significant correlation between CEO-likeness and financial expertise, although of inevitably low magnitude due to their factor construction, suggests that CFO roles come with both these dual aspects rather than these being inverse as is often implied.

4. Results

4.1. Models

Regarding the determinants of CFO compensation, we use an OLS regression with country and year controls. Thus, to test the key association of interest between CFO role and compensation, we use Model [1] in the following general form (with firm and time subscripts suppressed):

$$CFO\ compensation = \alpha_0 + \alpha_1\ CFO\ role\ variables + Controls + \varepsilon_t \quad (1)$$

Recall from Section 2 that we have two dependent variables: CFO total compensation (level) and CFO compensation relative to his CEO (proximity).

Regarding the implications of CFO compensation, we again use an OLS regression model, with country, year, and industry controls, in the following general form:

$$Financial\ reporting\ quality = \alpha_0 + \alpha_1\ CFO\ compensation\ variables + \alpha_2\ CFO\ role\ variables + Controls + \varepsilon_t \quad (2)$$

The main dependent variable or proxy for financial reporting quality is based on discretionary accruals calculated two different

¹⁰ As is customary for factor analysis-based variable construction, we take the linear combination (sum) of the items loading on each factor. Specifically, the *Financial Expertise* variable is the sum of the values of the *CPA* and *Experience in Auditing* dummy variables minus the value of the *Education* dummy (because of the negative sign from the factor analysis) for each observation [ranging from −1 to +2 with a mean 0.12]. Similarly, the *CEO-likeness* variable is the sum of the values of the *Experience in Consulting* and *Director* dummy variables minus the value of a *CEO-CFO distance* dummy (equal to 1 for an above-median distance) [ranging from −1 to +2 with a mean of 0.02].

Table 5
Correlations among the main variables of interest.

	CFO compensation amount	CFO-CEO compensation proximity	CFO-CEO incentive comp. proximity	Short-term incentive intensity	Long-term incentive intensity	Financial expertise	CEO- likeness	DAJ	DAMJ
CFO-CEO compensation proximity	0.202 <i>0.000</i>								
CFO-CEO incentive compensation proximity	0.127 <i>0.007</i>	0.765 <i>0.000</i>							
Short-term incentive intensity	0.723 <i>0.000</i>	0.167 <i>0.000</i>	<i>0.109</i> <i>0.021</i>						
Long-term incentive intensity	0.548 <i>0.000</i>	0.053 <i>0.260</i>	0.053 <i>0.258</i>	<i>0.115</i> <i>0.015</i>					
Financial expertise	0.087 <i>0.078</i>	0.070 <i>0.156</i>	0.062 <i>0.213</i>	−0.009 <i>0.861</i>	0.068 <i>0.173</i>				
CEO-likeness	0.142 <i>0.004</i>	0.164 <i>0.001</i>	0.078 <i>0.111</i>	0.034 <i>0.488</i>	0.071 <i>0.151</i>	0.232 <i>0.000</i>			
DAJ	−0.020 <i>0.724</i>	0.076 <i>0.178</i>	0.105 <i>0.063</i>	−0.049 <i>0.388</i>	0.076 <i>0.179</i>	−0.083 <i>0.163</i>	0.022 <i>0.713</i>		
DAMJ	−0.024 <i>0.670</i>	0.080 <i>0.155</i>	0.113 <i>0.045</i>	−0.054 <i>0.337</i>	0.074 <i>0.188</i>	−0.08 <i>0.177</i>	0.030 <i>0.607</i>	0.996 <i>0.000</i>	
DAK	0.030 <i>0.632</i>	0.140 <i>0.024</i>	0.153 <i>0.013</i>	−0.063 <i>0.310</i>	0.144 <i>0.020</i>	−0.071 <i>0.269</i>	0.079 <i>0.217</i>	0.903 <i>0.000</i>	0.905 <i>0.000</i>

Variable definitions in Tables 2 and 4. Significance of coefficients in italics.

ways using the Jones model and performance-matched discretionary accruals. In all regressions, we compute heteroscedasticity robust standard errors clustered by firm level.

