Journal of Management Accounting Research
Vol. 31, No. 2
Summer 2019

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November 29, 2017

Acknowledgements: We thank Brian Cadman (editor), Ben Commerford, Ryan Dunn, Chris McCoy, Curtis Mullis, Frank Verbeeten, two anonymous reviewers, and conference participants at the 2016 AAA annual and southeast regional meetings. Funding provided by the University of Alabama's Culverhouse College of Business is appreciated.

Keywords: CFO/COO duality, corporate governance,

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ABSTRACT

While the popular press has documented Chief Financial Officer (CFO) role expansion into traditional operations functions, recent research suggests that time spent on non-core CFO activities harms financial reporting quality. We examine the operational acumen of CFOs and the potential negative reporting consequences stemming from one person simultaneously holding the role of CFO and Chief Operations Officer (COO); henceforth, "CFO/COO duality". Empirically, CFO/COO duality occurs with increasing frequency during our sample period (2000 through 2016) and duality is not uncommon (among firms with a COO, over 10% have a unified CFO/COO executive). We find no evidence that combining the CFO and COO positions adversely affects operations. Regarding financial reporting quality, we find some evidence that CFO/COO duality firms have relatively more volatile discretionary accruals; however, these accruals are also relatively more predictive of future cash flows. Collectively, our results suggest that unifying control of operations and reporting can be an effective corporate reconfiguration.

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1. Introduction

There is little debate that the role of chief financial officers (CFOs) has expanded over time (e.g., Favaro 2001; Zorn 2004; Farag, Plaschke, and Rodt 2012; Bernard, Ge, Matsumoto, and Toynbee 2015; Hoitash, Hoitash, and Kurt 2016), however, there is little agreement regarding the precise roles and responsibilities that the 'new' CFO fills in addition to traditional accounting and treasury functions. Survey and interview evidence (e.g., Groysberg, Kelly, and MacDonald 2011; Farag et al. 2012; Consero 2014) indicates that CFOs take on additional roles such as strategist, talent manager, risk manager, investor relations, and a host of other non-traditional roles. In short, the role of the CFO is increasingly broad and complex. This paper is motivated by reports of CFO responsibility expansion into operations (IFAC 2013, p. 11; Thomson 2013; McCann 2014; Johnson 2015). We assume that a CFO who takes on the Chief Operating Officer (COO) title; henceforth 'CFO/COO duality', provides a strong, publicly-available signal that the CFO has significant operating responsibility and we investigate the operational and financial consequences of CFOs inheriting this operational responsibility. In particular, we examine the possibility that; 1) relative to firms with a traditional CFO, the quality of discretionary accruals may differ when the top accounting executive is also responsible for operational duties, and 2) relative to a firm with a traditional COO, the quality of discretionary expenditure decisions may differ when the top operations executive, who likely comes from a financial background, is also responsible for financial decisions.

Competition for control within business enterprises has existed for at least 100 years (Hopwood 2008) and, although the COO has historically been considered the second-in-command and 'heir apparent' to the CEO (Bennett and Miles 2006), recent trends support the

contention that CFOs can more legitimately claim to be the true second-in-command (Farag et al. 2012; p. 131). Consistent with this contention, the percentage of public firms that have eliminated the COO position has dramatically increased in recent years (Gerut 2010; Neilson 2015). Anecdotally, the decline in COOs has led to increasing power for CFOs, who often inherit many of the operational duties after the COO position is eliminated (McGregor 2015).

Although anecdotal evidence of CFOs taking on operational duties is prevalent (Thomson 2013; McCann 2014; Johnson 2015), to our knowledge, prior research has not empirically investigated the effectiveness of CFOs with respect to operational acuity. In contrast, emerging research does investigate whether time spent on non-core CFO duties harms financial reporting. While Biggerstaff, Cicero, Goldie, and Rieid (2016) find deterioration in financial reporting quality when CFOs increase leisure activities, Cunningham, Myers, and Short (2017) find no deterioration when CFOs take on outside director responsibilities. As described below, when a CFO takes on substantial operating responsibility (captured here as CFO/COO duality), there are reasons to believe both financial reporting and short-term operating decisions might differ compared to the decisions made in traditional 'single role' CFO firms. To the extent reporting decisions change in 'dual role' CFO firms, financial reporting might be more or less predictive of future performance. To the extent short-term operating decisions change, future firm performance could be positively or negatively impacted.

From a cross-sectional analysis perspective, public data limitations make it problematic to detect the level of operational involvement that a given CFO has within his/her company. For example, lack of a COO does not clearly signal increased CFO operating responsibility because the CEO often takes responsibility for operations in companies that eliminate the COO position, which in turn, leaves the CFO with traditional accounting and treasury responsibilities (Neilson

2015). Conversely, a CFO might provide extensive operational support to an acting COO. In both cases, detecting and assessing CFO operational involvement for the purpose of empirical analysis is challenging. We overcome this challenge by examining instances where one person simultaneously holds the CFO and COO position (i.e., CFO/COO duality).

Using the BoardEx - North America database, we note that CFO/COO duality is not uncommon and CFO/COO duality is increasing in frequency over our sample period (2000 through 2016). In almost all cases (97% of cases), we find that the unified CFO/COO position is filled by a person with a CFO background (i.e., we find few observations of a COO becoming a unified CFO/COO). As such, we argue that CFO/COO duality offers a publicly-detectable way in which to assess the impact of a CFO taking on additional operating responsibilities. Said differently, CFO/COO duality offers an unambiguous observation of consolidated control that permits a relatively clean investigation of (1) the operational ability of CFOs and (2) the interplay between financial reporting and operational control.

Primarily based on upper echelons theory[1], management research posits and finds that firms with COOs are structurally different than firms with no COO (e.g., Hambrick and Cannella 2004, Marcel 2009, Zhang 2006). As such, our investigation begins by identifying all firm-years with a COO position listed in the Boardex database that have Compustat data availability (n = 12,108). CFO/COO duality firms and firm-years represent at least 11.0% of the sample (slightly higher after all data needs are considered) and, consistent with anecdotal accounts (e.g., Thomson 2013; McCann 2014; Johnson 2015), the number of CFO/COO duality firms

[1] Upper echelons theory claims that understanding why organizations "do what they do" is predicated on considering the biases and dispositions of top executives (Hambrick 2007, 334). A long tradition of upper echelon research considers how the manner in which executives socialize and communicate influences firm performance (Marcel 2009, 647). As described in the next section "socializing and communicating" is a moot point when one executive holds both the CFO and COO titles (but communication is necessary when different executives hold these positions).

significantly increases during our sample period. We compare all firms that unify the CFO and COO positions to all firms with separate CFO and COO executives on a broad range of firm-level financial metrics and executive-level personal characteristics. In general, CFO/COO duality occurs in smaller, high growth firms (i.e., CFO/COO duality firms have lower assets and relatively high market-to-book ratios) and duality firms have relatively low ROA. In addition, CFO/COO duality executives are atypical relative to the CFO population in our sample. Specifically, CFO/COO duality executives are more experienced (both older and more likely to have prior CFO experience), less likely to have accounting certification, and they are far more likely to be a member of their firm's board of directors compared to other CFOs. As such, our main analyses involves a matched-firm design based on both firm-level and executive-level characteristics. We examine both financial reporting quality and operational outcome differences between CFO/COO duality firms and matched firms.

There are reasons to believe financial reporting quality might be affected by the decision to unify the CFO and COO positions. For example, current research based on limited attention theory investigates whether financial reporting quality is impacted by CFOs who spend time on non-core CFO activities. Specifically, Cunningham et al. (2017) find that the home-firm financial reporting quality of CFOs who take outside director positions is not compromised by the CFO's incremental outside duties. In contrast, Biggerstaff et al. (2016) find a significant negative association between financial reporting quality and a CFO's consumption of leisure (specifically, golfing).[2] Unlike these studies, we investigate an incremental time commitment that occurs *within* a CFO's firm. It is possible that an increase in functional diversity resulting from CFO/COO duality might improve performance (Bunderson and Sutcliffe 2002; Canella,

[2] Similarly, Biggerstaff, Cicero, and Puckett (2017) find CEO time spent golfing is negatively related to firm operating performance.

Park, and Lee 2008). Similarly, there is compelling evidence that individuals who have expertise in different areas find it difficult to communicate with one another (Ferreira and Sah 2012; 578), suggesting a unified CFO/COO executive might outperform separate CFO and COO executives.

In addition, executive power arguments suggest that unifying the CFO and COO positions might influence financial reporting quality. While there is little evidence that CFOs opportunistically alter financial reporting in the post-SOX era (Jiang, Petroni, and Wang 2010; Feng, Ge, Luo, and Shevlin 2011), emerging research suggests that CFO power is associated with real earnings management (rather than accruals management) to achieve earnings targets. As such, accrual quality improves with CFO power (Baker, Lopez, Reitenga, and Ruch 2018). Conversely, operating executive power (proxied by CEOs) is associated with accruals management (rather than real earnings management) to achieve earnings targets (Baker et al. 2018). To the extent that operational objectives (i.e., COO incentives) can be met with opportunistic reporting (CFO flexibility), unified CFO/COOs might behave differently than traditional CFOs. For example, the independence of accounting and financial reporting from operations is compromised when the CFO and COO positions are combined, which may increase the incentive for opportunistic reporting (e.g., meeting operational objectives via accruals management) by CFO/COO duality executives relative to a 'traditional' CFO.

Our multivariate analysis investigates the relationship between CFO/COO duality and the magnitude, volatility, and mapping of discretionary accruals into future cash flows and earnings (Dechow, Ge, and Schrand, 2010). We provide some evidence that the accruals of CFO/COO duality firms are more volatile than the accruals of matched-firm peers, which may suggest lower accrual quality (e.g., Lev 1983; Bergstresser and Philippon 2006; Dechow, Ge, and Schrand 2010; Jiang et al. 2010). That said, the relatively high volatility of accruals that we observe does

not appear to be an act of self-interest on the part of unified CFO/COOs. To explain, we find evidence that abnormal discretionary accruals map into future cash flows significantly better for CFO/COO duality firms compared to matched firms, which suggests *greater* accrual quality (consistent with Francis, LaFond, Olsson, and Schipper 2004) for CFO/COO duality firms. Interestingly, when we analyze within-firm effects of duality (e.g., using a sample of firms that had both separate CFO and COO firm-years, and CFO/COO duality firm-years) we also observe this improved accruals-to-cash-flow mapping during CFO/COO duality firm-years.

