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Evidence from accounting conservatism**



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Gender Differences in Financial Reporting Decision-Making:
Evidence from Accounting Conservatism*

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Gender Differences in Financial Reporting Decision-Making: Evidence from Accounting Conservatism

Abstract

This paper investigates the effect of CFO gender on corporate financial reporting decision-making. Focusing on firms that experience changes of CFO from male to female, the paper compares the firms' degree of accounting conservatism between pre- and post-transition periods. We find that female CFOs are more conservative in their financial reporting. In addition, we find that the relation between CFO gender and conservatism varies with the levels of various firm risks such as litigation risk, default risk, systematic risk, and CFO specific risk such as job security risk. We further find that risk-aversion of female CFOs is associated with less equity-based compensation, lower firm risk, higher tangibility level, and lower dividend payout level. Overall, the study provides strong support for the notion that female CFOs are more risk averse than male CFOs, which leads female CFOs to adopt more conservative financial reporting policies.

Keywords: Accounting Conservatism; Gender; CFO; Risk-Aversion.

JEL Classification: M41; J16

1. Introduction

Over the past decade, there has been a significant increase in the number of women belonging to top executive teams. With this increase, researchers have begun to investigate the impact of female executives on various corporate decisions such as financing, investment, mergers and acquisitions, and going public, among others (e.g., Mohan and Chen 2004; Levi, Li, and Zhang 2008; Huang and Kisgen 2013). In general, they find that corporate decisions made by female executives are significantly different from those made by male executives. However, in the accounting literature, evidence on whether there exists a gender effect on corporate accounting decision-making is limited and results are mixed. For instance, Dyreng, Hanlon, and Maydew (2010) do not find that executive gender affects corporate tax avoidance. Similarly, Ge, Matsumoto, and Zhang (2011) do not find that CFO gender affects discretionary accruals. In contrast, Barua, Davidson, Rama, and Thiruvadi (2010) and Peni and Vahamaa (2010) find that firms with female CFOs have lower absolute discretionary accruals or higher income-decreasing discretionary accruals. Given these conflicting results, Birnberg (2011) concludes that although behavioral accounting research has shown greater awareness of gender issues in recent years, whether there exists gender differences in terms of accounting decision-making is still an open question, and calls for more research in this area.

In this paper, we provide evidence on this issue by examining whether there are systematic differences in the choice of financial reporting practices between male and female CFOs in the context of accounting conservatism. Further, we investigate whether female CFOs are more sensitive to various types of risks than male CFOs by examining cross-sectional variations in the relation between CFO gender and accounting conservatism. Finally, we examine real-activity channels through which risk-aversion of female CFOs could impact accounting conservatism.

We focus on accounting conservatism because it is one of the most influential principles of accounting (Sterling 1970). More important for the issues addressed in our paper, it reflects managers' attitudes toward risk. For example, Watts (2003a) points out that accounting conservatism is an efficient mechanism that could mitigate conflicts between management and various contracting parties, and could reduce potential litigation by outside parties, especially shareholders. Biddle, Ma, and Song (2010) find that accounting conservatism and firm default risk are jointly determined. Prior studies also find that CEO and CFO turnover rates are higher subsequent to financial restatements due to the use of aggressive accounting,

and that displaced managers suffer reputational and labor market penalties for using aggressive accounting (e.g., Desai, Hogan, and Wilkins 2006; Hennes, Leone, and Miller 2008; Collins, Masli, Reitenga, and Sanchez 2009). Given the extant evidence in the sociology, psychology, and economics literatures that women are generally more risk averse than men (e.g., Eckel and Grossman 2004; Croson and Gneezy 2009),¹ and the evidence that corporate decisions also reflect managers' personal risk preferences (e.g., Hambrick and Mason 1984; Graham, Harvey, and Puri 2013), we would expect that female executives are significantly more sensitive to risks related to aggressive accounting. Thus, female executives should be more conservative in their financial reporting than their male counterparts.

In this paper, we focus on the effect of CFO's gender on accounting conservatism because the management of a firm's financial reporting system is the primary responsibility of the CFO. Mian (2001), Geiger and North (2006), Chava and Purnanandam (2010), Jiang, Petroni, and Wang (2010), and Ge et al. (2011), among others, provide strong evidence showing that among senior managers the CFO has the most direct impact on accounting related decisions.

Using a sample of Standard and Poor's (S&P) 1,500 companies over the period 1988 through 2007, we examine whether, following a change in CFOs, there is a significant change in accounting conservatism that is attributable to gender. We use three measures of accounting conservatism that have been used in the extant literature: (i) a measure based on the firm's market-to-book ratio (Beaver and Ryan 2000); (ii) an accrual measure (Givoly and Hayn 2000); and (iii) a skewness measure (Givoly and Hayn 2000; Zhang 2008). We find that subsequent to the hiring of a CFO, when there is a change in gender from male to female there is a significant increase, both statistically and economically, in the level of accounting conservatism. This result holds irrespective of which measure of conservatism that we use, and when we control for firm characteristics and industry and year effects.

Next, we examine the impact of endogeneity on our results. We perform this analysis because unobservable economic changes contemporaneous with CFO changes could also affect accounting conservatism. In addition, female CFOs may not be randomly chosen when they are hired. In conducting this analysis, we use both difference-in-differences and propensity-score matching approaches, where we use male to male CFO transition as the control group. Our results hold for both of these tests. To triangulate

¹ Croson and Gneezy (2009) summarize three possible explanations for the gender difference in risk taking behaviors as emotions, overconfidence, and risk as challenge or threats.

our main findings, we further construct a sample of female to male CFO transitions and find that accounting conservatism decreases after firms change their CFOs from female to male. Our results are also robust to Basu (1997) measure of accounting conservatism, and to controls such as CFO shareholdings, CFO age, CFO previous experience, corporate governance, and whether there is a concurrent CEO turnover.

We also conduct cross-sectional analyses to examine how different risk environments faced by CFOs affect their accounting decision-making. Specifically, we focus on four types of risks that have been shown to be related to conservative accounting. These include litigation risk, default risk, systematic risk, and management turnover risk (Watts 2003a; Biddle et al. 2010; Desai et al. 2006; Collins et al. 2009). We predict that female CFOs are more sensitive to these risks than their male counterparts when making accounting decisions. Our cross-sectional analyses support this prediction. We find that the positive relation between female CFOs and accounting conservatism is more pronounced or only exists when firms have higher litigation risk, default risk, systematic risk, or management turnover risk. These findings provide a direct link between risk-aversion of female CFOs and accounting conservatism.

Finally, we examine how the structure of CFO compensation and several corporate decisions are influenced by female CFOs' attitudes toward risk. We find that female CFOs have significantly less equity-based compensation compared to their male predecessors, which is consistent with more conservative accounting practices (LaFond and Roychowdhury 2008). Additionally, we find that there is a reduction in investment in intangible assets and an increase in investment in tangible assets subsequent to the transition, which is consistent with an increase in conservatism; as Roychowdhury and Watts (2007) point out that firms with more tangible assets report more conservative accounting. Finally, we detect a significant reduction in dividend payout following male to female CFO transition. This is consistent with the assertion in Watts (2003a) that firms by reducing their dividend payout are de facto increasing their conservatism.

To the best of our knowledge, this is the first study that identifies and quantifies the effect of gender on accounting conservatism. Prior studies examining accounting conservatism take the neoclassical view and focus on firm-level or country-level factors as determinants of conservatism, and treat top executives as homogenous. In our paper, we relate corporate financial reporting decisions to the gender of top executives. Thus, our study broadens the view of what drives accounting conservatism to include the gender of top executives.

Our paper is related to an emerging literature that examines how personal characteristics of CFOs affect financial reporting practices. Relying on Hambrick and Mason (1984) upper echelons theory, recent studies have shown that managerial fixed effects have significant explanatory power for various accounting choices (e.g., Bamber, Jiang, and Wang 2010; Dyreng et al. 2010; Ge et al. 2011). In this paper, borrowing from the well-established theory from sociology, psychology, and economics literatures, we bridge risk-aversion of female executives with conservative accounting and find strong supportive evidence of its importance. Our findings indicate that there is a significant gender factor to the determinants of accounting decision-making. Our paper thus complements and extends this stream of research and responds to the call made by Birnberg (2011).

Our study is also related to but markedly different from Barua et al. (2010) and Peni and Vahamaa (2010). First, in contrast to these studies that focus on earnings management, we examine the impact of CFO gender on accounting conservatism. While to some extent earnings management could be related to conservatism because managers could establish reserves through understating earnings, Francis, LaFond, Olsson, and Schipper (2004) point out that these two are distinct earnings attributes because they have different intended functions of accounting. Watts (2003b) also notes that earnings management is not a plausible explanation of accounting conservatism.