4.2. Main findings

Table 6 reports the results for H1a (column 1), which maintains that CEO-likeness is associated with higher levels of compensation, and H1b (column 2) stating that CEO-likeness implies compensation that is more similar to that of the CEO. The results indicate support for both hypotheses. The effect of CEO-likeness is significantly positive in the presence of all the control variables, thus supporting the prediction that firms design pay packages depending on CFO type. Specifically, CFOs with more managerial background or focus in their jobs, and thus, who are more “like” CEOs, are both compensated more as well as more similarly to their CEOs. In terms of economic significance, CFOs that are one unit “more like” their CEO (as measured by our CEO-likeness variable) earn 8.4% more and move 5.8% closer to the compensation of their CEO (as measured by our CFO-CEO compensation proximity ratio). In terms of control variables, CFO compensation amount is also positively associated with tenure (and, correspondingly, with the same job/same individual variable); with the compensation amount of his CEO; with the presence of a remuneration committee; and with company size. CFO-CEO compensation proximity is positively associated with the CFO being male, the CFO having been a former CEO, and with tenure (same job/same individual). Regarding country variables (un-tabulated), the higher the outside investor rights, the lower the CFO compensation amount; and the higher the disclosure index, the lower the CFO compensation as well as the CFO compensation proximity with the CEO, suggesting greater mitigation of potential agency problems.

Table 7 shows the results regarding the implications of CFO compensation. Specifically, we examine H2a on the association between CFO short-term and long-term incentive intensity and financial reporting quality, and H2b on the link between CFO-CEO incentive compensation proximity and financial reporting quality. Results across the models using the two variations of our key dependent variable consistently indicate support for both hypotheses. The significant positive relationship between long-term incentive intensity of CFO compensation and discretionary accruals suggests that a higher weight of long-term incentives in CFO compensation is associated with lower quality of financial reporting. Economically, a one percent increase in a CFO’s long-term incentive intensity results in a roughly two decile increase in the average value of discretionary accruals (0.044 in the Jones model and 0.052 in the Kothari et al. model). Similarly, higher CFO-CEO incentive compensation proximity, or thus closer similarity in the incentives of the CFO and CEO, is associated with lower financial reporting quality. Here, an one percent increase in CFO-CEO incentive compensation proximity results in about a one decile increase in the average value of discretionary accruals (or between 0.015 and 0.023). Financial expertise is negatively associated with discretionary accruals, suggesting that CFOs with stronger financial knowledge and background have a seemingly positive impact on the quality of financial reporting. This appears to be of lower economic magnitude, where a one unit increase in our measure of financial expertise (which is admittedly hard to interpret in economic terms) results in a decrease in discretionary accruals of a range in between 0.009 and 0.015. There is a negative and significant relationship between board size and discretionary accruals across all models, suggesting that companies with presumably stronger monitoring exhibit higher financial reporting quality. The findings also show a negative and significant association between CFO tenure and discretionary accruals and a positive and significant relationship with the same job/same individual variable, suggesting that financial reporting quality benefits from CFO experience but potentially suffers from entrenchment.

Table 6
Determinants of CFO compensation.

	CFO compensation amount	CFO-CEO compensation proximity
CEO-likeness	0.084** <i>0.035</i>	0.058*** <i>0.017</i>
Financial expertise	0.033 <i>0.027</i>	0.016 <i>0.013</i>
Tenure	0.017*** <i>0.006</i>	0.001 <i>0.003</i>
Gender	0.130 <i>0.160</i>	0.110** <i>0.052</i>
Former CEO		0.097 [†] <i>0.051</i>
Same job/same individual	0.169* <i>0.099</i>	0.111*** <i>0.041</i>
CEO compensation amount	0.579*** <i>0.045</i>	
Board size	0.010 <i>0.009</i>	0.005 <i>0.005</i>
Financial expert in the Audit Committee	0.034 <i>0.045</i>	−0.008 <i>0.025</i>
Presence of Remuneration Committee	0.158** <i>0.077</i>	0.062 <i>0.047</i>
Total assets (log)	0.063*** <i>0.021</i>	−0.013 <i>0.011</i>
ROA	0.647* <i>0.338</i>	−0.050 <i>0.179</i>
Regulated industry	−0.036 <i>0.052</i>	0.030 <i>0.030</i>
Constant	4.690*** <i>1.280</i>	0.281 <i>0.526</i>
Country controls	Yes	Yes
Year controls	Yes	Yes
N	386	386
Prob F	0.000	0.000
R-squared	0.801	0.199

Variable definitions in Tables 2 and 4. Clustered robust standard errors in italics; *** p < 0.01; ** p < 0.05; * p < 0.10.