As with financial reporting quality, there are reasons to believe operations might be affected by the decision to unify the CFO and COO positions. On one hand, the increased functional diversity (Bunderson and Sutcliffe 2002; Canella, Park, and Lee 2008) and cross-specialty communication (Ferreira and Sah 2012) arguments suggest multi-faceted executives improve performance. On the other hand, CFOs are often accountants, and some have raised concerns about the operational business acumen of accountants (e.g., Kim, Hatcher, and Newton 2012; Paulsson 2012; Hoitash et al. 2016). Additionally, firms with powerful CFOs tend to use REM (income-increasing discretionary expenditures) rather than accruals-based earnings management (Baker et al., 2018). If CFO/COO executives are relatively powerful, and view their financial reporting responsibilities in a manner similar to traditional CFOs, short-sighted discretionary expenditure decisions could occur in duality firms. In total, we find no evidence that the discretionary expenditure decisions of CFO/COO duality companies influence future cash flows or future ROA in a way that differs from matched firms.

There is an ongoing call for CFOs and financial professionals to become more operationally astute (Wilds 2017, Cokins and Dybvig 2017) and many argue that to succeed in the future, professional accountants will need improved operational business acumen (Arnold 2018). Our

study suggests that managers from a financial background can fulfil operational roles admirably. While our findings are limited to CFOs who take on operational responsibility at the highest level (i.e., CFO/COO dualities), we argue that CFO/COO dualities are important to study because they offer the only clear public signal that a CFO has operational control. By systematically investigating CFO/COO duality for the first time, we offer empirical support for anecdotal claims that CFOs are taking on increased operational responsibility. Given that operations and financial reporting represent two of the three primary Committee of Sponsoring Organizations of the Treadway Commission (COSO) internal control objectives, the relative effectiveness of unified CFO/COOs should be of particular interest to accountants. In addition, our evidence should be of interest to boards of directors who consider modifying traditional organizational structures. Clearly, not all CFOs would have the ability or desire to take charge of their organization's operations, but our evidence suggests CFOs can be effective executives with respect to operations.

The remainder of the paper is structured as follows. Section 2 reviews background literature and outlines the research questions that we investigate. Section 3 provides our methodology and results. Section 4 concludes and discusses directions for future research.

2. Background Literature and Research Questions

Hambrick and Cannella (2004) conducted an early empirical exploration of why companies have Chief Operating Officers and whether the presence of a COO is associated with corporate performance.[3] Drawing on contingency theory, Hambrick and Cannella argue that CEOs are

[3] Based on field interviews, Hambrick and Cannella (2004; 967) find that executives with the "President" title function as COOs (and executives often hold both titles). To our knowledge, all subsequent research uses the 'COO' and 'President' titles interchangeably (e.g., Krause, Semadeni, and Cannella 2013, Marcel 2009, Bennet and Miles 2006, Naveen 2006, and Zhang 2006). We follow this convention and consistently use the 'COO' title (which can be interpreted as "COO and/or President"); however, we note that firms exclusively using the 'President' title

more likely to have COOs if (1) the CEO faces extraordinary task demands and (2) the CEO's background is not geared towards internal operations. Hambrick and Cannella find partial support for contingency theory (i.e., CEOs without operational backgrounds were more likely to have COOs) but they fail to support industry-based task demand (i.e., highly dynamic industries with large information-processing demands that, in theory, might overwhelm a CEO were not more likely to have a COO relative to less dynamic industries). Regarding corporate performance, Hambrick and Cannella (2004) find that companies with COOs have *lower* ROA and Market-to-Book values than companies without COOs. They conclude that the decision to have a COO is a structural choice of considerable consequence (p. 977); however, they were unable to detect clear determinants to predict the decision to have a COO.

Subsequent studies sought to further explain the impact of a firm having a COO in particular situations. For example Zhang (2006) found evidence to support a "power contender" hypothesis for COOs. Zhang examined 220 CEO successions and found that companies with the COO position were more likely to terminate the CEO after poor performance than were companies without a COO. Similarly, Naveen (2006) examined 691 CEO turnover events and found support for Vancil's (1987) 'relay succession' hypothesis. Specifically, Naveen found that both forced turnover and 'replacement by an outside CEO' occur at markedly lower rates when a firm has (versus does not have) a COO. Somewhat incongruent with Zhang (2006), Naveen (2006) documents that voluntary succession (from a retiring CEO to the current COO) benefits companies via positive stock price reaction to the 'heir apparent' COO being named CEO.

Appealing to upper echelon theory (and contrary to Hambrick and Cannella 2004), Marcel (2009) predicts and finds that companies with COOs have *higher* ROA and market-to-book

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are, on average, larger (by assets) than firms exclusively using the 'COO' title. Our matched-sample design controls for firm size differences.

values than companies without COOs due to improved information processing among executive teams that include a COO. Marcel also finds that the COO is most beneficial when firms have older executives. Evidence of a systematic COO benefit stands in contrast to the fact that the COO position is increasingly being eliminated in many large companies, from approximately half of all companies having a COO in 2000 to only one third in 2014 (Gerut 2010; Neilson 2015; McGregor 2015).[4]

While the preceding research appears to give conflicting reports on the value of a COO, we accept Hambrick and Cannella's conclusion that "the decision to have a COO is a structural choice of considerable consequence" and proceed with the assumption that firms with the COO position are somehow 'different'.[5] As such, our empirical analyses involve only companies that choose to have the COO position.

While it is unclear who takes operating responsibility when the COO position is eliminated, some argue that the decline in companies with a COO has led to increasing power for CFOs, who often take on many of the operational duties after the COO position is eliminated (McGregor 2015; McCann 2014). We are unaware of research that systematically investigates the prevalence of CFOs taking over operational responsibilities for COOs nor are we aware of research explaining why operational duties are given to CFOs, but historically, the role of CFOs has expanded over time and small sample studies suggest that CFO *involvement* in operational decisions began after the 1960s (Gerstner and Anderson 1976; Zorn 2004). Clearly, some internal functions traditionally under the COO's purview, such as motivating and monitoring employees, allocating resources, and assessing investment opportunities (Hambrick and Cannella, 2004), would be in accord with skill sets often associated with CFOs; however, other

[4] Exact percentages of this reduction vary by index (e.g., Fortune 500 / S&P 1500) and by the years examined.
[5] Interestingly, Hambrick, Humphrey and Gupta (2015; p. 455) use the 'presence of a COO' as a proxy for a firm's "vertical interdependence".

traditional COO operating responsibilities (e.g., strategy implementation, handling disturbances, marketing, customer relations, and R&D) are incongruent with the stereotypical perception of CFOs as accounting/finance specialists rather than overall business generalists (Favaro 2001). Nevertheless, recent anecdotes suggest that the changing dynamic within public companies is for CFOs to take on operating responsibilities (e.g., IFAC 2013, p. 11; Thomson 2013; McCann 2014; Johnson 2015), a phenomenon consistent with the expanding role of CFOs in the post Sarbanes-Oxley era (Erhemjamts, Gupta, and Tumennasan 2009).

Although interesting anecdotes of CFOs taking on operational responsibly can be found[6] and CFOs are increasingly encouraged to become more involved in operations (e.g., Wilds 2017, Cokins and Dybvig 2017), gathering systematic, cross-sectional evidence regarding the frequency with which CFOs command operating responsibility in corporations is problematic. As previously noted, the presence of a COO does not imply that the CFO lacks operational responsibility. Conversely, the CFO of a company without a COO might not have substantial operational responsibility. Clearly, gaining a better market-wide understanding of the extent to which CFOs have taken on operational roles is important; however, our approach in this study is to examine the extreme case where a CFO formally becomes the top operational executive by simultaneously holding the CFO and COO titles. By investigating CFO/COO duality, we can compare the reporting quality and operational outcomes of unified CFO/COO firms against similar firms that maintain a traditional organizational structure with separate CFO and COO executives.[7]

[6] In popular press examples, McCann (2013) quotes Safety-Kleen CFO Jeff Richard ("where I bring value is on the operations side") and he also describes how CFO Pete Bensen took on a large part of operational oversight when McDonald's recently eliminated the COO position (McCann 2014).

[7] All firms in our tested sample have both the COO and CFO function. Of the 74,627 merged BoardEx/Compustat firm-years, 16,480 have no CFO or COO; 41,423 have no COO; and 4,616 have no CFO. This results in the 12,108 observations shown in Table 1 (10,777 firm-years with separate CFO and COO executives and 1,331 CFO/COO duality firm-years).

Regarding reporting quality, there are reasons to believe a unified CFO/COO would produce higher quality external reporting than a traditional CFO. At a general level, management research suggests that intrapersonal functional diversity is positively associated with firm performance (Bunderson and Sutcliffe 2002, Canella et al. 2008). In addition, communicating across differentiated specialists is problematic (Heath and Staudenmayer 2000, Ferreia and Sah 2012), as such, unifying the CFO/COO position might eliminate communication problems between separate CFO and COO executives. In the context of our study, a unified CFO/COO might reasonably understand the financial implications of operating decisions better than a traditional CFO.

At a more specific level, typical responsibilities of COOs (e.g., managing inventory, customer service channels, the supply chain, and capital investment possibilities) intuitively inform significant reporting judgments. We use Calavo Growers, a duality company in our sample, to illustrate. Calavo – the global leader in the avocado industry and an expanding provider of value-added fresh food – discusses critical accounting estimates related to inventory, promotional allowances, acquired intangible assets, and the allowance for accounts receivable in the company's 2014 annual report. The company states accounting estimates are based on historic experience "and on various other assumptions that are believed to be reasonable under the circumstances". Intuitively, the CFO/COO from 2010-2014, Arthur Bruno's operational experience with product, customers, and acquisitions (in his role as COO) should inform these critical accounting estimates (in his CFO role), while avoiding misunderstandings between the operational and finance teams that may occur with separate CFO and COO executives (and their respective "teams").

In contrast, there are reasons to believe that financial reporting quality might be lower under CFO/COO duality relative to a traditional two-executive regime. Certainly, the added operational responsibilities and duties of a unified CFO/COO might overburden the executive relative to a traditional CFO role, thus reducing financial reporting quality (Krantz 2008). As previously noted, time spent away from CFO duties has been found to harm financial reporting quality in some settings (e.g., the increased leisure investigated by Biggerstaff et al. 2016). In addition, it is possible that combining the CFO and COO roles compromises independence. CFOs have a significant impact on financial reporting decisions (e.g., Geiger and North 2006; Ge et al. 2011), and there is some evidence that CFOs opportunistically alter financial reporting (Jiang et al. 2010; Feng et al. 2011). Finally, unlike traditional CFOs, who are incentivized to produce high-quality financial reports (Baker et al. 2018), the combination of operational objectives (i.e., COO incentives) with financial reporting may create the incentive to opportunistically use accruals in an effort to meet operational targets (CFO flexibility).[8] In summary, we pose the following research question:

> **RQ 1:** Does financial reporting quality differ in CFO/COO duality firms relative to other firms?