Second, in contrast to Barua et al. (2010) and Peni and Vahamaa (2010), we employ a more careful research design that uses CFO gender changes as a quasi-natural experiment to better identify the gender effect. In addition, we conduct an array of robustness checks to deal with omitted variable bias, self-selection bias, and other empirical issues that are acknowledged as limitations in both of their studies and are common concerns in gender studies (Atkinson, Baird, and Frye 2003).

Third, and more importantly, we extend their work by exploring how the relation between CFO gender and conservatism varies with different types of risks, and by exploring several real-activity channels through which risk-aversion of female CFOs could lead to increased conservatism. Thus, our paper examines not only whether, but also why and how CFO gender affects accounting decision-making.

The remainder of our paper is structured as follows. Section 2 contains a brief review of the relevant research and presents our hypothesis. Section 3 introduces the measures of conservatism that we use in our analysis. In Section 4, we describe our sample selection process, present descriptive statistics,

and conduct univariate comparisons. Multivariate tests are conducted in Section 5. The final section summarizes and concludes.

2. Related literature and hypothesis development

Gender effect in accounting research

Motivated by the theoretical work of Hambrick and Mason (1984) which contends that managers' individual characteristics affect how they assess and interpret their positions and therefore affect their decisions, a new stream of accounting research has begun to investigate how individual top managers affect corporate accounting related decisions. In examining the effect of individual managers' idiosyncratic influences on accounting decisions, most papers follow the research design of Bertrand and Schoar (2003) that disentangles the managerial effect from firm effect by tracking managers across firms over time. For example, Bamber et al. (2010) examine executive fixed effects on corporate financial disclosure policies and find that individual managers have a significant effect on voluntary disclosure. Dyreng et al. (2010) find evidence of a CEO/CFO fixed effect on corporate tax avoidance strategies. Ge et al. (2011) report that individual CFOs are an important determinant of various accounting choices, such as discretionary accruals, meeting/beating analysts' expectations, and earnings smoothness. However, when they examine how different individual characteristics affect those accounting decisions, they generally do not find a significant gender effect.

Given the significant increase in female corporate executives, gender differences in accounting related decision-making have begun to attract attention in accounting research. However, studies on the gender issue are still very limited and results are mixed. For example, Barua et al. (2010) find that firms with female CFOs have lower absolute discretionary accruals, Peni and Vahamaa (2010) show that female CFOs are more likely to report income-decreasing discretionary accruals, while Ge et al. (2011) do not find a CFO gender effect on discretionary accruals. In his survey paper, Birnberg (2011, 6) summarizes that "Future behavioral accounting research may show greater awareness of the (gender) issue." However, "Because of the limited research, it is an open question whether gender is as relevant an issue when professional participants are used as it is in other studies." As such, he calls for more research on this topic.

Our paper complements behavioral accounting research by examining the effect of CFO gender on accounting decision-making in the context of conservatism. Next, we review related literature in the areas of both conservatism and gender and develop our hypothesis.

Accounting conservatism and risk

Conservatism has long been an important convention in financial reporting (Watts 2003a). Prior studies provide several explanations for the existence of conservative accounting, and two of the most widely accepted are contracting and litigation risk.² The contract-based explanation argues that conservatism is beneficial to investors and other contracting parties because it is a means of mitigating moral hazard problems caused by asymmetric information facing contracting parties (Watts 2003a; Zhang 2008). Consistent with the contracting explanation, LaFond and Roychowdhury (2008) find that lower managerial ownership increases the demand for conservatism. Ahmed and Duellman (2007) find that firms with boards that are more independent or with higher shareholdings report a higher level of conservatism. Lara, Osmá, and Penalva (2009) find that stronger governance firms have higher levels of accounting conservatism. Finally, Ahmed, Billings, Morton, and Stanford (2002) find that conservative reporting can mitigate bondholder-shareholder conflicts over dividend policy and hence reduce the cost of debt.

The litigation risk explanation contends that litigation generates asymmetric payoffs because firms overstating net assets are more likely to be involved in potential litigation and thus have higher litigation costs than firms understating net assets (Watts 2003a). Conservatism can reduce firms' litigation risk by understating net asset values. Empirical studies find that management and auditors that overstate earnings and net assets are more likely to be sued by shareholders than management and auditors that understate earnings and net assets (Kellogg 1984). Watts (2003b) also points out that courts are more likely to punish firms with overstatements than firms with understatements because stakeholders generally suffer more losses from overstatements than from understatements.

In the financial restatement literature, studies find that the number of restating firms that overstate their previous earnings is much larger than the number of restating firms that understate their previous

² For a comprehensive review of accounting conservatism, see Watts (2003a, b).

earnings.³ For example, Graham, Li, and Qiu (2008) find that overstatements outnumber understatements nine to one. Prior studies also find that the turnover rates of CEOs and CFOs are relatively higher around financial restatements, especially for restatements due to the use of aggressive accounting (e.g., Desai et al. 2006; Hennes et al. 2008; Collins et al. 2009). The replaced managers also suffer significant losses in income, power, and reputation because of their usage of aggressive accounting. For example, they are less likely to find a comparable position as their prior CFO position, and they are more likely to face legal and financial penalties. Using survey evidence, Graham, Harvey, and Rajgopal (2005) find that about 78 percent of CFOs believe that disclosing bad news faster improves their company's reputation for accurate and transparent reporting.

More recently, Biddle et al. (2010) examine the relation between accounting conservatism and a firm's bankruptcy risk. They find that conservatism's cash enhancing and informational roles could reduce both contemporaneous and subsequent bankruptcy risk of the firm.

Hypothesis development

Gender differences in attitudes toward risk and in risk related behavior have long been studied in the sociology, psychology, and economics literatures. In general, most studies support the notion that women are more risk averse than men.⁴ For example, Levin, Snyder, and Chapman (1988) report significant differences between male and female college students toward gambling attitudes. Johnson and Powell (1994) find that women are more risk averse than men in their betting habits. Jianakoplos and Bernasek (1998) find that single women are more risk averse than single men in household-holdings investment decisions. Sundén and Surette (1998) examine gender differences in the allocation of defined contribution plan assets and report that women are less likely to hold most of their assets in stocks. Bernasek and Shwiff (2001) also find that women allocate their pension more conservatively than men.

Olsen and Cox (2001) survey a sample of chartered financial analysts and certified financial planners and find that female professional investors are more concerned about downside risk than their male counterparts, and are more likely to reduce risk given a target return. In contrast, men tend to focus on

³ Palmrose, Richardson, and Scholz (2004) document negative market reactions to the announcements of financial restatements.

⁴ Eckel and Grossman (2004) and Croson and Gneezy (2009) provide excellent surveys of gender differences in risk attitudes in the economics literature.

increasing returns. Kumar (2010) finds that female analysts issue more accurate forecasts and that their accuracy is higher in market segments compared to their male counterparts. In the managerial setting, several studies, including Niessen and Ruenzi (2007), focus on mutual fund managers and compare the investment behavior of male and female fund managers. In general, they find that female fund managers are more risk averse than male fund managers in their investment decisions.

More recently, studies have begun to investigate whether the gender of corporate executives affects corporate decision-making. Huang and Kisgen (2013) investigate how gender differences of CFOs affect various corporate financial decisions. They find that firms under the control of female CFOs grow more slowly than firms under the control of male CFOs. Additionally, they find that female CFOs are less likely to make a significant number of acquisitions. However, when they do make acquisitions they exhibit higher announcement returns compared to those made by firms with male CFOs. They also find that female CFOs are less likely to issue debt and are more likely to reduce the leverage ratio than their male counterparts. Furthermore, for firms below their target capital structure ratio, the capital structure adjustment speed under female executives is slower than under male executives. These findings are consistent with the notion that female CFOs are more risk averse than male CFOs. Levi et al. (2008) examine whether the gender of CEOs or corporate directors plays a role in the pricing of and the returns of mergers and acquisitions. They find that bidders with female CEOs pay much lower premiums than bidders with male CEOs. They also find that the presence of female directors on the board is inversely related to bid premiums.

Recent studies also examine how the presence of female executives affects firm performance, corporate governance, and earnings quality from a gender diversity perspective. For example, Adams and Ferreira (2009) find that female board members improve corporate governance but decrease firm performance. Gul, Srinidhi, and Ng (2011) find that stock prices of firms with gender diverse boards have more firm specific information because gender diversity could improve transparency of disclosures and/or facilitate private information collection. Krishnan and Parsons (2008) and Labelle, Gargouri, and Francoeur (2010) find that gender diversity in senior management is positively related to earnings quality. Srinidhi, Gul, and Tsui (2011) also find that female directors are associated with higher earnings quality.