4.3. Additional analyses

We conclude with some further sensitivity analyses. In order to understand which components of CFO role duality included in our factors affect CFO compensation design (H1a and H1b), we repeat the main analyses in Table 6 using the publicly-available variables included in our factor-based scores separately. Specifically, following Hoitash et al. (2016), we include *CPA or experience in auditing* they use to designate a CFO as an accountant when he is a CPA or has worked as an auditor. Based on Datta and Datta (2014), we include *Education* to indicate whether a CFO has an MBA. We also include *Director* (equal to 1 if the CFO sits on the board) in line with Bédard et al. (2014). In addition to our proprietary measure (*CEO-CFO distance*) and the above mentioned publicly-available measures, we also include the *Tenure*, *Gender*, and *Former CEO* variables. The results in Table 8 indicate that it is our proprietary measure—i.e., the type of tasks and the firm-specific function of the CFO—that influences both the amount of CFO compensation and its proximity to that of the CEO. The other results are essentially unaffected compared to those we report in Table 6.

In our analysis of H1 on the determinants of CFO compensation, we use country dummies instead of the La Porta et al. (1998) and Leuz et al. (2003) country legal and institutional variables (which we used in our main analysis primarily because they are more easily interpretable compared to nondescript country dummies). The results (untabulated) with reference to the main variables of interest remain unaffected.¹¹ In addition, we rerun our analysis of H1 including industry fixed effects (using 2-digit SIC codes). The key results of interest (untabulated) remain unchanged (the results for CEO-likeness are actually stronger).

We also parse the CFO compensation components and find that the higher the CEO-likeness, the higher the base salary and the long-term incentives compensation components, which supports the human capital rationale. Regarding proximity, the higher the CEO-likeness, the higher the similarity of CFO compensation with the CEO's in terms of base salary and bonus, the latter possibly reflecting a greater similarity in terms of the underlying objectives (performance targets).

¹¹ Regarding the country-level variables, however, we also note that compensation proximity is significantly higher in common law countries. We also find positive and significant relations between compensation proximity and outside investor rights, the importance of equity markets, and ownership concentration, suggesting that in contexts where monitoring is stronger, there may be greater tolerance for a closer proximity of CFO pay to that of the CEO.

Table 7
Implications on financial reporting quality.

	Discretionary accruals (Jones model)		Discretionary accruals (Kothari model)	
Short-term incentive intensity	–0.022		–0.038	
	<i>0.025</i>		<i>0.023</i>	
Long-term incentive intensity	0.044*		0.052*	
	<i>0.023</i>		<i>0.027</i>	
CFO-CEO incentive comp. proximity		0.015*		0.023**
		<i>0.008</i>		<i>0.010</i>
Financial expertise	–0.009**	–0.011**	–0.017***	–0.015***
	<i>0.005</i>	<i>0.005</i>	<i>0.005</i>	<i>0.005</i>
CEO-likeness	–0.005	–0.006	0.001	0.003
	<i>0.005</i>	<i>0.006</i>	<i>0.005</i>	<i>0.006</i>
Tenure	–0.002*	–0.002	–0.002	–0.001
	<i>0.001</i>	<i>0.001</i>	<i>0.001</i>	<i>0.001</i>
Gender	0.004	–0.004	0.010	–0.009
	<i>0.013</i>	<i>0.014</i>	<i>0.018</i>	<i>0.021</i>
Same job/same individual	0.047*	0.043*	0.058**	0.054*
	<i>0.024</i>	<i>0.024</i>	<i>0.029</i>	<i>0.031</i>
Board size	–0.003**	–0.004**	–0.004**	–0.004**
	<i>0.001</i>	<i>0.001</i>	<i>0.002</i>	<i>0.002</i>
Financial expert on Audit Committee	0.009	0.010	0.021**	0.020**
	<i>0.008</i>	<i>0.008</i>	<i>0.009</i>	<i>0.009</i>
Total assets (log)	–0.003	0.004	–0.002	0.000
	<i>0.005</i>	<i>0.004</i>	<i>0.007</i>	<i>0.006</i>
ROA	–0.044	–0.052		
	<i>0.115</i>	<i>0.114</i>		
Leverage	0.064	0.074*	0.012	0.020
	<i>0.041</i>	<i>0.040</i>	<i>0.031</i>	<i>0.028</i>
Cash flow from operations/Sales	–0.002	–0.002	–0.002	–0.002
	<i>0.003</i>	<i>0.003</i>	<i>0.002</i>	<i>0.002</i>
Constant	–0.066	0.086	0.117	0.226
	<i>0.182</i>	<i>0.151</i>	<i>0.241</i>	<i>0.209</i>
Country controls	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes
N	277	277	234	234
Prob F	0.000	0.007	0.000	0.000
R-squared	0.165	0.173	0.165	0.187