Similar to financial reporting quality, there are reasons to believe operational decisions might be better or worse in firms with CFO/COO duality relative to firms that have separate CFO and COO executives. On one hand, the intrapersonal functional diversity of unified CFO/COOs and eliminated communications issues between separate CFOs and COOs could positively affect the quality of operating decisions given that unified CFO/COOs should better understand the financial implications of operating decisions relative to

[8] Anecdotal evidence from the government sector suggests that regulators prefer separate CFO and COO positions (e.g., New Mexico's State Auditor suggested that the University of New Mexico separate the CFO and COO roles to achieve better segregation of duties (11/10/17 audit report)).

traditional COOs. Examples of higher-quality operating decisions (i.e., better 'cost/benefit' decisions, including capital investment decisions) could manifest via skill sets such as "lean thinking" principles, assessing the return on marketing and brand investment, ensuring effective investment in R&D and innovation, and similar capabilities recommended to professional accountants who aspire to become a CFO (IFAC 2013, p. 22).

On the other hand, there are reasons to believe CFO/COO duality firms will underperform similar firms with separate CFO and COO executives. Historical concern about the business acumen of CFOs (Favaro 2001) anecdotally continues, especially when CFOs have accounting backgrounds (e.g., Kim, Hatcher, and Newton 2012 and Paulsson 2012), and empirical analysis shows accounting CFOs perform poorly in non-traditional roles such as facilitating firm growth (Hoitash et al. 2016) and managing investor relations (Bernard et al. 2015). In addition, to the extent a unified CFO/COO is overburdened (relative to a traditional COO), one would expect a decrease in operating decision quality.

Given the dearth of prior research on the operational acumen of CFOs and the lack of clear theory, we make no formal prediction regarding how CFO/COO duality will affect a firm's operating outcomes. Rather, we pose the following non-directional research question:

> **RQ 2:** Does the quality of operating decisions differ in CFO/COO duality firms relative to firms with a more traditional management structure?

Although we have argued that prior theory and research do not permit directional predictions regarding the reporting quality or operational performance between firms with, versus without, a unified CFO/COO executive, we conjecture that the decision to entrust a CFO with formal operational control is not a random decision. Specifically, the experience and abilities (either real or perceived) of a CFO who is named CFO/COO are likely higher than those of a 'typical'

CFO. In addition, companies that entrust one executive with the unified CFO/COO role are likely different from 'typical' companies. While precise executive skill is hard to gauge, research suggests publicly available metrics such as executive credentials and experience are positively associated with firm performance (Falato, Li, and Milbourn 2015). As explained in the following section, we attempt to control the unique aspects of both the CFOs who become CFO/COO and the companies that select CFO/COOs using a matched sample of firm-year observations.

3. Methodology and Results

The starting point for our sample is all US firm-years included in both Compustat and BoardEx North America that have both a CFO and either a COO or a President for the years 2000 – 2016.[9] We require that the CFO and COO be present throughout the fiscal year and that their titles remain unchanged throughout the fiscal year for inclusion in our sample. Executives who hold unified CFO and COO positions are classified as duality executives during the year(s) in which they simultaneously hold both titles. As shown in Table 1, in the full sample, 428 firms (12.4%) have a unified CFO/COO executive in at least one year, with 1,331 (11.0%) of the firm-years being duality observations.[10]

Next, we eliminate observations without all data required to construct our matching variables (described in Table 2) and our discretionary accruals and future performance measures (described in Table 5). We omit the first year of the executives' tenure in a CFO/COO duality

[9] We identify CFOs in the BoardEx Organizational Composition table using regular expression searches for 'CFO' and 'Chief Fin%'. Similarly, we identify COOs using regular expression searches for 'COO' and 'Chief Operat%'. Presidents are identified with the regular expression search 'President'. We exclude managers with titles containing the terms 'Region%' or 'Division%' from our analysis because these titles typically refer to lower-level rather than senior executive roles. See footnote 3 for a discussion of COO versus President titles.

[10] Regressing duality firms (or firm-years) on 'year' during our analyzed 16-year test period (2001-2016) shows a significantly increasing CFO/COO duality trend ($p < .01$). Using our matched-sample duality firm-years to illustrate (i.e., the 1,331 firm-years shown in Table 1, Panel A), the average number of duality firm-years steadily increases (average n = 63 ('01-'06); n = 91 ('07-'11); n = 100 ('12-'16)). The trend does not monotonically increase by year: 2011 is the 'high' year (n = 113) and a large decrease occurs from 2015 (n = 110) to 2016 (n = 75).

role to focus our analyses on stable effects, rather than effects caused by transition into the role and we omit rare cases where a COO becomes the CFO/COO duality executive.[11] We next construct two samples. The first sample is a between-firm analysis using a matched sample (shown in Table 1, Panel A) comprised of firm-years with a single CFO/COO duality executive and matched control firm-years with separate CFO and COO executives. The matched sample is 508 observations drawn from 98 duality firms and 173 control firms. The second sample is a within-firm analysis (shown in Table 1, Panel B) comprised of firms that have at least one duality firm-year and at least one non-duality firm-year during the sample period. The duality only sample is comprised of 50 firms with 114 duality years and 138 non-duality years. The sample reconciliation is shown in Table 1.

Insert Table 1 here

Next, we examine the firm and executive characteristics that will be used in the matching model. All executive characteristics are collected from BoardEx-North America, while firm-level information is collected from Compustat. Consistent with Shipman, Swanquist and Whited (2017), we include all control variables from our second stage models in the CFO/COO duality matching model. In Table 2, the firm and executive characteristics are reported separately for non-duality and duality firm-years. Firm characteristics that significantly differ between duality and non-duality firms suggest that duality firms; (1) are substantially smaller (2,200 vs. 7,322 in asset value), (2) have higher leverage (.63 vs. .60), (3) have a higher market to book ratio (2.03 vs. 1.43), (4) have lower return on assets (-.20 vs. -.04), and (5) have lower operating cash flows (-.07 vs. .04). These differences suggest that duality firms can be loosely characterized as

[11] COOs who become CFO/COO represent 9 firm-year observations of our screened sample, while remaining eliminations are first-year observations of a CFO becoming the duality executive (see Table 1). If multiple executives possess the same CFO, COO, or President title, we retain the individual listed in Execucomp (if present) or the executive with the higher annual compensation reported in BoardEx as this individual is likely the one with the greatest responsibility and authority over operations and/or financial reporting.

'growth firms.' Turning to CFO characteristics, the following differ statistically: 1) duality CFOs are more likely to be 62 or older (.07 vs. .03), 2) duality CFOs are less likely to be certified accountants (.41 vs. .53), 3) duality CFOs are more likely to have been hired into the company as the CFO (.69 vs. .61), 4) they are more likely to have been a CFO at a prior employer (.72 vs. .53), and 5) duality CFOs are far more likely to be on the board of directors relative to non-duality CFOs (.46 vs. .07). These differences suggest that duality CFOs, on average, are less accounting-centric CFOs who are high powered, have a strong background and were hired into the company at a high level. In total, the substantial differences between firm-years with, versus without, a CFO/COO duality executive suggest that a matching model is needed for valid comparisons.

Insert Table 2 here

Our matching procedure begins with a CFO/COO duality choice model. The following model includes the firm and CFO characteristics described in Table 2. Fitted values from the following logistic regression model are used to construct the matched sample.

$$\begin{aligned} DUALITY_{i,t} = {} & \alpha + \beta_1 ASSETS_{i,t-1} + \beta_2 MB_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 ROA_{i,t-1} + \beta_5 OPCASH_{i,t-1} + \\ & \beta_6 RETURN_{i,t-1} + \beta_7 SALES\sigma_{i,t} + \beta_8 OPCASH\sigma_{i,t} + \beta_9 AGE_{i,t} + \beta_{10} AGE62_{i,t} + \\ & \beta_{11} TENURE_{i,t} + \beta_{12} CERTIFY_{i,t} + \beta_{13} MASTERS_{i,t} + \beta_{14} EXTERNAL_{i,t} + \\ & \beta_{15} PRIORCFO_{i,t} + \beta_{16} DIRECTOR_{i,t} + \varepsilon \end{aligned} \quad (1)$$

Where:

DUALITY = 1 if CFO is also listed as either the COO or President.
ASSETS = Total assets.
MB = Market-to-book ratio (market value of equity / total assets).
LEV = Leverage (total liabilities / total assets).
ROA = Return on assets (net income / total assets).
OPCASH = Cash flow from operating activities / total assets.
RETURN = Annual stock return (the percentage change in fiscal year-end stock price from year t-1 to year t).
SALESσ = (Standard deviation of sales for years *t* – year *t–4*) / total $assets_t$.
OPCASHσ = (Standard deviation of operating cash flows for years *t* – year *t–4*) / total $assets_t$.
AGE = The CFO's age.

AGE62 = 1 if the CFO is age 62 or older, and 0 otherwise.[12]
TENURE = Tenure as CFO at current firm.
CERTIFY = 1 if the CFO is certified, and 0 otherwise
MASTERS = 1 if the CFO has a Masters degree, and 0 otherwise.
EXTERNAL = 1 if the CFO was hired into the company as CFO, and 0 otherwise.
PRIORCFO = 1 if the CFO held a CFO position with a prior employer, and 0 otherwise.
DIRECTOR = 1 if the CFO is on the board of directors, and 0 otherwise.

All continuous variables employed in this study are winsorized at the first and 99th percentile. All models estimated in this study include industry (two-digit SIC) and year indicators, and use standard errors that are clustered at the firm level. Regression results are presented in Table 3.

Insert Table 3 here

Consistent with the pairwise t-tests, there are significant coefficients on ASSETS, LEV, OPCASH and OPCASHσ. Inconsistent with the t-tests, the coefficient on CFO age is negative and significant. This may be related to the high correlation between the continuous measure of CFO age and the indicator variable for CFOs who are 62 or older (the indicator variable is positively related to duality). Consistent with the t-tests, there are significant coefficients on CERTIFY, PRIORCFO, EXTERNAL and DIRECTOR. Interestingly, CFO characteristics explain a greater portion of the variation in duality than do firm characteristics. To illustrate, if only CFO (firm) characteristics are regressed onto the DUALITY indicator variable, the pseudo R^2 is .235 (.075). This suggests that, while duality is more common in smaller, less profitable and more volatile firms, the ability to find a CFO with the proper background is critical to the decision to combine the chief accounting and operating duties.