In this paper, we focus on CFO gender, instead of gender diversity of the top management team because as pointed out by Ge et al. (2011, 1141) that “The CFO typically oversees the firm’s financial reporting process and therefore he/she likely has the most direct impact of all the senior managers on the accounting related decisions of the firm.” Consistent with this argument, Geiger and North (2006) and Ge et al. (2011) provide empirical evidence showing that CFOs fixed effect has a significant impact on various accounting related decisions. Chava and Purnanandam (2010) find the CFOs’ incentives significantly affect earnings management and debt maturity, while CEOs’ incentives have no impact on earnings management and debt maturity. They argue that CEOs pay close attention to broad corporate decisions and delegate the finer aspects of such decisions to other specialized top management team members. This suggests that CFOs’ risk preferences are the key determinants of the firm’s accounting and financing decisions. Consistent with Chava and Purnanandam (2010), Jiang et al. (2010) find that CFO equity incentives play a stronger role than those of the CEO in earnings management. Peni and Vahamaa (2010) find that there is no significant relation between CEO gender and earnings management. Finally, Francis, Hasan, and Wu (2013) find that only CFO gender and not the gender of other top executives, affects cost of debt financing.

To summarize, most of the evidence in the literature points to gender differences in risk attitudes, with females being more risk averse compared to males. Because CFOs have the responsibility of deciding and monitoring financial reporting policies, and because female CFOs are more sensitive to risks (such as information, litigation, default, and of being terminated), we expect that firms with female CFOs will exercise more caution in the recognition and measurement of income and assets and exert higher verification of good news than bad news, thereby reducing the potential risk of overstatement. The above discussion leads to the following hypothesis:

HYPOTHESIS: *Female CFOs are more conservative in financial reporting than male CFOs.*

3. Measures of accounting conservatism

At present, there is no single generally accepted measure of conservatism in the accounting literature.⁵ Consequently, we use three different measures of conservatism in our analysis: A market-value-based measure (*CON_MTB*) and two earnings-based measures (*CON_ACCRUAL* and *CON_SKEWNESS*).

⁵ For a comprehensive discussion of measures of accounting conservatism, see Wang et al. (2009).

Our first measure of conservatism, *CON_MTB*, is the market-to-book ratio of a firm (Beaver and Ryan 2000; Ahmed et al. 2002; Ahmed and Duellman 2007; Hui, Matsunaga, and Morse 2009). Intuitively, the market-to-book ratio reflects asymmetric information due to earlier recognition of expenses and losses and to deferred revenue recognition, thereby capturing understatement of net assets relative to market value. Therefore, the higher the market-to-book ratio, the more conservative is the firm's accounting policy (Beaver and Ryan 2000). There are at least two advantages of *CON_MTB*. First, it has a strong theoretical underpinning of Feltham and Ohlson (1995)'s valuation model. Second, being a firm-specific measure it is generally easy to implement (Wang, Hógartagh, and Zijl 2009). *CON_MTB* is one of the most widely used measures of conservatism in the literature. However, it should be noted that in the extant accounting and finance literature a firm's market-to-book ratio is also used as a proxy for a firm's growth opportunities and economic rents generated from assets-in-place. Consequently, in our analysis we control for these factors in the regressions. We discuss our control variables in detail below.⁶

Our second measure of conservatism, *CON_ACCRUAL*, is the cumulative non-operating accruals deflated by cumulative total assets, multiplied by -1 for ease of interpretation.⁷ Thus, a higher *CON_ACCRUAL* indicates greater conservatism. This measure was established by Givoly and Hayn (2000) and has become widely used in the accounting literature (e.g., Ahmed and Duellman 2007; Zhang 2008). The basic idea is that conservative accounting tends to accelerate the recognition of losses and defers the recognition of gains thereby resulting in persistently negative accruals. Richardson, Sloan, Soliman, and Tuna (2005) point out that accruals tend to be reversed within a one- to two-year period. Thus, cumulative accruals over a reasonably long period of time mitigate the effects of any temporary large accruals and reduce the potential serial correlation problem (Ahmed and Duellman 2007). Additionally, in our paper, cumulative measures of conservatism are advantageous when comparing conservatism between two time

⁶ In addition, following Beaver and Ryan (2000), we also include the current and six-year lagged stock returns as additional explanatory variables to filter out the lag component in the regressions. In these estimations our results are qualitatively unchanged. As the results of using bias component are very similar to the results of using market-to-book ratio, we only report results based on market-to-book ratio.

⁷ Non-operating accruals are defined as operating accruals – Δ accounts receivable (Compustat #2) – Δ inventories (Compustat #3) – Δ prepaid expenses (Compustat #160) + Δ accounts payable (Compustat #70) + Δ taxes payable (Compustat #71), where operating accruals = net income (Compustat #172) + depreciation (Compustat #14) – cash flow from operations (Compustat #308).

periods (the pre- and post-transition periods) to isolate the gender effect.⁸ We calculate *CON_ACCRUAL* for both the pre- and post-transition periods of each firm and test for differences between these two periods.⁹

Our third measure of conservatism, *CON_SKEWNESS*, is the time-series skewness of earnings. Similar to Zhang (2008), we deflate it by the skewness of cash flows to control for the variation in firm performance. It is also multiplied by -1 to facilitate interpretation of our results. A higher value of *CON_SKEWNESS* indicates higher conservatism. This measure is also based on Givoly and Hayn (2000), who argue that accounting conservatism requires an immediate and complete recognition of negative news and a delayed and gradual recognition of positive events, leading to a negatively skewed earnings distribution. We calculate *CON_SKEWNESS* for both the pre-transition period and the post-transition period of each firm and test for differences between these two periods.

Recent studies point out that conservatism can arise either “unconditionally” via inherent conservative accounting principles (e.g., excessive depreciation) or “conditionally” via a more timely recognition of bad versus good news (e.g., impairment accounting) (Basu 1997; Beaver and Ryan 2005). Our three measures of conservatism capture unconditional conservatism. Thus, in robustness checks, we also use a modified Basu (1997) model to capture conditional conservatism. The underlying idea of Basu (1997) model is that both “bad news” and “good news” are reflected in stock prices, and “bad news” is reflected much more prominently in earnings. Therefore, the relation between current earnings and current returns is stronger when the returns are negative than when they are positive. To examine whether female CFOs recognize bad news versus good news in a more timely manner compared to their male counterparts, we use a modified model in which we interact all variables in Basu’s (1997) model with gender effect. We explain our model specification in detail in Section 5.

In summary, our four chosen measures of conservatism have been used widely in the extant literature. We use all four measures to triangulate our results. To the extent that our results across all measures of conservatism are consistent, we can be confident that they are robust.

⁸ However, one disadvantage of using cumulative measures is that they reduce our sample size, and consequently reduce the statistical power of the tests.

⁹ As we only keep one CFO for the pre- or post-transition period, these two periods are fairly comparable. For example, the median (mean) number of years for the pre-transition period is 5 (6.25), and the median (mean) number of years for the post-transition period is 5 (5.23).

4. Data and summary statistics

Sample selection

To examine the gender effect on financial reporting conservatism, our primary research design is to compare the degrees of conservatism between the pre- and post-transition periods for male to female CFO turnover firms. For robustness checks, we also examine conservatism between the pre- and post-transition periods for a male to male CFO transition sample and for a female to male CFO transition sample.

The gender information is primarily from the ExecuComp database, which covers most of the S&P 1,500. In cases where there is missing gender information in ExecuComp, we manually search the 10-K filings of the firms through the Securities and Exchange Commission (SEC) Edgar system. If the company filings do not report the gender of the executives, we further search the company's website and other business websites (such as Forbes.com, Yahoo.com, Google.com and ZoomInfo.com) to identify the gender of the executives. We construct our CFO transition sample using the following filters: (1) Both pre- and post-transition CFOs have to be in office consecutively for at least 3 years excluding the transition year; (2) if there are more than one CFO during the pre- or post-transition period, we only keep the CFO who is closest to the transition year; (3) if a firm changes its CFO from male to female more than once, we only count the most recent change for each firm; (4) we exclude financial firms and utility companies (SIC code between 6000 and 6999 and between 4900 and 4999), and our time period is from 1988 to 2007. The resulting sample is then merged with Compustat to obtain firm accounting information. Our final sample consists of 974 firm-year observations with 92 cases of male to female transitions. For the other two transitions that we examine, we have 4,239 firm-year observations with 353 cases of male to male transitions, and 421 firm-year observations with 48 cases of female to male transitions.

For our main testing sample of male to female CFO transitions, we find that female CFO tenure varies across our sample with a minimum of 4 years (34.78% of the total 92 cases) and a maximum of 11 years (one case). We also find that female CFOs appointments have increased significantly from 1995 (4 cases) to 2002 (16 cases), and have declined somewhat in 2003 and 2004 (5 and 3 cases). The sample also shows that the consumer industry has the largest female CFO representation, followed by the manufacturing and high-tech industries. Firms listed on the New York Stock Exchange have more than

twice the number of female CFOs than firms listed on NASDAQ. Finally, the state with the highest number of female CFOs is California with 17, followed by Texas and Ohio with 12 and 8.