Variable definitions in Tables 2 and 4. Clustered robust standard errors in italics; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

In our analyses of the effects of CFO role-types and CFO compensation (H2), we use the modified-Jones model (DAMJ) as described in Dechow et al. (1995) to measure our dependent variable, i.e., financial reporting quality. Our main results (see Table 9) are confirmed. In addition, we include the volatility of revenues and the volatility of sales growth as additional control variables (as in Chava and Purnanandam, 2010). We use country dummies instead of the Leuz et al. (2003) variables. Here, too, the results (untabulated) with reference to the main variables of interest remain unaffected.

Given the importance of audit committees in influencing the quality of financial reporting (e.g., Carrera et al., 2017), we did additional analyses using the various audit committee variables available for our sample. We found that 97% of our sample firms have an audit committee; that 93% of the audit committees have an independent chair; and that there is a financial expert on 29% of the audit committees. When the chair of the audit committee is not independent, CFO financial expertise is significantly lower (-0.35 , $t = 1.43$, $p < 0.10$, one-tailed). When there is a financial expert on the audit committee, both CEO-likeness (0.21 , $t = 2.30$, $p < 0.05$) and CFO financial expertise (0.25 , $t = 2.15$, $p < 0.05$) are significantly higher. These univariate associations point a certain picture of corporate governance, where more independent and more expert audit committees are associated with commensurate financial expertise of the CFO but also a higher degree of CEO-likeness.

Therefore, we rerun our analyses for H2a and H2b by including specific audit committee variables (audit committee or not; independent chair of the audit committee; financial expert on the audit committee) in our regressions. Interestingly, the presence of a financial expert on the audit committee is positively associated with the magnitude of accruals (using the Jones and Kothari models), suggesting lower reporting quality. This is, however, in line with the findings of Carrera et al. (2017). CFO financial expertise continues to be negatively associated with discretionary accruals, indicating a positive effect on financial reporting quality. Hence, the effect of the CFO role appears to be even more important in light of the positive association between discretionary accruals and a financial expert on the audit committee. One reason is, as was argued in prior work, that, in fact, a CFO with greater financial expertise is the one who may be able to effectively counterbalance the potential influence of financial experts on the audit committee who are likely to be considered ‘opinion leaders’ on accounting choices and financial reporting decisions (Chiu et al., 2013).

Focusing on countries specifically, we also rerun our analyses on H1a and H1b by considering only the three major EU countries included in our sample (as in Muslu, 2010)—i.e., France, Germany, UK. Our main results remain unchanged. Furthermore, for H2a

Table 8
Determinants of CFO compensation decomposed.

	CFO compensation amount	CFO-CEO compensation proximity
Education	−0.075 <i>0.047</i>	−0.015 <i>0.029</i>
CPA or experience in auditing	0.036 <i>0.048</i>	0.039 <i>0.031</i>
CEO-CFO distance	−0.080 ^{***} <i>0.021</i>	−0.037 ^{***} <i>0.011</i>
Director	0.005 <i>0.076</i>	0.026 <i>0.038</i>
Tenure	0.018 ^{**} <i>0.006</i>	0.002 <i>0.003</i>
Gender	0.120 <i>0.146</i>	0.108 ^{**} <i>0.052</i>
Former CEO		0.086 <i>0.056</i>
Same job/same individual	0.178 [*] <i>0.098</i>	0.115 ^{***} <i>0.041</i>
CEO compensation amount	0.590 ^{***} <i>0.045</i>	
Board size	0.012 <i>0.009</i>	0.005 <i>0.005</i>
Financial expert in Audit Committee	0.005 <i>0.435</i>	−0.021 <i>0.024</i>
Presence of Remuneration Committee	0.174 ^{**} <i>0.072</i>	0.061 <i>0.042</i>
Total assets (log)	0.071 ^{***} <i>0.020</i>	−0.008 <i>0.011</i>
ROA	0.608 [*] <i>0.332</i>	−0.059 <i>0.177</i>
Regulated industry	−0.066 <i>0.047</i>	0.018 <i>0.029</i>
Constant	4.385 ^{***} <i>1.262</i>	0.263 <i>0.553</i>
Country controls	Yes	Yes
Year controls	Yes	Yes
N	387	386
Prob F	0.000	0.000
R-squared	0.813	0.210