Using the duality choice model reported in Table 3, each DUALITY firm-year is matched to the non-duality control firm-year with the closest fitted value, with three restrictions. The

[12] We use 62 years old or older as a proxy for short horizon executives who are nearing retirement (Cadman, Rusticus, Sunder, 2013).

control firm must come from the same two-digit SIC, and the same year. Additionally, the difference in fitted value between the DUALITY firm-year and the control firm-year must fall within -.10 and .10 (Shipman et al. 2017). We employ a covariate balance test to assess the effectiveness of our matching procedure, consistent with Armstrong, Ittner, and Larcker (2012). DUALITY and control firm descriptive information is provided in Table 4, Panel A. The firm and executive characteristics appear similar between DUALITY firm-years and control firm firm-years with three differences between the two groups (1) the CFO tenure of the duality firm-years is, on average, one year longer than non-duality firm-years (significant at $p < .01$), (2) a higher percentage of duality CFOs are over 62 years of age (6% vs. 3% for non-duality firm-years, $p < .10$), and (3) duality firm-years are less leveraged (.48 vs. .56) than matched non-duality firm-years. All other variables yield insignificant differences between CFO/COO duality firm-years and the matched sample of firm-years.

In Panel B of Table 4, we tabulate dependent variable averages for both control and duality firm-years. Relative to their matched firms-years, univariate tests show that CFO/COO duality firm-years have more volatile accruals and better future performance than do matched firm-years.

Insert Table 4 here.

Analysis of Discretionary Accruals

We first examine financial reporting quality (i.e., RQ 1) by observing patterns of discretionary accruals, which potentially indicate differential financial reporting choices. Similar to prior research (e.g., Lev 1983; Bergstresser and Philippon, 2006; Dechow, Ge, and Schrand 2010 Jiang et al., 2010), we use the absolute value of discretionary accruals as a preliminary

measure of the quality of financial reporting decisions. The reasoning behind this is that firms using accruals opportunistically will have large income-increasing accruals followed by large income-decreasing accruals in future periods, resulting in accruals with large absolute values. For example, Dechow, Hutton, Kim and Sloan (2012) find that large income-increasing accruals in the year of an SEC Accounting and Auditing Enforcement Release (AAER) are followed by large income-decreasing accruals in year *t+1*. Dechow et al. (2012) find that incorporating these reversals into earnings management tests improves the power of the test. To better leverage the reversing pattern of accruals, we develop a second measure of financial reporting quality equal to the absolute value of accrual changes (e.g., discretionary accruals$_{t+1}$ - discretionary accruals$_t$). Using this measure, a positive (income-increasing) accrual of .06 in year *t* without a reversal in year in *t+1* would produce a relatively small value (roughly .06), while a positive accrual of .06 in year *t* following by a full reversal in year *t+1* would produce a relatively large value (roughly .12).

Our estimate of discretionary accruals is drawn from Kothari, Mizik and Roychowdhury (2016), modified to include the forward looking variable developed by Dechow, Richardson and Tuna (2003) and used by Jiang et al. (2010). The accrual model shown below includes controls for year-specific and firm-specific effects (discussed below) and is estimated using panel data.

$$TA_{i,t} = \alpha_1(1/ASSET_{i,t-1}) + \alpha_2 TA_{i,t-1} + \alpha_3(\Delta SALES_{i,t} - \Delta AR_{i,t}) + \alpha_3 PPE_{i,t} + \alpha_4 NETINCOME_{i,t} + \alpha_5 SALES\_GR + e_{i,t} \quad (2)$$

Where:
TA = (the change in non-cash current assets – the change in current liabilities net of the current portion of long-term debt - depreciation and amortization) / total assets$_{t-1}$
1/ASSET = one / total assets$_{t-1}$
$\Delta SALES_{i,t} - \Delta AR$ = (Δsales$_t$ - Δ accounts receivable$_t$) / total assets$_{t-1}$
PPE = net property plant and equipment$_t$ / total assets$_{t-1}$
NETINCOME = net income$_t$ / total assets$_{t-1}$
SALES_GR = percentage change in sales from year t to year t+1

Discretionary accruals are typically estimated by industry and year. As noted in Kothari et al. (2016), models estimated by industry and year are prone to misspecification. Industry and year level estimates are mean zero at the industry and year level, but not at the firm level, resulting in some firms having primarily positive or negative accruals.[13] To address this issue, Kothari et al. (2016) estimate discretionary accruals using panel data, and difference the variables in such a way as to create firm and year fixed effects. First, all variables are differenced from the cross-sectional mean (e.g., $TADIF_{i,t}$ = firm *i* TA in year *t* – the cross-sectional mean for TA in year *t*). Second, all variables are differenced from their lagged value (e.g., $TA_{i,t}$ = $TADIF_{i,t}$ - $TADIF_{i,t-1}$). The resulting model produces time-series residuals for each firm. Discretionary accruals are calculated as the difference between the individual year residual and the firm mean residual (e.g., $DA_{i,t}$ = residual for firm *i* in year *t* – the mean value of the residual in firm *i*). Models examining the effect of duality on discretionary accruals use the absolute value of year *t* discretionary accruals or the absolute value of the future change in discretionary accruals (DA_{t+1} - DA_t).

All else equal, larger values for the absolute value of discretionary accruals suggest lower quality financial reporting. It is less clear how accruals volatility relates to financial reporting quality. Although some prior research suggests that volatility in discretionary accruals is a signal of lower financial reporting quality (e.g., Bergstresser and Philippon, 2006; Jiang et al., 2010), other research suggests that the volatility of discretionary accruals also reflects the volatility of the underlying cash flows (e.g., Dechow and Dichev, 2002; Francis et al., 2008). Consequently, we interpret volatility in discretionary accruals to be a signal of low financial reporting quality only if the accruals *do not* map into future cash flows. Conversely, we interpret more positive

[13] For example, in our sample, when accruals are estimated by industry and year, there is a significant, positive serial correlation, which is inconsistent with the reversing nature of discretionary accruals. On the other hand, when the Kothari et al. (2016) technique is used, there is a significant, negative serial correlation.

mapping of accruals into future cash flows as a sign of *higher* quality financial reporting (consistent with Francis et al. 2004).[14]

The financial reporting model is shown below.

$$DA_{i,t} = \alpha + \eta_1 DUALITY_{i,t-1} + \eta_2 ASSETS_{i,t-1} + \eta_3 MB_{i,t-1} + \eta_4 LEV_{i,t-1} + \eta_5 ROA_{i,t-1} + \eta_6 OPCASH_{i,t-1} + \eta_7 RETURN_{i,t-1} + \eta_8 SALES\sigma_{i,t} + \eta_9 OPCASH\sigma_{i,t} + \eta_{10} AGE_{i,t} + \eta_{11} AGE62_{i,t} + \eta_{12} TENURE_{i,t} + \eta_{13} CERTIFY_{i,t} + \eta_{14} MASTERS_{i,t} + \eta_{15} EXTERNAL_{i,t} + \eta_{16} PRIORCFO_{i,t} + \eta_{17} DIRECTOR_{i,t} + \varepsilon \quad (3)$$

Where:
DA are firm *i*'s:
DA_ABS = the absolute value of discretionary accruals in *t*, or
ΔDA_ABS= the absolute value of (DA_{t+1} - DA_t)
All other variables as previously defined.[15]

Consistent with prior research, we expect that size will be negatively related to discretionary accruals and that *OPCASHσ, SALESσ* and *MB* will be positively related to discretionary accruals (e.g., Dechow and Dichev, 2002; Francis et al., 2008). Since higher leveraged firms may be under more pressure to meet covenant-related targets, we expect a positive relationship between LEV and discretionary accruals. Prior research finds that CFO board membership is associated with lower levels of discretionary accruals (Bedard et al., 2014), so we expect a negative sign on DIRECTOR. CFOs with shorter horizons may be less concerned about future consequences, so we expect a positive sign on AGE62.

RQ 1 investigates whether CFO/COO duality firms have different financial reporting quality relative to comparable firms with separate CFO and COO executives. In Table 5, the

[14] We categorize accruals-to-cash flow as a reporting quality phenomenon due to chronological ordering (i.e., the accounting estimation precedes performance outcomes). However, Choi, Han, Hwan Jung, and Kang (2015) argue that the manner in which current accruals map into future cash flows is a sign of executive operating performance (e.g., successful execution of a plan). As noted by Dechow et al.(2010), accrual quality can be driven by estimation quality or actual performance. Our contribution does not hinge on resolving this debate, but we label accruals-to-cash flow mapping as a reporting quality metric to be in line with 'the vast majority of prior research' (Choi et al. 2015, p. 621).

[15] We do not include CFO/COO tenure in our primary analyses because the variable is coded 0 for all control firms and because this variable is highly correlated with CFO tenure. We conduct sensitivity analyses with the inclusion of the CFO/COO tenure variable and find results qualitatively similar to those presented in the paper.

absolute value of discretionary accruals (DA_ABS) and the absolute value in the change in discretionary accruals from year *t* to year *t+1* (ΔDA_ABS) are examined for both the matched sample and the duality-only sample. We find that higher market-to-book firms (MB) and firms in more volatile environments (σOPCASH) have more volatile discretionary accruals. In our duality-only sample, we find that AGE62 and PRIORCFO are negative and at least marginally related to DA_ABS. We find no other control variables are significant at traditional significance levels.

Turning to our primary variable of interest, DUALITY, results are mixed. The coefficient for DUALITY in the matched sample is positive and insignificant in the discretionary accrual measures (p = .159), but marginally significant in the change in discretionary accruals measure (p = .078). When using the duality only sample, there is no difference in accrual volatility between duality firm-years and non-duality firm-years. In un-tabulated analyses, we find no significant relationship between CFO/COO duality and signed discretionary accruals, the level of positive discretionary accruals, or the level of negative discretionary accruals. This suggests that the differences in discretionary accruals between CFO/COO duality firms and non-duality firms are not related to asymmetry between income-increasing and income-decreasing accruals.