Summary statistics and univariate comparisons

Panel A of Table 1 presents summary statistics for the male to female CFO transition firms. For *CON_MTB*, the mean (median) for our sample is 1.809 (1.498), which is slightly lower than the mean (2.291) and the median (1.513) of all Compustat firms for the same time period. The means (medians) of *CON_ACCRUAL* and *CON_SKEWNESS* are 0.017 (0.016) and -0.159 (-0.255), which are similar to the results reported by Ahmed et al. (2002), Ahmed and Duellman (2007), Zhang (2008), Hui et al. (2009), and others. We find that the mean (median) value of firm assets for our sample is \$11,212 million (\$1,170 million), compared to a mean (median) value of \$5,724 million (\$272 million) for all Compustat firms. Our sample firms are larger than the average firm in the Compustat database, as our sample is primarily from ExecuComp which covers S&P 1,500 firms. Our other firm-specific variables are similar to those in Huang and Kisgen (2013), who also use ExecuComp as their primary source of data.

[Insert Table 1 here]

Panel A also presents univariate comparisons of firm level variables between the pre- transition period and the post-transition period. We find that the mean *CON_MTB* increases from 1.718 before CFO changes to 1.874 after CFO changes. The mean difference of 0.156 is significant at the 10% level. We also find that both *CON_ACCRUAL* and *CON_SKEWNESS* have increased significantly (significant at the 1% level) after male to female CFO transitions. These univariate comparisons are supportive of our hypothesis that female CFOs are more conservative in their accounting decision-making compared to their male predecessors. With regard to other firm variables, we find that while firm size increases, firm leverage, sales growth, and R&D decrease significantly following male to female CFO changes. These results are consistent with Huang and Kisgen (2013) and show that, in general, female CFOs are more risk averse in financing and investing decisions compared to their male counterparts.

Peni and Vahamaa (2010) find that female CFOs are associated with income-decreasing discretionary accruals. If conservatism captures a manager's tendency to defer earnings/assets, both discretionary accruals and conservatism could proxy for the same underlying construct. To mitigate this

concern, we also examine how discretionary accrual changes following CFO gender changes. We use the modified cross-sectional Jones (1991) model as described in Dechow, Sloan, and Sweeney (1995) to capture discretionary accruals. We find that discretionary accruals are significantly lower in the post-transition period than in the pre-transition period, which is consistent with Peni and Vahamaa (2010). One possible explanation is that both conservatism and discretionary accruals are affected by CFO gender. This is a reasonable explanation, as both of them are subject to CFO's discretions, but they have different intended functions of accounting (Francis et al. 2004). Watts (2003b) also summarizes that earnings management is not a plausible general explanation of accounting conservatism.¹⁰

Panel B of Table 1 provides the pairwise correlations among the main variables. As expected, we find that all three measures of conservatism are significantly and positively correlated with male to female CFO transitions. For the correlations among the three conservatism measures, we find that while *CON_MTB* is positively related to both *CON_ACCRUAL* and *CON_SKEWNESS*, both correlations are not significant. The results are understandable because *CON_MTB* is a market-based measure of conservatism and both *CON_ACCRUAL* and *CON_SKEWNESS* are earnings-based measures of conservatism (Watts 2003b; Ahmed and Duellman 2007). The correlation between *CON_ACCRUAL* and *CON_SKEWNESS* is 0.26 and is significant at the 1% level. The insignificant correlations between discretionary accruals and the three measures of conservatism further indicate that they are two distinct earnings attributes. In the correlation table, we also find that several firm variables are also significantly correlated with conservatism measures, which indicates the need for multivariate analysis.

5. Multivariate analysis

CFO gender and accounting conservatism: Baseline regressions

In our multivariate analysis, we begin by testing how male to female CFO transition affects accounting conservatism using the three different conservatism measures. The main empirical model is the following:

$$\text{Conservatism} = f(\text{Post}, \text{Firm characteristics}, \text{Industry effect}, \text{Year effect}) \quad (1)$$

¹⁰ To further mitigate the concern of the overlapping between these two accounting attributes, in a robustness check we include discretionary accruals as an additional control in the main regressions, and all our results hold for this additional control.

Where *Post* is our primary variable of interest and is a dummy variable that equals one if a year is after the CFO transition year and zero if a year is before the CFO transition year.

Following prior studies, such as Ahmed et al. (2002), Ahmed and Duellman (2007), and LaFond and Roychowdhury (2008), we include the following firm-level control variables in our regressions: *Log(Asset)* - the natural log of total assets; *Profitability* - earnings before interest, taxes, and depreciation divided by total assets; *Leverage* - total long term liabilities divided by total assets; *Sales growth* - annual growth in total sales; *R&D* - research and development costs divided by total assets; *Cash holding* - cash and short-term investment divided by total assets; *Litigation risk* - equals one if a firm belongs to high-litigation-industries (SIC code 2833–2836, 3570–3577, 7370–7374, 3600–3674, and 5200–5961), and zero otherwise; *SOX* - equals one if a year is after 2002, and zero otherwise; *Management gender diversity* – the proportion of female executives (excluding female CFOs) in the top management team; and *Board gender diversity* – the proportion of female directors (excluding female CFOs) in the boardroom.¹¹ Ahmed and Duellman (2007) emphasize the industry differences of accounting conservatism, and Basu (1997) and Givoly and Hayn (2000) find that accounting conservatism changes over time. To control for these effects we include two-digit SIC industry and year effects in the regressions.

LaFond and Watts (2008) argue that information asymmetry is often smaller for large firms than for small firms, thereby reducing the demand for conservative accounting for large firms. We thus expect a negative relation between firm size and accounting conservatism. Ahmed et al. (2002) argue that the costs associated with conservative accounting are higher for low-profitability firms than that for high-profitability firms, and they find a positive relation between profitability and conservatism. We predict that leverage should have a positive effect on conservatism because firms with greater bondholder-shareholder conflicts have a higher demand for conservative accounting (e.g., Ahmed et al. 2002; Ahmed and Duellman 2007; Zhang 2008). We also expect a positive relation between sales growth and *CON_MTB* because large sales growth often inflates the market expectations of future cash flows; sales growth is expected to have a negative relationship with *CON_ACCRUAL* and *CON_SKEWNESS* because sales growth affects accruals such as inventory and receivables, which in turn affects *CON_ACCRUAL* and *CON_SKEWNESS* (Ahmed and Duellman 2007). R&D is GAAP mandated to be recorded conservatively; as such it should be

¹¹ It should be noted that we also estimated regressions where we included female CFOs when calculating gender diversity and our results are qualitatively unchanged.

positively related to conservatism. We expect a positive relationship between cash holdings and conservatism because conservatism could reduce cash outflows and cash wastage and also lowering agency costs associated with cash holdings (Watts 2003a). We predict a positive sign of litigation risk as Watts (2003a) argues that litigation risk is one of the major factors that affect accounting conservatism.

Recent studies find that gender diversity in top management and boardroom positively affects earnings quality, we therefore expect both management gender diversity and board gender diversity to positively impact conservatism (e.g., Krishnan and Parsons 2008; Labelle et al. 2010; Gul et al. 2011).

Lobo and Zhou (2006) find that there is an increase in accounting conservatism following the passage of Sarbanes-Oxley Act (SOX); accordingly SOX should have a positive impact on the level of conservatism. Because our time span is relatively long (20 years), we believe that SOX could only capture the regulatory effect after 2002, but not totally pick up the individual year effects from 1988 to 2007. Thus, we control for both SOX and year effects in our regressions.¹² To avoid the perfect multicollinearity problem, we drop the first and the last year dummies (year 1988 dummy and year 2007 dummy) of the entire sample period and make the regression estimable. For robustness checks, we also estimate the model first without the SOX dummy and then without the year fixed effects. All inferences remain the same.

We report our baseline regression results in Table 2. As noted earlier, we use three different measures of conservatism in our tests: *CON_MTB*, *CON_ACCRUAL*, and *CON_SKEWNESS*. We predict a positive relation between accounting conservatism and *Post*, as we expect that female CFOs are more conservative than their male predecessors in making financial reporting decisions.

Model 1 shows that the male to female CFO transition has a statistically significant and economically meaningful impact on *CON_MTB*. Specifically, the coefficient on *Post* is 0.273 and is significant at the 1% level, indicating that *CON_MTB* is about 0.273 higher for the post-transition period (under the control of female CFOs) compared to the pre-transition period (under the control of male CFOs). This finding provides supportive evidence that female CFOs are more conservative in financial reporting decision-making than their male counterparts.