Variable definitions in Table 2. Clustered robust standard errors in italics; *** p < 0.01.; ** p < 0.05.; * p < 0.10.

and H2b, our main findings are also confirmed with reference to these countries.

Finally, we also ran further models that mirror Table 6 but include various other plausible control variables to merely stretch our results in the sense of any of a number of possible omitted correlated variables that could explain both the CFO role and his compensation, and thus raise the always lurking and never satisfactorily addressable endogeneity concern which is endemic to the empirical approach adopted in this type of studies (Nikolaev and van Lent, 2005). We do this under the rubric of additional analyses because we feel that the cost to parsimony of including ever more control variables is not justified by the benefit of a slight, if any real, reduction in (one's views of satisfactorily addressing) the concern about endogeneity. That said, one could argue that further proxies of, say, the complexity of the CFO's job may be good candidates to additionally include in the model. Following Balsam et al. (2012), we thus considered the effect of a firm's investing and financing activities on CFO compensation (i.e., on the right-hand side in Table 6), operationalized as the firm's involvement in mergers and acquisitions (M&A) and the amount of debt and equity issuance. This did not affect the results of interest of our reported results.

5. Discussion and conclusions

Prior research has mainly focused on CEO pay despite the growing concerns over pay of the CFO, especially due to the fiduciary responsibilities that CFOs have in addition to managerial responsibilities on the executive team. In this study, we investigate determinants and effects of CFO compensation in a sample of European listed firms over the years 2005–2009.

We use CFO role as the main determinant of CFO compensation. The operationalization of CFO role is one of the contributions of our paper. When attempting to define the CFO's role, research has hitherto considered only CFO competences, such as CFO education or work experience (Datta and Datta, 2014; Bédard et al., 2014), or indirect proxies of CFO managerial responsibilities, such as the financial performance measures used to evaluate CFOs for performing such duties (Hoitash et al., 2012), or whether the CFO works in a public or private company (Indjejikian and Matějka, 2009). To expand the analysis of CFO role types in prior work, we consider two key elements of the organizational design of the CFO role; that is, CFO power (as measured by CFO membership of the board) and the

Table 9
Implications on financial reporting quality.

	Discretionary accruals (modified Jones model)	
Short-term incentive intensity	–0.023 <i>0.025</i>	
Long-term incentive intensity	0.042* <i>0.024</i>	
CFO-CEO incentive comp. proximity		0.017* <i>0.009</i>
Financial expertise	–0.010** <i>0.005</i>	–0.012** <i>0.005</i>
CEO-likeness	–0.005 <i>0.005</i>	–0.006 <i>0.006</i>
Tenure	–0.002** <i>0.001</i>	–0.002* <i>0.002</i>
Gender	–0.002 <i>0.016</i>	–0.011 <i>0.017</i>
Same job/same individual	0.048** <i>0.024</i>	0.043* <i>0.024</i>
Board size	–0.003** <i>0.002</i>	–0.004** <i>0.002</i>
Financial expert on Audit Committee	0.009 <i>0.008</i>	0.009 <i>0.008</i>
Total assets (log)	0.003 <i>0.005</i>	0.003 <i>0.004</i>
ROA	–0.035 <i>0.115</i>	–0.046 <i>0.113</i>
Leverage	0.061 <i>0.040</i>	0.071* <i>0.039</i>
Cash flow from operations/Sales	–0.002 <i>0.003</i>	–0.002 <i>0.003</i>
Constant	–0.028 <i>0.192</i>	0.127 <i>0.157</i>
Country controls	Yes	Yes
Year controls	Yes	Yes
Industry controls	Yes	Yes
N	277	277
Prob F	0.000	0.005
R-squared	0.168	0.182