Insert Table 5 here

Analysis of Discretionary Expenditures

To examine the effect of discretionary operating choices on future performance, we begin by constructing an estimate of discretionary expenditures. The estimate of discretionary

expenditures is drawn from the literature on real earnings management (REM).[16] However, it is important to note that we do not attempt to identify intentional earnings manipulation through REM. Rather, we attempt to capture the quality of operating decisions and use discretionary expenditures as a proxy for operating decisions. Our estimate of discretionary expenditures is drawn from Vorst (2016) and modified to include; 1) the first lag of discretionary expenditures to control for the effect of prior decisions on the current year, similar to Kothari et al. (2016), 2) the forward looking variable developed by Dechow, Richardson and Tuna (2003) to control for the effect of anticipated performance on current year decisions, and 3) a variable to control for the effect of current year performance on current year discretionary decisions from Kothari et al. (2016). The discretionary accrual estimation procedure from Kothari et al. (2016) - shown as equation (3), above - is used for the discretionary expenditures model. Therefore, the discretionary expenditures model includes double-differenced variables to control for year-specific and firm-specific effects, and is estimated using panel data. The model is shown below.

$$DISCEXP_{it} = \gamma_1(1/ASSET_{i,t-1}) + \gamma_2 DISCEXP_{i,t-1} + \gamma_3 MCAP_{i,t-1} + \gamma_4 TOBINSQ_{i,t} + \gamma_5 INTFUNDS_{i,t} + \gamma_6 \Delta SALES_{i,t} + \gamma_7 \Delta SALESNEG_{i,t} + \gamma_8 NETINCOME_{i,t} + \gamma_9 SALES\_GR + \varepsilon \quad (4)$$

Where:

$DISCEXP$ = (advertising + R&D + SG&A)[17] / total $assets_{t-1}$.

$MCAP$ = ln(common shares * stock price)

$TOBINSQ$ = [(common shares * stock price) + convertible debt & preferred stock + long-term debt + debt in current liabilities] / total $assets_t$

$INTFUNDS$ = (income before extraordinary items + depreciation & amortization + R&D) / total $assets_{t-1}$

$\Delta SALES$ = Δsales / total $assets_{t-1}$

$\Delta SALESNEG$ = 1 if $\Delta SALES < 0$, and 0 otherwise

$NETINCOME$ = net $income_t$ / total $assets_{t-1}$

$SALES\_GR$ = percentage change in sales from year t to year t+1

As with the discretionary accrual estimation, the mean firm-level residual, using all

[16] We considered the inclusion of other measures used in REM research to assess the quality of operating decisions. We do not examine the abnormal production measure because our sample is not limited to manufacturing firms. We also do not examine the abnormal cash flow measure because, as discussed in Roychowdhury (2006), the effect of abnormal cash flow can be ambiguous.

[17] Advertising and R&D expense are set to zero if they are blank in Compustat.

estimated years, is subtracted from the individual firm-year residual to estimate the deviation from normal discretionary expenditure patterns, which is our estimate of discretionary expenditures (DE). Negative (positive) values for DE represent reductions (increases) from normal expenditures patterns.

The Future Performance Implications of Discretionary Accruals and Expenditures

Consistent with prior discretionary accrual and real earnings management research (e.g., Cohen and Zarowin, 2010; Gunny, 2010, Kim and Sohn, 2013; Vorst, 2016), we examine future operating performance using: (1) cash flow from operations scaled by total assets (OPCASH) and (2) return on assets (ROA). We borrow from the real earnings management research (e.g., Roychowdhury, 2006; Cohen, Dey, and Lys, 2008), by identifying deviations from normal discretionary expenditure patterns (abnormal discretionary expenditures). However, unlike real earnings management research, we are not interested in the use of REM to meet earnings targets. We analyze discretionary expenditures, which include research and development (R&D), advertising, and selling, general and administrative (SGA) expenditures, because they represent an observable output of operating decisions that are generalizable to a wide range of firms across multiple industries. If successfully implemented, abnormal increases in discretionary expenditures could generate increases in future revenues, while abnormal decreases could result in the elimination of expenses that were not producing adequate future benefits. Conversely, decreases in abnormal discretionary expenditures could be the result of a potentially value-destructive attempt to meet earnings targets (Gunny, 2010).

We interpret operating decisions to be of high (low) quality when abnormal discretionary expenditures are associated with increases (decreases) in future operating

performance. Therefore, in Equation (5), the relationship between discretionary expenditures / discretionary accruals and future performance is examined.

$$\begin{aligned} OPCASH_{i,t+1}/ROA_{i,t+1} = {} & \alpha + \psi_1 DUALITY_{i,t} + \psi_2 DA\_POS_{i,t} + \psi_3 DA\_NEG_{i,t} + \psi_4 DE\_POS_{i,t} + \\ & \psi_5 DE\_NEG_{i,t} + \psi_6 (DUALITY_{i,t} \times DA\_POS_{i,t}) + \psi_7 (DUALITY_{i,t} \times DA\_NEG_{i,t}) + \\ & \psi_8 (DUALITY_{i,t} \times DE\_POS_{i,t}) + \psi_9 (DUALITY_{i,t} \times DE\_NEG_{i,t}) + \psi_{10} ASSETS_{i,t-1} + \\ & \psi_{11} MB_{i,t-1} + \psi_{12} LEV_{i,t-1} + \psi_{13} ROA_{i,t-1} + \psi_{14} OPCASH_{i,t-1} + \psi_{15} RETURN_{i,t-1} + \\ & \psi_{16} SALES\sigma_{i,t} + \psi_{17} OPCASH\sigma_{i,t} + \psi_{18} AGE_{i,t} + \psi_{19} AGE62_{i,t} + \psi_{20} TENURE_{i,t} + \\ & \psi_{21} CERTIFY_{i,t} + \psi_{22} MASTERS_{i,t} + \psi_{23} EXTERNAL_{i,t} + \psi_{24} PRIORCFO_{i,t} + \\ & \psi_{25} DIRECTOR_{i,t} + \varepsilon \end{aligned} \quad (5)$$

Where:
DA_POS = discretionary accruals if discretionary accruals > 0, and 0 otherwise.
DA_NEG = discretionary accruals if discretionary accruals < 0, and 0 otherwise.
DE_POS = discretionary expenditures if discretionary expenditures > 0, and 0 otherwise.
DE_NEG = discretionary expenditures if discretionary expenditures < 0, and 0 otherwise.
All other variables are as previously defined.

We expect that contemporaneous firm performance (ROA, OPCASH and RETURN) will be positively related to future performance. Since high market-to-book firms likely have more growth opportunities, we expect a positive coefficient on MB. We expect a negative coefficient on CFO_AGE62 because, as an executive's horizon shortens, performance in future periods becomes less important. We make no predictions for the remaining variables.

We separately examine positive discretionary expenditures (DE_POS) and negative discretionary expenditures (DE_NEG). Positive abnormal discretionary expenditures could indicate that the firm is investing in activities that may have no benefit to future sales (i.e., low quality), or could indicate an increase in growth opportunities that require additional investment (i.e., high quality). Negative abnormal discretionary expenditures could indicate that the firm has opportunistically cut discretionary expenditures at the expense of future sales (i.e., low quality), or could indicate more efficient spending decisions through cutting excess costs (i.e., high quality). Additionally, negative discretionary expenditures are potentially the

result of attempts to opportunistically increase income (e.g., Roychowdhury 2006; Cohen et al. 2008). Because the mapping of accruals into our performance measures (cash flow and ROA) have different expectations, we discuss these analyses separately.

The Future Cash Flow Implications of Discretionary Accruals and Expenditures

As with discretionary expenditures, we separately examine positive discretionary accruals (DA_POS) and negative discretionary accruals (DA_NEG). The mapping of discretionary accruals into future cash flows is an indicator of financial reporting quality (Barth, Cram, and Nelson 2001). We expect that discretionary accruals will be positively related to future cash flows; however, the direction of accruals potentially produces differential cash flow mapping. For example, there is a great deal of prior research indicating that positive discretionary accruals relate to earnings management (e.g., Zang 2012; Jiang et al. 2010; Cohen et al. 2008). Since a greater proportion of positive discretionary accruals are likely opportunistic relative to negative discretionary accruals, the relationship between discretionary accruals and future cash flows may differ between positive and negative discretionary accruals.

As shown in Table 6, and consistent with expectations, we find that OPCASH is positively related to future operating cash flow ($OPCASH_{t+1}$). While current RETURN is also positively related to future cash flow in the matched sample, it is not significant in the duality-only sample. Inconsistent with expectations, MB, ROA and AGE62 are not related to $OPCASH_{t+1}$.

Turning to the variables of interest, we find evidence suggesting that duality firm-years have higher financial reporting quality than non-duality firm-years. As shown in Table 6, in

both the matched sample and the duality only sample, we find that income-increasing discretionary accruals map into future cash flows more accurately in duality firm-years compared to non-duality firm-years (more accurate mapping of discretionary accruals into future cash flows is represented by positive coefficients for both the positive and negative discretionary accrual variables). Specifically, in both samples, we find a significantly negative coefficient for DA_POS for non-duality firm-years, but an offsetting, significantly positive coefficient on the interaction term DA_POS_t x $DUALITY_t$ ($p = 0.013$ in the matched sample; $p = 0.096$ in the duality only sample; both two-tailed) in the duality firm-years. The significantly negative coefficient on DA_POS in the matched firms and the insignificant summed coefficient on DA_POS for duality firms suggests poor quality accruals for non-duality firm-years compared to neutral quality accruals for CFO/COO duality firm-years. Poor (rather than neutral) accrual quality for matched control firms may be related to sample composition. Recall that duality firms and their matched firms are smaller, have lower operating cash flows and have more volatile operating cash flows relative to the full sample.

We also find high quality accruals for DA_NEG for both duality and matched firms in the matched sample (i.e., negative discretionary accruals are followed by lower operating cash flow in the following year). We find no differences with respect to the effect of discretionary expenditures on future cash flows (neither DE_POS, DE_NEG nor any interaction term is significant). In summary, we find consistent evidence that the positive discretionary accruals of CFO/COO duality firms map into future cash flows more accurately than do the positive discretionary accruals of matched firms with separate CFO and COO executives. This finding indicates that the relatively high volatility of discretionary accruals observed in CFO/COO duality firms (see Table 5) are more likely to be an indication of higher volatility in the

underlying cash flows than an indication of lower financial reporting quality.

Insert Table 6 here

The Future Earnings Implications of Discretionary Accruals and Expenditures

We now turn to our second measure of future performance, ROA_{t+1}. As shown in Table 7, and consistent with expectations, ROA and OPCASH are positive and significantly related to ROA_{t+1} in the matched sample (with marginally significant association in the duality-only sample). Inconsistent with expectations, RETURN and AGE62 are not related to ROA_{t+1} and MB is negatively related to future ROA in both the matched and duality-only samples.