[Insert Table 2 here]

¹² This approach (including both time dummies and one post-regulation dummy) is commonly used in the literature when examining SOX, Regulation FD, Global Settlements, and other regulation changes. For example, Zang (2012) controls for both SOX and year fixed effect in one regression model. Other examples include Chan, Chen, Chen, and Yu (2012), Kross and Suk (2012), and Bereskina and Cicero (2013).

With regard to the control variables, we find consistent with our expectations that the coefficients on *Profitability*, *Sales growth*, and *Cash holding* are positive and significant, and the coefficient on *Log (Asset)* is negative and significant. However, we find that the coefficient on *Litigation risk* is negative and significant at the 10% level, which is opposite to our expectation but is consistent with the finding by Ahmed and Duellman (2007).¹³

In Model 2 of Table 2, we use *CON_ACCRUAL*, an accrual based measure of conservatism as the dependent variable. Our control variables are the same as those used in Model 1.¹⁴ Consistent with the results for *CON_MTB*, we find that *Post* is statistically significant with a coefficient of 0.007, indicating that female CFOs are more conservative than their male counterparts. With regard to the control variables, we find that *Profitability*, *Leverage*, and *R&D* are all positive and significant, while *Sales growth* is negative and significant, consistent with our expectations and prior findings.

In Model 3 of Table 2, we present regression results where the specification is similar to that in models 1 and 2, except that we use the skewness-based measure of conservatism, *CON_SKEWNESS*, as the dependent variable. Similar to the results reported in models 1 and 2, we find that *Post* has a statistically significant and economically meaningful impact on *CON_SKEWNESS*. With regard to the control variables, *Log (Asset)* is negatively related to *CON_SKEWNESS*, while *Profitability* and *Leverage* are positively related to *CON_SKEWNESS*. We also find that the coefficients on *Management gender diversity* and *Board gender diversity* are positive and significant, which is consistent with our expectations.¹⁵

To examine the relative importance of the CFO gender effect, we also report standardized beta coefficients below the t-statistics in Table 2. We find that standardized beta coefficients on *Post* are relatively large, especially in models 2 and 3. Specifically, it has the highest value (0.329) in Model 3 and

¹³ We also run firm- and year-fixed effects regressions to control for the potential cross sectional dependence and to rule out the effect of unobservable firm characteristics that are stable over time and correlated with the independent variables. Our testing variable, *Post*, remains significant within these regressions.

¹⁴ Because *CON_ACCRUAL* and *CON_SKEWNESS* are cumulative measures, the control variables in models 2 and 3 are averaged over the pre- and post-transition periods. We also measure control variables in the central year of each period or the last year that the CFO is in the office. The results are similar to those obtained when we use average values.

¹⁵ We test whether multicollinearity problems exist for all the regressions presented in this paper. The average variance inflation factors (VIF) for all regressions are all below 2. The highest VIF for any regressors in our empirical tests is 4.28 (*Default risk*Post* in Table 6). Thus, both the average VIF and the highest VIF are well below the threshold indicator of 10.

the second highest value (0.271) in Model 2. These results indicate that, compared to firm-level controls, CFO gender has a relatively more meaningful impact on accounting conservatism.

In sum, our results in Table 2 show that for all three measures of accounting conservatism, financial reporting becomes more conservative following a change in CFO from male to female. These results provide empirical evidence to support our hypothesis that female CFOs are more conservative than male CFOs in financial reporting decision-making.

CFO gender and accounting conservatism: Robustness checks

In baseline regressions presented in Table 2, we control for various observable firm characteristics that have been shown to impact accounting conservatism in the literature. However, unobservable time series changes contemporaneous with CFO changes could also affect accounting conservatism thus possibly making our results spurious. In addition, female CFOs might not be randomly assigned to firms; consequently our empirical results could be subject to self-selection bias. To mitigate these endogeneity issues, we apply both difference-in-differences and propensity-score matching approaches (e.g., Bertrand, Duflo, and Mullainathan 2004; Zhao 2004).

Difference-in-differences regression results

The difference-in-differences approach compares accounting conservatism before and after transitions from a male to a female CFO with a control sample of male to male transitions. We first construct a matching sample of firms that change their CFOs from male to male (the control sample) using the same criteria as the male to female transition sample. We then pool the control sample and the treatment sample (male to female transition firms). We create a dummy variable *Female* that equals one if a firm is a male to female CFO transition and zero if a firm is a male to male CFO transition firm.

Following Jiang, Stanford, and Xie (2012), we estimate the following demeaning regression model using the pooled sample:

$$\Delta CON = \mu + \beta_1 Female + \beta_2 \Delta X + \varepsilon \quad (2)$$

where ΔCON is the difference between the mean value of conservatism for the post-transition period and the mean value of conservatism for the pre-transition period. We use the same set of control variables as

those used in Table 2, and we use mean differences of those control variables in Equation 2. That is, ΔX is the difference between the mean value of the control variable for the post-transition period and the mean value of the control variable for the pre-transition period.¹⁶ There are two major advantages of using this demeaning format. First, it allows us to interpret the coefficient on *Female* as the average difference in conservatism for a firm with the average sample characteristics. Second, it is less likely to suffer from multicollinearity problem compared to a traditional difference-in-differences model that uses actual values of variables and interaction terms.¹⁷ We expect that the variable *Female* will have a positive effect on ΔCON if female CFOs are more conservative than male CFOs.

[Insert Table 3 here]

Results from the difference-in-differences regression are reported in Model 1 of Table 3, in which we use *CON_MTB* as the dependent variable. We find that the coefficient on *Female*, which captures the incremental effect of female CFOs on *CON_MTB* for the post-transition period, is 0.157 and is significant at the 1% level. We also use *CON_ACCRUAL* and *CON_SKEWNESS* as dependent variables and find consistent results. For brevity, we do not tabulate these results. Thus, compared to male CFOs, female CFOs increase accounting conservatism significantly more following CFO transitions. It should be noted that our difference-in-differences regression results mitigate the unobservable omitted variable bias concern and indicate a causal effect of CFO gender on accounting conservatism.

Propensity-score matching results

It could also be the case that female CFOs are not randomly assigned to firms. In order to address this potential selection bias issue, we use a propensity-score matching approach. Similar to the difference-in-differences regression, we use male to male CFO transition firms as the control sample. In the first stage, we pool the treatment sample and the control sample and run a logistics regression to predict the possibility of appointing a female CFO in the transition year. The dependent variable is *Female*, a dummy variable that equals one if a firm is a male to female transition firm, and zero if a firm is a male to male transition firm. We include major firm characteristics, such as firm size, profitability, and leverage, in the regression.

¹⁶ We exclude litigation risk in the regression, as there is no variation in our litigation risk measure for a firm over time.

¹⁷ We thank the editor and one of the referees for pointing this out to us.

These firm characteristics are measured one year before the CFO transition year. We also control for industry and year effect in the regression. Next we use the propensity scores obtained from the logistic estimations and perform a one to one nearest neighbor match with replacement. This procedure ensures that each male to female CFO transition firm is paired with a male to male CFO transition firm. We pool the treatment sample and the matched sample together and examine the differences between female CFOs and male CFOs in terms of accounting conservatism during the post-transition period.

Model 2 of Table 3 reports the propensity-score matching results when we use *CON_MTB* as the dependent variable. We find that the coefficient on *Female* is 0.273 and is significant at the 1% level, indicating that following a CFO transition, firms under the control of female CFOs on average have a higher degree of accounting conservatism compared to the matching firms that are under the control of male CFOs. We also use *CON_ACCRUAL* and *CON_SKEWNESS* as dependent variables and find consistent results. For brevity, we do not tabulate these results. Thus, the results of the propensity-score matching approach mitigate the self-selection bias concern and further confirm our main findings.

Are results driven by simultaneous changes of CFOs and CEOs?

Prior research shows that there are significant changes in financial reporting following a change in CEOs. New CEOs sometimes use the “big bath” to reduce earnings, so that they can blame the company’s poor performance on the previous CEOs and take credit for the (expected) future improvements. In order to ensure that our results are not confounded by a contemporaneous CEO change during our CFO transition period, we identify cases in which our male to female CFO transition firms concurrently appoint new CEOs during the same transition year. For our sample of 92 male to female CFO transitions, we find 56 cases with concurrent CEO turnovers in the transition year. We then re-estimate our baseline regressions using a reduced sample that excludes cases of simultaneous changing of CFOs and CEOs.

Model 3 of Table 3 presents regression results. As before, for brevity, we only report results when we use *CON_MTB* as the dependent variable. We find that our variable of interest, *Post*, continues to have a significant and positive effect on accounting conservatism. Our (un-tabulated) results also hold when we use *CON_ACCRUAL* and *CON_SKEWNESS* as dependent variables. Thus, these results indicate that our

finding of a significant increase in the level of accounting conservatism when there is a transition from male to female CFO cannot be attributed to the simultaneous changing of the firm's CEO.