Variable definitions in Tables 2 and 4. Clustered robust standard errors in italics; *** p < 0.01.; ** p < 0.05; * p < 0.10.

different manifestations of firm-specific CFO jobs and tasks. This last variable is measured based on a proprietary distance measure of CFO vs. CEO managerial competencies and duties. Thus, our modeling of CFO role is based on CFO competences (as measured by four variables related to education, background, and two types of professional qualifications), CFO power, and the nature of the CFO job (expressed in term of distance to that of the CEO). We employ factor analysis to combine these six variables, which results in two constructs that we label as being related to the financial expertise of the CFO and his closeness in terms of the nature of his job to the CEO (“CEO-likeness”).

Importantly, our conceptual approach implies, and our empirical inferences suggest, that these two role dimensions can “co-exist” instead of being strictly “traded off” or being opposites. Indeed, it is commonly implied in prior work that if a CFO is a financial expert, he cannot be “strategic” and vice versa. In other words, prior work has typically, and certainly implicitly, assumed a rather simplistic “either/or” framework that to some extent fails to capture the very real complementarities of the CFO role in practice (Byrne and Pierce, 2007; Chang et al., 2014). In this respect, our study adds to the prior literature on CFO roles by conceiving the various aspects of CFO role duality together and by considering the different roles in context—that is, by complementing a CFO’s professional characteristics with the type of job assigned and the extent of decision authority imparted. This is consistent with the call that, to understand the CFO role, an analysis of the different manifestations of firm-specific CFO jobs is pivotal (Bédard et al., 2014).

We feel that our more encompassing operationalization of the CFO role is particularly pertinent for professional roles in the top management team, and especially for CFOs, where the demand for CFOs to have greater involvement in the business should not be detrimental to their quintessential professional fiduciary responsibility. This tension is what makes CFO roles unique, and such tension must be managed, not just traded off, as indeed firms would admit they cannot or will not. This is, after all, the very nature of the CFO job.

With regard to the effects of the CFO’s role on compensation, we document that the level of CEO-likeness is positively and significantly associated to CFO compensation amount and to CFO compensation proximity with the CEO. But when is close too close for comfort; that is, when may having a more CEO-like role and pay soften the CFO’s fiduciary role? This is an important agency/governance question (Graham and Harvey, 2001; Mian, 2001; Fee and Hadlock, 2004): ensuring that the CFO stewardship aspect of

the job is not compromised by the seemingly increasingly important quest for business partnering. Consistent with human capital and labor market theories, CEO likeness gives CFOs an edge to command higher salary and earn more performance-dependent pay due to their inevitably valuable generalist skills pertinent for the C-suite whose occupants' charge is to drive results. But the greater proximity of the incentives of CEO-like CFOs to that of their CEOs also likely implies that such CFOs may have objectives that are more closely aligned with those of their CEOs, which may compromise their fiduciary responsibility (e.g., [Indjejikian and Matějka, 2009](#); [Hoitash et al., 2012](#)).

Our results indicate a positive relationship between long-term incentive intensity of CFO compensation and discretionary accruals, suggesting that a higher weight of long-term incentives in CFO compensation is on its own associated with lower quality of financial reporting. Similarly, higher CFO-CEO incentive compensation proximity, or thus closer similarity in the incentives of the CFO and CEO, is also associated with lower financial reporting quality. Financial expertise, however, is negatively associated with discretionary accruals, suggesting that CFOs with stronger financial knowledge have a positive impact on the quality of financial reporting. When examining the economic significance of these three effects, our findings indicate that the negative effect of each of the incentive compensation variables is greater than the positive effect of financial expertise. On balance, then, the pull of either more incentive intense or more CEO-like compensation seems stronger than the pull from a CFO's putative professional qualifications and considerations. The important issue therefore remains for firms to design CEO-like CFO roles with job design features, including compensation features, which yield the benefits of involved CFOs without undermining their fiduciary ethos. Firms should therefore consider whether CEO-likeness in terms of the CFO's job can be achieved without also ever more closely matching the CFO's compensation to that of their CEO. Our evidence, however, suggest that they may not.