Turning to our variables of interest, we note no significant differences in our duality only sample. Specifically, the effect that discretionary accruals and discretionary expenditures have on future ROA does not appear to depend on whether one or two executives occupy the CFO and COO positions. In contrast, we observe two differences in our matched sample analysis investigating future ROA. First, the DA_NEG x DUALITY interaction term is significant and positive ($p = .07$, two-tailed interaction; also significant in the reported F-test at $p = .02$). This result indicates that negative discretionary accruals predict poorer future earnings performance in duality firms. Prior earnings management research focuses on the negative effects of income-increasing, presumably opportunistic, accruals (e.g., Zang 2012; Jiang et al. 2010; Cohen et al. 2008). The interpretation of negative (income-decreasing) accruals is less straightforward. Finding that negative discretionary accruals predict poorer future ROA is consistent with income-decreasing accruals in duality firms providing a more accurate signal of future performance. We further examine this result in the sensitivity analyses section.

In our second observed matched-sample difference, the coefficient on DE_NEG is positive and significant for match firms (p = .07, two-tailed) and this effect is not offset in CFO/COO duality firms (i.e., the summed coefficient DE_NEG + DE_NEG * DUALITY, p = .07, two-tailed), suggesting that the decision to cut back discretionary expenditures harmed future ROA for both duality and matched firms (DE_NEG retains its negative sign, thus a positive coefficient implies lower future performance). The negative effect of reductions in discretionary expenditures on future performance is consistent with the firm experiencing the negative consequences of real earnings management. However, as noted above, there is no evidence that real earnings management is incrementally different in CFO/CFO duality firm-years. Coupled with the preceding analysis of future cash flow, we observe no differences in operating performance between our CFO/COO duality firm-years and their matched firm-years. Additionally, in un-tabulated analyses, using the control variables from the discretionary accruals model shown in Table 5, we find no evidence that duality is related to signed discretionary expenditures or the absolute value of discretionary expenditures. Overall, the results indicate that CFO/COO duality does not affect the relationship between discretionary expenditures and future performance.

Insert Table 7 here

Robustness Tests Using Alternative Models

We next examine the robustness of the reported results by performing the empirical analysis shown in Tables 5 – 7 after replacing the discretionary accrual measure with the forward looking discretionary accrual model from Dechow, Richardson and Tuna (2003) and Jiang et al. (2010), and replacing the discretionary expenditure measure with the Vorst (2016) discretionary

expenditure model. For brevity, we highlight differences in this model specification as they relate to Tables 5 and 7, and we only re-tabulate the future operating cash flow model.

Alternative discretionary accruals tests using the preceding methods provide results similar to those presented in Table 5 with the following exceptions. Using the Dechow et al. (2003) accrual measure, the coefficient on DUALITY becomes significant when examining $|DA_t|$ using the matched sample ($p < .01$, two-tailed), and when examining $|DA_{t+1} - DA_t|$ using the duality only sample ($p < .05$, two-tailed), consistent with the results presented in Table 5. Turning to the future ROA results presented in Table 7, we find two changes. First, we find no evidence that negative discretionary accruals are negatively related to future ROA in duality firms. Second, using the Vorst (2016) discretionary expenditure measure, we find no evidence that reductions in discretionary expenditures are negatively related to future ROA in either match firms or CFO/COO duality firms. In Table 8, we present the full analysis of whether volatile accruals are, in fact, representative of lower reporting quality.

Insert Table 8 here

Comparing Table 6 (Kothari et al. 2016 model) to Table 8 (Dechow et al. 2003 model), we first note remarkable similarity in all model control variables. Turning to the variables of interest, we continue to find evidence that duality firm-years have better financial reporting than non-duality firm-years. Specifically, in both the matched sample and the duality only sample, we find that income-increasing discretionary accruals map into future cash flows more accurately in duality firm-years compared to non-duality firm-years. Although the negative coefficient for DA_POS in no longer significant in non-duality firm-years (as it is in Table 6), the coefficient on the interaction term DA_POS x DUALITY remains significant in the duality firm-years ($p = 0.086$ in the matched sample; $p = .058$ in the duality only sample; both two-

tailed), resulting in significant F-tests for the combined main term plus interaction term (p = .062 and p = .088 for the matched and duality-only samples, respectively). Again, we find low quality accruals for DA_NEG, especially for the duality-only sample; however, we observe significant and offsetting improvement in the DA_NEG x DUALITY coefficient (p = .098). Consistent with prior analyses, we find no differences with respect to discretionary expenditures on future cash flows (neither DE_POS, DE_NEG nor any interaction term is significant). With this alternative model specification, we again find evidence that the discretionary accruals of CFO/COO duality firms map into future cash flows more accurately than do the discretionary accruals of matched firms with separate CFO and COO executives.

In an additional un-tabulated sensitivity test, we use the accrual model from Dechow and Dichev (2002), which regresses the change in working capital onto cash flow from operations in years *t-1*, *t,* and *t+1*. The estimation is done at the firm-level. The residuals from this regression represent accruals that are unrelated to cash flows. The Dechow and Dichev (2002) estimates of discretionary accruals produce results that are similar to those presented in the paper. That is, we find evidence that DUALITY is positively and significantly related to $|DA_t|$ in the duality only sample, and to $|DA_{t+1} - DA_t|$ in both the matched and duality-only samples. We also find that the relationship between income-increasing discretionary accruals and future cash flows is significantly more positive in duality firms, but only when using the matched sample. Similar to the Dechow et al. (2003) accrual measure, we find that negative discretionary accruals are related to lower future operating cash flows, but only in non-duality firms, and we find no evidence that negative discretionary accruals result in lower future ROA in CFO/COO duality firms.

In summary, some of the results in the paper are sensitive to which discretionary accrual

or discretionary expenditure measure is used.[18] However, there are two results that are consistent in all specifications. First, the absolute value of discretionary accruals and the absolute value of the change in discretionary accruals are larger in CFO/COO duality firms relative to non-duality firms. Second, there is consistent evidence that income-increasing discretionary accruals are more positively related to future operating cash flows in CFO/COO duality firms relative to non-duality firms.

4. Conclusion

The shifting configurations of occupational involvement in organizations is an important and understudied area (Hopwood 2008, p. 11). This study is the first to empirically examine the operational acumen of CFOs. We examine instances where one individual simultaneously holds the CFO and COO title (i.e., CFO/COO duality) and compare the reporting quality and operational outcomes of CFO/COO duality firms against a set of matched firms with separate CFO and COO executives. We also perform within-firm comparisons (comparing years with separate CFO and COO executives to CFO/COO duality firm-years). We find no evidence that CFO/COO duality adversely (or beneficially) affects operations, a finding that may calm concerns about the operational business acumen of accountants (e.g., Kim, Hatcher, and Newton 2012 and Paulsson 2012). Regarding financial reporting quality, although our results suggest that discretionary accruals become more volatile when a CFO also takes on COO responsibilities, we find that CFO/COO duality accruals are relatively more predictive of future cash flows compared to the accruals of control firms. We interpret this finding as an indicator that financial reporting quality

[18] We also examine alternative proxies for financial reporting quality (earnings restatements and financial irregularities); however, these are low-power tests due to sample size. Duality (match-able) firms have a 6.6% (6.1%) restatement rate over two-year post-reporting horizons (p = .38). Similarly, our duality sample included zero financial irregularities (versus 25 irregularities for our match-able sample).

improves in the presence of CFO/COO duality.

Our results are relevant to the ongoing call for CFOs and financial professionals to become more operationally astute (Wilds 2017, Cokins and Dybvig 2017, IMA 2017). Although our analysis is limited to executive-level responsibility (e.g., CFOs who become COO), we empirically support anecdotal reports that CFO responsibilities are expanding into operations (e.g., IFAC 2013, p. 11; Thomson 2013; McCann 2014; Johnson 2015). Given this role expansion, understanding how reporting and operational outcomes are impacted when financial professionals take on operational responsibilities is increasingly important. With methodological limitations noted (e.g., CFO/COO dualities are an extreme proxy for operational control, duality executives are more experienced than 'typical' CFOs, and our financial reporting quality measures are often-criticized discretionary accruals), our study suggests managers from a financial background can fulfil operational roles admirably.

Regardless of the preceding limitations, understanding what happens when a firm unifies control of operations and financial reporting should be of interest to accountants because accounting is, essentially, reporting about the underlying economic and operational reality of an entity. Although our study is a relatively specific and high-level analysis of CFOs taking on operational responsibility, learning that CFOs who take control of operations appear to do a reasonable job with operating decisions should be encouraging news for proponents of broad-based training among financial experts (e.g., IFAC 2013) and to those accountants wishing to move beyond historic 'number counting' stereotypes (Favaro 2001). Our study provides evidence relevant to users of financial statements that firms with CFO/COO duality can exhibit stronger mapping of discretionary accruals to future cash flows, thus enhancing the predictive objective of financial reporting. Finally, our study also informs boards of directors

by providing evidence that CFOs who are given operational control can effectively perform both roles if the CFO/COO executive possesses the appropriate skill set.

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Table 1
Sample Reconciliation

Panel A: Duality Choice Model Sample and Matched Sample

	Non-Duality Firm-years (separate CFO and COO)		Duality Firm-years (unified CFO/COO)	
	Firms	Firm-years	Firms	Firm-years
All Boardex firm-years with a COO position and available Compustat data	3,100	10,777	438	1,331
Less observations without duality choice model data	428	1,764	48	160
Duality Choice Model Sample	**2,672**	**9,013**	**390**	**1,171**
Less observations without discretionary accrual, discretionary expenditure and dependent variable data	962	3,785	166	538
Less first year duality observations and duality executives who were prior COOs	0	0	86	218
Observations with all needed data	1,710	5,228	138	415
Less non-matching observations	1,537	4,974	40	161
Matched Sample	**173**	**254**	**98**	**254**

Panel B: Duality Only Sample

	Firms	Non-duality firm-years	Duality firm-years
Observations with all needed data for firms with at least one duality year during the sample period	138	138	415
Less observations where the firm was duality for every year in the sample period	88	0	301
Duality Only Sample	**50**	**138**	**114**

Table 2
Choice Model Sample
Non-duality vs. DUALITY Firm-years

	Non-duality Firm-Years (separate CFO and COO)		**DUALITY Firm-Years** (unified CFO/COO)		**Mean t-test**	**Median Mann Whitney test**
Variable	**Mean**	**Median**	**Mean**	**Median**	**p-value**	**p-value**
ASSETS	7,332.660	982.713	2,200.356	166.569	< 0.0001	< 0.0001
MB	1.432	0.822	2.038	0.971	< 0.0001	< 0.0001
LEV	0.601	0.576	0.630	0.487	0.0156	< 0.0001
ROA	-0.042	0.022	-0.203	0.007	< 0.0001	< 0.0001
OPCASH	0.034	0.063	-0.071	0.032	< 0.0001	< 0.0001
RETURN	0.139	0.052	0.166	0.027	0.1938	0.0827
SALESσ	0.094	0.051	0.128	0.060	< 0.0001	0.0004
OPCASHσ	0.041	0.019	0.079	0.033	< 0.0001	< 0.0001
AGE	48.323	48.000	49.160	49.000	0.0002	0.0017
AGE62	0.033	0.000	0.071	0.000	< 0.0001	< 0.0001
TENURE	4.413	3.326	3.793	2.809	< 0.0001	< 0.0001
CERTIFY	0.536	1.000	0.416	0.000	< 0.0001	< 0.0001
MASTERS	0.444	0.000	0.457	0.000	0.4176	0.4176
EXTERNAL	0.606	1.000	0.687	1.000	< 0.0001	< 0.0001
PRIORCFO	0.535	1.000	0.725	1.000	< 0.0001	< 0.0001
DIRECTOR	0.066	0.000	0.460	0.000	< 0.0001	< 0.0001
N	9,013		1,171			

All p-values are two-tailed.