Female to male CFO transition and accounting conservatism

To the extent that the significant increase in accounting conservatism following a male to female CFO transition is due to the different risk preferences between female CFOs and male CFOs, we would expect a decrease in the degree of accounting conservatism after firms change their CFOs from female to male. To examine if this is the case, we construct a sample of female to male CFO transition cases using the same criteria as the male to female CFO transition sample. Our final sample includes 48 female to male CFO changes.

Model 4 of Table 3 presents regression results using the female to male CFO transition sample where *CON_MTB* is the dependent variable. In the regression, *Post* is a dummy variable that equals one if a year is after the CFO transition year and zero if a year is before the CFO transition year. We find that the coefficient on *Post* is -0.769 and is significant at the 5% level, suggesting that after female to male CFO transition, accounting conservatism measured by *CON_MTB* decreases. We further use *CON_ACCRUAL* and *CON_SKEWNESS* as dependent variables. We find that both coefficients are negative. However, the coefficient is only statistically significant when we use *CON_ACCRUAL* as the dependent variable. For brevity, we do not tabulate these results. In general, our results obtained using a female to male CFO transition sample are consistent with our conjecture that male CFOs are less conservative than female CFOs as evidenced by the finding that after firms switch their CFOs from female to male, the degree of accounting conservatism is reduced. The results triangulate the findings from the male to female CFO transition sample.

Asymmetric timeliness measure of accounting conservatism

We further examine the sensitivity of our results to an alternative measure of conservatism that is commonly used as a measure of conditional conservatism in accounting research: The asymmetric timeliness measure (Basu 1997). We use the following model specification to capture the gender effect on conditional conservatism:

$$X_{i,t}/P_{i,t-1} = \alpha_0 + \alpha_1 Neg_{i,t} + \beta_0 Return_{i,t} + \beta_1 Return_{i,t} * Neg_{i,t} + \gamma_0 Post_{i,t} + \gamma_1 Post_{i,t} * Neg_{i,t} + \gamma_2 Post_{i,t} * Return_{i,t} + \gamma_2 Post_{i,t} * Return_{i,t} * Neg_{i,t} + Controls_{i,t} + \varepsilon_{i,t} \quad (3)$$

where $X_{i,t}$ is the earnings per share of firm i in fiscal year t ; $P_{i,t-1}$ is the price per share of firm i at the beginning of fiscal year t ; $Return_{i,t}$ is the 12-month return of firm i ending three months after the end of fiscal year t ; $Neg_{i,t}$ is a dummy variable equal to one if $Return_{i,t}$ is less than zero and zero otherwise; and $Post_{i,t}$ is a dummy variable which equals one if firm i in fiscal year t is after the transition year and zero if firm i in fiscal year t is before the transition year.

[Insert Table 4 here]

Table 4 presents the results of the pooled regressions used to estimate the asymmetric timeliness coefficient and to test for the effect of male to female CFO transition on asymmetric timeliness. In Model 1, we present the Basu (1997) regression without considering the gender transition effect. Consistent with our expectations, we find that the coefficient on $Return * Neg$, which captures asymmetric timeliness, is positive and significant at the 1% level, indicating that the relation between earnings and negative returns is more pronounced than the relation between earnings and positive returns. Model 2 contains the results when we interact $Post$, which captures the effect of male to female CFO transition, with other variables. If female CFOs report bad news more quickly than male CFOs, we expect the coefficient on $Return * Neg * Post$ to be positive and significant. Consistent with our expectation, the coefficient on $Return * Neg * Post$ is 0.403 and is significant at the 1% level.

Model 3 reports results where we have augmented the model with the same set of control variables that we used in Table 2. We also interact each control variable with $Return$, Neg , and $Return * Neg$. The coefficient on $Return * Neg * Post$ remains positive and significant at the 1% level, indicating that accounting conservatism as measured by asymmetric timeliness increases significantly after male to female CFO transition. This finding corroborates our earlier results and indicates that our results are not dependent upon the measure of accounting conservatism that is used in our estimations.

Other CFO characteristics, corporate governance, and accounting conservatism

So far our results provide strong evidence that female CFOs are more conservative in financial reporting decision-making than male CFOs. However, we have not considered other CFO characteristics that could

also affect accounting conservatism. For example, older CFOs could be more conservative than younger CFOs in their financial reporting. CFOs' previous work experience, compensation structure and share ownership could also affect their reporting incentives. To control for these possibilities, we include in our regressions *CFO's age*, *CFO's prior experience* that equals one if a CFO has previous CFO experience, and zero otherwise, and *CFO shareholding*, which is the percentage of shares held by the firm's CFO.¹⁸ These data are obtained from the ExecuComp database.

Prior studies have also found that corporate governance affects accounting conservatism (e.g., Lara et al. 2009; Ahmed and Duellman 2007). We use several variables to control for corporate governance to examine whether our previous results are driven by underlying governance structures of firms instead of by a gender effect. Our first measure of governance is the *G-index* of Gompers, Ishii, and Metrick (2003), which is a measure of shareholder rights. We also include several board characteristics that are widely used in the corporate governance literature to measure board quality (e.g., Hermalin and Weisbach 2003; Ahmed and Duellman 2007). These board characteristics are: *Board composition* - the ratio of the number of independent directors to total number of directors; *Log (board size)* - the natural log of the number of directors on a board; *Board duality* - dummy that equals one if the CEO is also the chairman of board, and zero otherwise; and *Board shareholding* - the total shares holding by total board members divided by total shares of a firm. We obtain both *G-index* and board information from the IRRC database.¹⁹

[Insert Table 5 here]

Table 5 presents regression results after controlling for CFO characteristics and corporate governance. Results for our three measures of conservatism, *CON_MTB*, *CON_ACCRUAL*, and *CON_SKEWNESS*, are presented in models 1, 2 and 3. Consistent with our earlier results, we find that in all three cases *Post* has a positive and significant effect on accounting conservatism, indicating that the documented increase in accounting conservatism for firms that transitioned from a male to a female CFO cannot be explained by CFO characteristics or corporate governance.

¹⁸ Because *CON_ACCRUAL* and *CON_SKEWNESS* are cumulative measures, we use the average age of CFOs in the pre- and post-transition periods for Model 2 and Model 3.

¹⁹ Because IRRC does not provide G-index information annually, following Bebchuk and Cohen (2005), we fill in missing years by assuming that the governance provisions reported in any given year were also in place in the year preceding the volumes' publication.

Turning to CFO characteristics, we find that the coefficients on *CFO age* are positive and significant for models 1 and 3, indicating that older CFOs tend to be more conservative. The coefficient on *CFO shareholding* is significantly negative in Model 3, which only weakly supports the finding by LaFond and Roychowdhury (2008).²⁰ The coefficients on *CFO prior experience* are insignificant for all three models, indicating that their prior work experience as CFOs does not impact accounting conservatism.

In terms of corporate governance, we find that *Board composition* has a positive and significant effect on *CON_ACCRUAL*, and that *Board shareholding* has a significantly positive effect on *CON_SKEWNESS*. These results are consistent with the findings of Ahmed and Duellman (2007). However, we also find that *Duality* has a positive effect on *CON_MTB* and *CON_SKEWNESS*, which is inconsistent with the notion that CEO duality is considered to impair good corporate governance. We also find that the *G-index* is significantly negatively related to *CON_SKEWNESS*. This result is consistent with Lara et al. (2009), who argue that better corporate governance leads to a higher degree of accounting conservatism.

CFO gender and accounting conservatism: The moderating effect of risk

So far, we have found a robust relation between CFO gender and accounting conservatism. Prior studies report that different types of risks, such as litigation, default, and managers' job security, affect accounting conservatism. If it is risk-aversion that affects female CFOs' financial reporting practices as we hypothesize in this paper, we should observe more conservative accounting when female CFOs face higher firm risk or personal job security risk. To test the moderating effect of risk on the relation between CFO gender and conservatism, we construct several risk measures and interact these risk measures with the CFO gender dummy to find out whether the relation between gender and conservatism varies with different aspects of risks.

The moderating effect of litigation risk

Litigation risk is one of the most important factors that affect conservatism (Watts 2003a). When firms overstate earnings and net assets, managers are more likely to be sued by shareholders (Kellogg 1984).

²⁰ We also test the effects of CFOs' other compensation components (such as salary, bonus, and stock option) and audit committee component (such as size, composition, duality, and financial expertise in audit committee) on accounting conservatism. However, we do not find a significant relationship between conservatism and other compensation components and audit committee components.