But our results also indicate a negative relationship between board size and discretionary accruals, suggesting that companies with presumably stronger monitoring exhibit better financial reporting quality. We also find a negative association between CFO tenure and discretionary accruals but a positive relationship with the length of time the CFO has been in the same job, suggesting that financial reporting quality benefits from CFO experience but potentially suffers from entrenchment. Clearly, there are many other dials beyond CFO compensation that firms can turn to try and maintain a robust financial governance environment. That said, even in the presence of these other effects, the CFO incentive compensation variables retained their negative effect, which underlines their potency.

We note, however, that we did not find a significant association between CFO short-term incentive intensity and our proxy for financial reporting quality. Instead, we find that the effect stems from CFO's long-term incentives. In the broadest sense, our findings for this effect of long-term incentives is consistent with prior work arguing that equity incentives may motivate managers to engage in behaviors to inflate share prices ([Bolton et al., 2006](#); [Bebchuk and Fried, 2010](#); [Benmelech et al., 2010](#); [Kim et al., 2011](#)). But again, our approach ventures beyond this by way of considering not merely incentive intensity on its own, but also the proximity of a CFO's incentives to those of his CEO. Higher CFO-CEO incentive compensation proximity, or thus closer similarity in the incentives of the CFO and CEO, is also associated with lower financial reporting quality.

Overall, then, our results suggest that CFOs get rewarded for their CEO-likeness, and particularly for their being similar to the CEO in terms of tasks and decision-making authority. But it is their financial expertise that is positively related to financial reporting quality. At the same time, using compensation that is too incentive intensive (on the long-term part), and too similar to that of the CEO, appears to be potentially harmful to the quality of financial reporting. These results are relevant for boards involved in selecting highly expert CFOs, and their compensation committees charged with designing subsequently effective incentive compensation plans for those CFOs.

There are many avenues for future research on CFO compensation. CFO peer group compensation comes to mind (like similar work for CEOs—e.g., [Bizjak et al., 2008](#)). This would not only establish a “benchmark” for the CFO role and pay within the firm as in our study (using the job methodology through which we obtained our data), but also externally relative to “peer group” CFOs. It would also be worthwhile to try and incorporate more CEO characteristics into the analysis. For example, founder CEOs may exert more pressure on their CFOs than non-founder CEOs, along the lines of prior work by [Feng et al. \(2011\)](#) that suggests that CFOs may be drawn into accounting manipulations under pressure from their CEOs. Moreover, social capital theory and social network analysis as in [Carrera et al. \(2017\)](#), for example, offer promise even beyond just the CFO-CEO dyad, deepening our understanding of “CFO embeddedness” within a specific social network, including (all) other top management team members and directors that may be levers or brakes on the CFO's actions, information, and resources.

Our paper obviously also has some limitations. Most of these are related to the strength of our proxies for the true underlying constructs of interest. We believe we do quite well with our CFO role proxy using individual-level and firm-level elements of what the CFO job entails. Regarding compensation, we can only observe realized pay, where, ideally we would like to be able to observe the actual incentive formulae. This would strengthen our proximity measures particularly, such as whether, say, the short-term incentive formula for the CFO and CEO contain similar or different performance measures, thresholds, and so on. That is the reason why we talk more cautiously about “compensation” rather than “compensation design” both in the title and in the text. Regarding our outcome variables, we are encouraged by the consistency of our results across the three operationalizations of accruals. But accruals are inarguably an imperfect proxy for the governance issues we are interested in and can only allude to at best. That is why we chose to talk about “*implications*” in our title: with inevitably better and/or more (corroborating) proxies for role, compensation, and consequences, we would feel more comfortable to say “*implications for governance*” for example. That said, to find that CFO roles come in various guises, and that these affect CFO compensation in systematic ways is rather intuitive, but to document this with a measure of CFO role that goes beyond the more typical proxies is possibly one contribution. However, our main contribution, we believe, rests with our finding that characteristics of both the CFO role and CFO compensation have implications for the influence that CFOs can have. Whether their influence is for better or worse appears to depend, among other things on a careful calibration of the CFO role

and the accompanying CFO compensation. Our findings suggest that the financial expertise of a CFO is a positive aspect but also that, if not accompanied with proper incentives, such as when the CFO's incentives track those of the CEO too closely, can be eroded. This, we believe, is an important take away for boards and regulators about, once again, the potency of compensation, in this case for CFOs particularly. At the broadest level, our paper hopefully but carefully speaks to the perennial question for organizations of how to benefit from involved CFOs while preventing them from going native.

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