Variable Definitions:
DUALITY = 1 if the CFO is also the COO or President, and 0 otherwise;
ASSETS = total $assets_{t-1}$;
MB = market value of $equity_{t-1}$ / total $assets_{t-1}$;
LEV = total $liabilities_{t-1}$ / total $assets_{t-1}$;
ROA = net $income_t$ / total $assets_t$;
OPCASH = operating $cash\ flows_t$ / total $assets_t$;
RETURN = (year end $price_t$ - year end $price_{t-1}$) / year end $price_{t-1}$;
SALESσ = standard deviation of sales for years *t* – year *t–4*) / total $assets_t$;
OPCASHσ = standard deviation of operating cash flows for years *t* – year *t–4*) / total $assets_t$;
AGE = CFO age;
AGE62 = 1 if CFO age ≥ 62, and 0 otherwise;
TENURE = tenure as CFO at their current firm;
CERTIFY = 1 if the CFO is a cpa or chartered accountant, and 0 otherwise;
MASTERS = 1 if the CFO has a MASTERS degree, and 0 otherwise;
EXTERNAL = 1 if the CFO was hired into the company as CFO, and 0 otherwise;
PRIORCFO = 1 if the CFO held a CFO position with a prior employer, and 0 otherwise; and
DIRECTOR = 1 if the CFO is on the board of directors, and 0 otherwise.

Table 3
DUALITY Choice Model
(Equation 1 Logistic Regression)

	Dependent Variable: DUALITY		
Variable	**Coefficient**	**Standard Error**	**p-value**
ASSETS	-0.0000	0.0000	< 0.0001
MB	-0.0288	0.0178	0.1060
LEV	-0.3457	0.0958	< 0.0001
ROA	-0.0073	0.1450	0.9600
OPCASH	-0.5451	0.2283	0.0170
RETURN	0.0235	0.0533	0.6600
SALESσ	0.2652	0.2690	0.3240
OPCASHσ	1.3545	0.5715	0.0180
AGE	-0.0143	0.0060	0.0180
AGE62	0.3925	0.1857	0.0350
TENURE	-0.1045	0.0131	< 0.0001
CERTIFY	-0.4300	0.0759	< 0.0001
MASTERS	0.0185	0.0776	0.8110
EXTERNAL	0.1480	0.0796	0.0630
PRIORCFO	1.0097	0.0859	< 0.0001
DIRECTOR	2.7116	0.0895	< 0.0001
N	10,184		
Pseudo-R^2	.2509		

All p-values are two-tailed. Industry and year fixed effects are included.

Variable Definitions:
DUALITY = 1 if the CFO is also the COO or President, and 0 otherwise;
ASSETS = total $assets_{t-1}$;
MB = market value of $equity_{t-1}$ / total $assets_{t-1}$;
LEV = total $liabilities_{t-1}$ / total $assets_{t-1}$;
ROA = net $income_t$ / total $assets_t$;
OPCASH = operating $cash\ flows_t$ / total $assets_t$;
RETURN = (year end $price_t$ - year end $price_{t-1}$) / year end $price_{t-1}$;
SALESσ = standard deviation of sales for years *t* – year *t–4*) / total $assets_t$;
OPCASHσ = standard deviation of operating cash flows for years *t* – year *t–4*) / total $assets_t$;
AGE = CFO age;
AGE62 = 1 if CFO age ≥ 62, and 0 otherwise;
TENURE = tenure as CFO at their current firm;
CERTIFY = 1 if the CFO is a cpa or chartered accountant, and 0 otherwise;
MASTERS = 1 if the CFO has a MASTERS degree, and 0 otherwise;
EXTERNAL = 1 if the CFO was hired into the company as CFO, and 0 otherwise;
PRIORCFO = 1 if the CFO held a CFO position with a prior employer, and 0 otherwise; and
DIRECTOR = 1 if the CFO is on the board of directors, and 0 otherwise.

Table 4
Matched Sample Descriptive Statistics
DUALITY Firm-years vs. Control Firm-years

Panel A: Choice Model Variables

	Control Firm-Years		DUALITY Firm-Years		Mean t-test	Median Mann Whitney test
Variable	**Mean**	**Median**	**Mean**	**Median**	**p-value**	**p-value**
ASSETS	2,171.3	328.4	3,518.4	72.7	0.2215	<0.0001
MB	1.9905	1.2116	2.1467	1.2567	0.4989	0.9122
LEV	0.5615	0.4866	0.4812	0.3759	0.0457	0.0001
ROA	-0.1179	0.0363	-0.1214	0.0215	0.9383	0.1293
OPCASH	-0.0180	0.0790	-0.0068	0.0729	0.6975	0.6373
RETURN	0.3023	0.0926	0.2392	0.0981	0.4010	0.7430
SALESσ	0.1325	0.0874	0.1299	0.0927	0.8398	0.7833
OPCASHσ	0.0659	0.0299	0.0613	0.0357	0.5918	0.2194
AGE	47.80	47.00	48.48	48.00	0.3161	0.4559
AGE62	0.0314	0.0000	0.0629	0.0000	0.0947	0.0947
TENURE	3.8065	2.8939	4.8558	3.9096	0.0001	<0.0001
CERTIFY	0.5196	1.0000	0.5157	1.0000	0.9294	0.9293
MASTERS	0.4370	0.0000	0.4803	0.0000	0.3283	0.3278
EXTERNAL	0.6535	1.0000	0.6181	1.0000	0.4076	0.4071
PRIORCFO	0.7638	1.0000	0.8228	1.0000	0.1007	0.1006
DIRECTOR	0.2441	0.0000	0.2913	0.0000	0.2300	0.2296

Panel B: Dependent Variables

	Control Firm-Years	DUALITY Firm-Years	Mean t-test
	Mean	**Mean**	**p-value**
$\lvert DA_t \rvert$	0.1077	0.1210	0.0426
$\lvert DA_{t+1} - DA_t \rvert$	0.1549	0.1843	0.0680
$OPCASH_{t+1}$	-0.0134	-0.0077	0.0087
ROA_{t+1}	-0.1307	-0.1246	0.0058
N	*254*	*254*	

All p-values are two-tailed.

Variable Definitions:

DUALITY = 1 if the CFO is also the COO or President, and 0 otherwise;
ASSETS = total $assets_{t-1}$;
MB = market value of $equity_{t-1}$ / total $assets_{t-1}$;
LEV = total $liabilities_{t-1}$ / total $assets_{t-1}$;
ROA = net $income_t$ / total $assets_t$;
OPCASH = operating cash $flows_t$ / total $assets_t$;
RETURN = (year end $price_t$ - year end $price_{t-1}$) / year end $price_{t-1}$;
SALESσ = standard deviation of sales for years *t* – year *t–4*) / total $assets_t$;
OPCASHσ = standard deviation of operating cash flows for years *t* – year *t–4*) / total $assets_t$;
AGE = CFO age;
AGE62 = 1 if CFO age ≥ 62, and 0 otherwise;
TENURE = tenure as CFO at their current firm;
CERTIFY = 1 if the CFO is a cpa or chartered accountant, and 0 otherwise;
MASTERS = 1 if the CFO has a MASTERS degree, and 0 otherwise;
EXTERNAL = 1 if the CFO was hired into the company as CFO, and 0 otherwise;
PRIORCFO = 1 if the CFO held a CFO position with a prior employer, and 0 otherwise;
DIRECTOR = 1 if the CFO is on the board of directors, and 0 otherwise;
$\lvert DA_t \rvert$ = the absolute value of discretionary $accruals_t$;
$\lvert DA_{t+1} - DA_t \rvert$ = the absolute value of (discretionary $accruals_{t+1}$ - discretionary $accruals_t$); and
$OPCASH_{t+1}$, ROA_{t+1} = year-ahead OPCASH and ROA, respectively.

Table 5
Discretionary Accruals

	Dependent Variable: $\lvert DA_t \rvert$				Dependent Variable: $\lvert DA_{t+1} - DA_t \rvert$			
	Matched Sample		Duality Only Sample		Matched Sample		Duality Only Sample	
Variable	**Coef.**	**p-value**	**Coef.**	**p-value**	**Coef.**	**p-value**	**Coef.**	**p-value**
DUALITY	0.0169	0.159	-0.0105	0.587	0.0307	0.078	-0.0238	0.469
ASSETS	-0.0000	0.142	0.0000	0.404	-0.0000	0.103	-0.0000	0.611
MB	0.0208	0.000	0.0218	0.000	0.0321	0.000	0.0291	0.000
LEV	0.0170	0.565	-0.0379	0.380	-0.0014	0.966	0.0491	0.338
ROA	0.0278	0.522	0.0403	0.373	0.0254	0.662	-0.0322	0.743
OPCASH	-0.0539	0.458	0.0121	0.904	-0.1141	0.254	0.1593	0.370
RETURN	0.0115	0.231	0.0163	0.331	0.0349	0.013	0.0423	0.157
SALESσ	-0.0608	0.236	-0.0716	0.361	-0.0109	0.867	-0.0696	0.450
OPCASHσ	0.5077	0.004	0.6984	0.001	0.2464	0.188	0.2605	0.308
AGE	0.0002	0.799	-0.0029	0.098	0.0005	0.781	-0.0028	0.226
AGE62	-0.0341	0.179	-0.0899	0.041	-0.0397	0.367	-0.0872	0.194
TENURE	0.0004	0.800	-0.0006	0.880	0.0016	0.635	-0.0005	0.917
CERTIFY	-0.0154	0.260	0.0145	0.589	-0.0068	0.739	0.0097	0.771
MASTERS	-0.0032	0.818	-0.0276	0.338	0.0136	0.508	-0.0054	0.876
EXTERNAL	-0.0197	0.117	0.0081	0.717	-0.0318	0.101	0.0172	0.522
PRIORCFO	-0.0211	0.304	-0.0409	0.097	-0.0551	0.080	-0.0397	0.229
DIRECTOR	0.0008	0.964	0.0495	0.094	0.0077	0.779	0.0671	0.174
N	508		252		508		252	
Adjusted R^2	0.4300		0.5486		0.3764		0.4162	

All p-values are two-tailed. Standard errors are clustered by firm. Industry and year fixed effects are included.