Conservatism can reduce firms' litigation risk by understating earnings and net asset value, as it reduces the likelihood of disappointing outcomes and potential conflicts between the firm and its outside shareholders (Lubberink and Huijgen 2001). We therefore conjecture that female CFOs would report more conservative accounting than their male counterparts for firms that are characterized by higher litigation risk, as they are more concerned with the potential litigation by outside shareholders given their greater degree of risk-aversion.

[Insert Table 6 here]

Panel A of Table 6 reports the results on how litigation risk affects the relation between CFO gender and accounting conservatism.²¹ The control variables in the regression are the same as in Table 2, except we add an interaction term *Litigation risk*Post* to test the moderating effect of litigation risk. As before, we use *CON_MTB*, *CON_ACCRUAL*, and *CON_SKEWNESS* as dependent variables in models 1, 2 and 3. We find that the coefficients on *Post* in all three models remain positive and significant. The coefficients on the interaction term *Litigation risk*Post*, which captures the gender effect on conservatism for firms with higher litigation risk, are all positive for the three models and significant for models 1 and 2. These results indicate that, in general, female CFOs are more conservative in their accounting reporting when faced with higher litigation risk.

The moderating effect of default risk

Biddle et al. (2010) examine the relation between accounting conservatism and firms' bankruptcy risk and find that accounting conservatism is negatively related to bankruptcy risk. There are several possible ways in which conservatism can reduce the risk of default. Watts (2003a) points out that by delaying the recording of earnings and net assets, conservatism reduces or defers cash expenditures for performance-based compensation, taxation, and dividends. Accounting conservatism, by reporting bad news and losses in a more timely fashion, can control bad investments in negative net present value projects. Ahmed and Duellman (2002) and Zhang (2008) provide evidence consistent with conservatism providing easier access to external financing. Finally, LaFond and Watts (2008) contend that conservatism reduces default risk indirectly by reducing information asymmetry and uncertainty of the firm. To the extent that female CFOs

²¹ For brevity, we do not report control variables in all four panels in Table 6.

are more risk averse, we would expect female CFOs to report more conservative accounting when faced with higher default risk.

To examine the moderating effect of default risk, we first calculate default risk based on Altman (1968) Z-score. We then construct a dummy variable *Default risk*, which equals one if a firm's Z-score is below the median Z-score value (lower Z-score means higher default risk), and zero otherwise. Our variable of interest is the interaction between *Default risk* and *Post*. We expect a positive sign of *Default risk*Post* if female CFOs are more sensitive to default risk than male CFOs when making their accounting decisions.

Panel B of Table 6 reports the results where *Default risk* and *Default risk*Post* have been added to the baseline regressions. As before, we use *CON_MTB*, *CON_ACCRUAL*, and *CON_SKEWNESS* as dependent variables in models 1, 2 and 3. We find that the coefficients on *Post* are all positive but only significant for Model 1. The coefficients on the interaction term *Default risk*Post*, which captures the gender effect on conservatism for firms with higher default risk, are all positive and significant for the three models. These results indicate that female CFOs report more conservative accounting when faced with higher default risk.

The moderating effect of systematic risk

In addition to a firm's default risk, we examine how its systematic risk affects female CFOs' reporting incentives. Armstrong and Vashishtha (2012) find that executives' risk incentives are significantly positively related to firms' systematic risk. In general, firms with higher systematic risk are more likely to be sued by outside shareholders (Francis, Philbrick, and Schipper 1994). Prior literature also finds that conservatism is negatively related to systematic risk as conservatism could reduce the uncertainty associated with the market's assessment of future cash flows (Francis et al. 2004). This implies that because of their attitude towards risk, female CFOs could report more conservative accounting when faced with higher systematic risk.

To examine the moderating effect of systematic risk, we first use *Beta* to measure firm systematic risk. *Beta* is calculated by regressing a firm's monthly stock returns on the corresponding NYSE/AMEX/NASDAQ Value-Weighted Index from CRSP during a fiscal year. We next construct a

dummy variable *Systematic risk*, which equals one if a firm's *Beta* is above one, and zero otherwise.²² Our variable of interest is the interaction between *Systematic risk* and *Post*. We expect a positive sign of *Systematic risk*Post* if female CFOs are more sensitive to systematic risk than male CFOs when making their accounting decisions.

Panel C of Table 6 reports the results where we include *Systematic risk* and *Systematic risk*Post* into the baseline regressions. As before, we use *CON_MTB*, *CON_ACCRUAL*, and *CON_SKEWNESS* as dependent variables in models 1, 2, and 3. We find that the coefficient on *Post* are all positive but is only significant in Model 1. More importantly, the coefficients on the interaction term *Systematic risk*Post*, which captures the gender effect on conservatism for firms with higher systematic risk, are all positive and significant for the three models. These results are consistent with our argument that female CFOs report more conservative accounting when faced with higher systematic risk.

The moderating effect of management turnover risk

Desai et al. (2006) and Hennes et al. (2008) find that managerial turnover rate is higher following the revelation of aggressive accounting. In addition, they find that displaced managers are less likely to find comparable employment subsequent to the displacement. Thus, if female CFOs are concerned about maintaining their positions at the top managerial level, we would expect that because of the ex-post labor market penalties, they would be incentivized to report more conservative accounting.

Table 6 Panel D provides evidence on the extent to which female CFOs' reporting practice is affected by their job security concerns. Using information from ExecuComp, we calculate the turnover rate for each industry as the total number of top managers fired in the industry scaled by the total number of firms in the industry. We then construct a dummy variable *Turnover risk*, that equals one if a firm operates in an industry with a turnover rate above the median turnover rate in the sample, and zero otherwise.

Adding *Turnover risk* and *Turnover risk*Post* into the baseline regressions, we find that all three coefficients of *Turnover risk*Post* are positive, with two of the three significant (models 1 and 2). These

²² We use one as the cutoff point because *Beta* with a value of one is the standard benchmark to separate stocks into high-volatility stocks and low-volatility stocks. Nonetheless, our results hold when we use the median value of *Beta* for our sample (0.92) as the cutoff point.

findings thus provide support for the argument that female CFOs report more conservative accounting when they have higher concerns about their job security.

Overall, the results in Table 6 indicate that female CFOs are significantly more conservative in their accounting practices than their male counterparts when they are faced with relatively high levels of risks, such as litigation risk, default risk, systematic risk, and job security risk. More importantly, the results provide a direct link between risk-aversion of female CFOs and accounting conservatism.

Female CFOs, other corporate decisions, and their implications for accounting conservatism

Do female CFOs choose less risky compensation packages?

We first examine whether the structure of female CFOs compensation is different from their male counterparts. We perform this analysis because different compensation structures have different implications for observed conservative accounting practices. For example, LaFond and Roychowdhury (2008) find that there is a negative association between managerial ownership and accounting conservatism. This is consistent with the notion that as the separation between managerial ownership and control increases, there is an increase likelihood of agency problems, hence increasing the demand for conservatism. Lubberink and Huijgen (2001) also show that there is a negative relation between managerial risk-taking incentives and accounting conservatism.

Graham et al. (2013) find that managers choose the type of compensation package that is consistent with their personal risk preferences. Risk averse managers are more likely to be compensated by cash and less likely to be compensated by equity related packages. Therefore, we conjecture that if risk-aversion is an inherent trait of female CFOs, we would observe that female CFOs are more likely to choose cash-based rather than equity-based compensation and a lower level of risk-taking incentives compared to their male counterparts.

To test our conjecture, we collect CFO compensation information from ExecuComp and separate total compensation into salary, bonus, equity, options, and others. Each of these components is then divided by total compensation. We then compare the compensation structure of male CFOs at year t-1 with female CFOs compensation structure at year t+1 for the male to female CFO transition sample. For comparison

purposes, we also report results for the male to male CFO transition sample. Results are graphically displayed in Figure 1.

[Insert Figure 1 here]

Figure 1-1 displays significant differences between male CFOs and female CFOs with regard to the structure of their compensation contracts. It shows that female CFOs are more likely to be compensated with cash-based compensation (both salary and bonus) than equity-based compensation (both equity and option) than their male predecessors. In un-tabulated results we find that the mean differences of cash-based and equity-based compensation between male and female CFOs are both significant at the 5% level. Importantly, we find that this is driven primarily by the option component of the compensation contracts. The percentage of options for male CFOs is 11%, while it is only 4.3% for female CFOs. In sum, these results are consistent with the argument that female CFOs are more risk averse and consequently receive a greater percentage of their compensation in salary and bonus as compared to their male counterparts.

Figure 1-2 reports corresponding results using the male to male CFO transition sample. For cash-based compensation, we do not find obvious differences between pre-transition male CFOs and post-transition male CFOs. For equity-based compensation, we find post-transition male CFOs are more likely to be compensated with options but less likely to be compensated with stocks than their male predecessors. Nonetheless, un-tabulated results show that both differences are not statistically different.