Variable Definitions:
$\lvert DA_t \rvert$ = the absolute value of discretionary accruals$_t$;
$\lvert DA_{t+1} - DA_t \rvert$ = the absolute value of (discretionary accruals$_{t+1}$ - discretionary accruals$_t$);
DUALITY = 1 if the CFO is also the COO or President, and 0 otherwise;
ASSETS = total assets$_{t-1}$;
MB = market value of equity$_{t-1}$ / total assets$_{t-1}$;
LEV = total liabilities$_{t-1}$ / total assets$_{t-1}$;
ROA = net income$_t$ / total assets$_t$;
OPCASH = operating cash flows$_t$ / total assets$_t$;
RETURN = (year end price$_t$ - year end price$_{t-1}$) / year end price$_{t-1}$;
SALESσ = standard deviation of sales for years *t* – year *t–4*) / total assets$_t$;
OPCASHσ = standard deviation of operating cash flows for years *t* – year *t–4*) / total assets$_t$;
AGE = CFO age;
AGE62 = 1 if CFO age ≥ 62, and 0 otherwise;
TENURE = tenure as CFO at their current firm;
CERTIFY = 1 if the CFO is a cpa or chartered accountant, and 0 otherwise;
MASTERS = 1 if the CFO has a MASTERS degree, and 0 otherwise;
EXTERNAL = 1 if the CFO was hired into the company as CFO, and 0 otherwise;
PRIORCFO = 1 if the CFO held a CFO position with a prior employer, and 0 otherwise; and
DIRECTOR = 1 if the CFO is on the board of directors, and 0 otherwise.

Table 6
Future Performance

	Dependent Variable: $OPCASH_{t+1}$			
	Matched Sample		**Duality Only Sample**	
Variable	**Coef.**	**p-value**	**Coef.**	**p-value**
DA_POS	-0.3582	0.018	-0.3228	0.107
DA_NEG	0.2884	0.057	0.2417	0.117
DE_POS	0.0656	0.812	0.3989	0.218
DE_NEG	-0.1504	0.336	0.1937	0.265
DUALITY	-0.0132	0.626	-0.0244	0.499
DA_POS * DUALITY	0.4365	0.013	0.5998	0.096
DA_NEG * DUALITY	0.1806	0.455	-0.3161	0.437
DE_POS * DUALITY	-0.0088	0.980	-0.1897	0.599
DE_NEG * DUALITY	0.2070	0.386	0.3159	0.509
ASSETS	0.0000	0.973	0.0000	0.628
MB	-0.0024	0.635	-0.0127	0.104
LEV	-0.0176	0.675	-0.2372	0.001
ROA	0.0468	0.518	-0.0297	0.798
OPCASH	0.7542	0.000	0.5454	0.000
RETURN	0.0395	0.038	0.0110	0.623
SALESσ	-0.0245	0.802	0.1504	0.110
OPCASHσ	0.0930	0.669	-0.4512	0.216
AGE	-0.0001	0.906	-0.0002	0.906
AGE62	0.0227	0.437	0.0570	0.527
TENURE	0.0028	0.163	-0.0016	0.745
CERTIFY	0.0002	0.988	-0.0012	0.970
MASTERS	-0.0086	0.518	0.0690	0.042
EXTERNAL	-0.0131	0.407	0.0010	0.971
PRIORCFO	0.0219	0.306	0.0107	0.717
DIRECTOR	0.0002	0.988	0.0203	0.625
DA_POS + DA_POS * DUALITY	0.0783	0.551	0.2771	0.277
DA_NEG + DA_NEG * DUALITY	0.4690	0.024	-0.0743	-0.818
DE_POS + DE_POS * DUALITY	0.0568	0.743	0.2092	0.427
DE_NEG + DE_NEG * DUALITY	0.0567	0.786	0.5097	0.247
N	508		252	
Adjusted R^2	0.7802		0.7782	

All p-values are two-tailed. Standard errors are clustered by firm. Industry and year fixed effects are included.

Variable Definitions:
DA_POS = discretionary $accruals_t$ if discretionary accruals > 0, 0 otherwise;
DA_NEG = discretionary $accruals_t$ if discretionary accruals < 0, 0 otherwise;
DE_POS = discretionary $expenditures_t$ if discretionary expenditures > 0, 0 otherwise;
DE_NEG = discretionary $expenditures_t$ if discretionary expenditures < 0, 0 otherwise; and
all other variables as previously defined.

Table 7
Future Performance

	Dependent Variable: ROA_{t+1}			
	Matched Sample		**Duality Only Sample**	
Variable	**Coef.**	**p-value**	**Coef.**	**p-value**
DA_POS	-0.0231	0.947	-0.2592	0.331
DA_NEG	-0.1703	0.566	0.1569	0.468
DE_POS	-0.4309	0.258	-0.5221	0.493
DE_NEG	0.8686	0.070	0.2893	0.307
DUALITY	-0.0162	0.622	-0.0527	0.435
DA_POS * DUALITY	0.1151	0.784	0.0889	0.857
DA_NEG * DUALITY	0.6399	0.077	-0.5065	0.214
DE_POS * DUALITY	0.5297	0.213	0.6705	0.394
DE_NEG * DUALITY	-0.3890	0.453	-0.2236	0.653
ASSETS	0.0000	0.335	0.0000	0.757
MB	-0.0212	0.023	-0.0328	0.020
LEV	-0.0786	0.126	-0.2478	0.045
ROA	0.2730	0.044	0.2176	0.116
OPCASH	0.9083	0.000	0.2867	0.119
RETURN	0.0132	0.466	-0.0564	0.310
SALESσ	0.1948	0.227	0.1200	0.499
OPCASHσ	0.7608	0.068	-0.7754	0.118
AGE	0.0000	0.989	0.0056	0.081
AGE62	-0.0816	0.212	0.0042	0.965
TENURE	0.0056	0.108	-0.0026	0.728
CERTIFY	0.0119	0.686	-0.0419	0.421
MASTERS	0.0165	0.482	0.0957	0.072
EXTERNAL	0.0275	0.330	-0.0066	0.869
PRIORCFO	0.0816	0.050	0.1038	0.050
DIRECTOR	-0.0576	0.141	-0.1249	0.123
DA_POS + DA_POS * DUALITY	0.0920	0.623	-0.1702	-0.726
DA_NEG + DA_NEG * DUALITY	0.4697	0.020	-0.3495	-0.293
DE_POS + DE_POS * DUALITY	0.0988	0.698	0.1484	0.795
DE_NEG + DE_NEG * DUALITY	0.4797	0.067	0.0657	0.881
N	508		252	
Adjusted R^2	0.7409		0.7342	

All p-values are two-tailed. Standard errors are clustered by firm. Industry and year fixed effects are included.

Variable Definitions:
DA_POS = discretionary $accruals_t$ if discretionary accruals > 0, 0 otherwise;
DA_NEG = discretionary $accruals_t$ if discretionary accruals < 0, 0 otherwise;
DE_POS = discretionary $expenditures_t$ if discretionary expenditures > 0, 0 otherwise;
DE_NEG = discretionary $expenditures_t$ if discretionary expenditures < 0, 0 otherwise; and
all other variables as previously defined.

Table 8
Future Performance (Sensitivity to DA and DE models)
Dechow et al. 2003 DA estimate / Vorst 2016 DE estimate

	Dependent Variable: $OPCASH_{t+1}$			
	Matched Sample		**Duality Only Sample**	
Variable	**Coef.**	**p-value**	**Coef.**	**p-value**
DA_POS	-0.1084	0.506	-0.1901	0.448
DA_NEG	0.2728	0.165	0.6561	0.000
DE_POS	0.0768	0.636	-0.0055	0.979
DE_NEG	-0.0554	0.798	0.1434	0.353
DUALITY	-0.0076	0.747	-0.0326	0.299
DA_POS * DUALITY	0.3541	0.086	0.5391	0.058
DA_NEG * DUALITY	-0.1913	0.246	-0.4684	0.098
DE_POS * DUALITY	-0.1823	0.385	0.3855	0.189
DE_NEG * DUALITY	0.2630	0.313	0.1697	0.562
ASSETS	0.0000	0.709	0.0000	0.144
MB	-0.0039	0.459	-0.0016	0.880
LEV	-0.0290	0.486	-0.2047	0.001
ROA	0.0407	0.646	-0.0685	0.518
OPCASH	0.6839	0.000	0.5930	0.000
RETURN	0.0337	0.079	0.0049	0.870
SALESσ	0.0239	0.807	0.1465	0.118
OPCASHσ	-0.1955	0.504	-0.4039	0.247
AGE	-0.0000	0.977	0.0011	0.556
AGE62	0.0228	0.467	0.0551	0.492
TENURE	0.0026	0.269	-0.0028	0.482
CERTIFY	0.0040	0.782	0.0237	0.489
MASTERS	-0.0125	0.396	0.0357	0.314
EXTERNAL	-0.0022	0.897	0.0100	0.729
PRIORCFO	0.0221	0.314	-0.0031	0.909
DIRECTOR	0.0010	0.962	0.0217	0.657
DA_POS + DA_POS * DUALITY	0.2457	0.062	0.34913	0.088
DA_NEG + DA_NEG * DUALITY	0.0815	0.655	0.18770	0.527
DE_POS + DE_POS * DUALITY	-0.1054	-0.397	0.38001	0.152
DE_NEG + DE_NEG * DUALITY	0.2076	0.182	0.31317	0.258
N	508		223	
Adjusted R^2	0.7637		0.7745	

All p-values are two-tailed. Standard errors are clustered by firm. Industry and year fixed effects are included.

Variable Definitions:
DA_POS = discretionary $accruals_t$ if discretionary accruals > 0, 0 otherwise;
DA_NEG = discretionary $accruals_t$ if discretionary accruals < 0, 0 otherwise;
DE_POS = discretionary $expenditures_t$ if discretionary expenditures > 0, 0 otherwise;
DE_NEG = discretionary $expenditures_t$ if discretionary expenditures < 0, 0 otherwise; and
all other variables as previously defined.