A common measure of a manager's risk-taking incentive is *Vega*, which is the sensitivity of the manager's wealth to the firm's stock return volatility (e.g., Coles, Daniel, and Naveen 2006; Chava and Purnanandam 2010). To examine whether female CFOs have less risk-taking incentives compared to male CFOs, we plot in Figure 1-3 the *Vega* of the CFOs one year prior to and three years subsequent to the transition from the male to female transition sample and the male to male transition sample. The plot shows that there is a distinct and continuous decline of CFOs' *Vega* once there is a transition from male to female. For instance, at year $t-1$, the *Vega* of male CFOs is about 43,578, while the *Vega* of female CFOs is 23,259 at year $t+3$. However, for the male to male transition sample, we find that there is an increase in *Vega* following male to male CFO transition. Figure 1-3 therefore further confirms that female CFOs are more risk averse than their male counterparts.

In sum, the less equity-based compensation contracts and the *Vega* of female CFOs reflect their personal risk preferences. According to LaFond and Roychowdhury (2008) and Lubberink and Huijgen (2001), the difference in selected compensation structures also implies a difference in the level of conservative accounting practices between male and female CFOs, with female CFOs adopting more conservative accounting reporting than male CFOs.

Corporate decision changes following male to female CFO transition

Guay (1999), Coles et al. (2006), and Chava and Purnanandam (2010), among others, find a strong relation between managers' risk-taking incentives and firms' operating decisions. As in Table 1, we show that there is a significant reduction in firms' leverage levels following the hiring of female CFOs, which is consistent with Huang and Kisgen (2013) and confirms that female CFOs are more risk averse than male CFOs. To further examine the effect of different risk attitudes between male and female CFOs, we provide in Panel A of Table 7 univariate comparisons of two commonly used risk measures between the pre- and post-transition periods. These are *Stock return volatility*, which is defined as the standard deviation of daily stock returns, and *Idiosyncratic risk*, which is defined as the standard deviation of the residuals from the market model. To obtain the residuals we regress a firm's daily stock returns on the corresponding NYSE/AMEX/NASDAQ Value-Weighted Index from CRSP for the pre- and post-transition periods. We find that both *Stock return volatility* and *Idiosyncratic risk* are reduced significantly subsequent to the change in the gender of CFOs from male to female. This provides further evidence that female CFOs are more risk averse than their male counterparts.

[Insert Table 7 here]

Next we examine how firms' investment policies are affected by the change of gender of CFOs. Roychowdhury and Watts (2007) contend that firms' investment decisions have important implications for accounting conservatism. Specifically, they argue that under GAAP, with limited exceptions, accounting assets do not record many valuable intangible assets and the value of growth options. For example, R&D and advertising expenditures which could create intangible assets are expensed as incurred. Unless they are acquired externally with a verifiable value, the value changes of acquisition assets are also not recorded.

Consequently, the value decline of those unrecorded assets is not recognized. Thus, if a firm's assets are determined more by growth options and intangible assets, we would observe less conservative accounting.

Guay (1999) and Coles et al. (2006) find that managerial risk-taking incentives are positively related to firms' riskier investment policy choices, such as more investment in R&D and less investment in PPE. To the extent that female CFOs are more risk averse than male CFOs, we would expect that firms under the control of female CFOs would make less risky investments and have less investment opportunities than firms under the control of male CFOs. This is the case because, as argued by Smith and Stulz (1985), risk-aversion could lead managers to forgo risk-increasing, positive net-present-value projects.

In Table 1, it was shown that *R&D* and *Sales growth* are significantly reduced following male to female CFO changes. In Panel B of Table 7, we present further evidence on the changes in various investment decisions subsequent to the male to female transition. Consistent with our expectations, we find that firms under the control of female CFOs are less likely to invest in intangible assets and are more likely to invest in tangible assets. Specifically, we find that *Advertisement*, which is advertising expenditures divided by total assets, is significantly reduced, while *Tangibility*, which is net property, plant, and equipment divided by total assets, is increased significantly after male to female CFO transition. We also find that *Capital expenditure*, which is total capital expenditures divided by total assets, is significantly lower in the post-transition period than that in the pre-transition period. Although *Acquisition*, which is total acquisitions divided by total assets, is also lower in the post-transition period than in the pre-transition period, the mean difference is not significant at traditional levels.

Prior studies also find that corporate payout policy impacts accounting conservatism. For example, Watts (2003a) argues that firms could be more conservative by reducing or deferring dividends. In Panel B of Table 7, we further examine how firm payout policy changes following male to female CFO changes. We find that *Dividend*, which is total dividends divided by total assets, is significantly reduced after male to female CFO transition. The result is consistent with Watts (2003a) and shows that female CFOs could increase conservatism by reducing dividend payout.

To gain a visual sense of how the patterns of investments/payout policy change following male to female CFO transition, we plot in Figures 2-1 to 2-6 key investment and payout variables from year t-1

through year $t+3$. For comparison purposes, we also plot the changes of the same variables for the male to male CFO transition sample.

[Insert Figures 2-1 to 2-6 here]

Figure 2-1 shows *R&D* one year before and three years after the CFO transition. For male to female transition firms, we see a significant and continuous drop of *R&D* after female CFOs are hired. For male to male transition firms, *R&D* remains relatively stable.

Figure 2-2 plots how *Advertisement* changes following CFOs' transitions. We see that male to female CFO transition firms have higher *Advertisement* than male to male CFO transition firms at year $t-1$. Although *Advertisement* of both sample firms decline after new CFOs take over, the magnitude is significantly larger for male to female transition firms than for male to male transition firms.

As shown in Figure 2-3, the trends of *Tangibility* for the firms belonging to the two different samples are opposite. For male to female transition firms, it keeps increasing following the transition from male to female CFOs, while for male to male CFO transition firms there is a steady decline.

In Figure 2-4, we see that *Capital expenditure* of firms belonging to both samples decline following the changes in CFOs. However, the magnitude of decline for the male to female CFO transition firms is substantially larger than that for male to male CFO transition firms. Figure 2-5 shows the changes in *Acquisition* following CFO changes. For the male to female CFO transition sample, we see a significant decline in *Acquisition* during year t (the transition year), and then a gradual decline in the following three years. For male to male CFO transition sample, there is not a clear trend in *Acquisition* over time. Finally, Figure 2-6 shows that *Dividend* keeps declining after male to female CFO transition, while it is relatively stable for male to male CFO transition.

In sum, results from Table 1, Panel B of Table 7 and Figures 2-1 to 2-6, show that firms under the control of female CFOs are more likely to invest in tangible assets, make fewer acquisitions, and pay less dividends than firms under the control of male CFOs. Thus we provide evidence on several real-activity channels through which risk-aversion of female CFOs could lead to increased conservatism.

Although we find a substantial amount and evidence of a strong relation between CFO gender and accounting conservatism, we are cautious to conclude that having a female CFO could benefit the firm, not

only because we do not find a significant increase of firm performance after female CFO appointments,²³ but also because we find that several corporate policy changes under the control of female CFOs might not be in the best interest of shareholders. For example, in Table 1 and Table 7, we find that firms actually reduce their R&D expenditures and capital expenditures, and pay fewer dividends to shareholders.

Recent studies show that innovation is crucial to the development and performance of the firm, and managerial overconfidence (more risk-taking) affects innovation of the firm (Hirshleifer, Low, and Teoh 2012). In Panel B of Table 7, we further examine innovation capability changes following male to female CFO changes. We use patent citation counts from the National Bureau of Economic Research (NBER) patent dataset to measure firm innovation capacity. The variable *Patent* is the total citation counts of patents. We find that the number of patent citations is significantly reduced following male to female CFO transitions. The result shows some additional costs of having female CFOs.

Finally, we acknowledge that our results in Section 5.4 are univariate comparisons. The main purpose of these analyses is to identify several real-activity channels through which risk-aversion could lead to increased conservatism, and we do not claim any causal relationship(s) between CFO gender and those test variables.

6. Conclusion

In this paper, we study the impact of CFO gender on financial reporting decision-making in the context of accounting conservatism. We find that following the hiring of a female CFO there is a significant increase in the degree of accounting conservatism as compared to the degree of their male predecessors. To alleviate endogeneity concerns, we apply a difference-in-differences approach and a propensity-score matching approach using male to male CFO transition as the control group, and we find robust results. The results from the female to male transition sample are consistent with our hypothesis and they triangulate our findings from the male to female transition sample. Our results are robust to the use of asymmetric timeliness as the measure of accounting conservatism, controlling for other CFO personal characteristics, corporate governance, and concurrent CEO turnover effect.

²³ Table 1 shows that there is no significant differences of firm performance between the pre-transition period and the post-transition period for male to female CFO changes.

In addition, we find that the positive relation between female CFOs and conservatism is more pronounced or only exists when firms have higher litigation risk, default risk, systematic risk, or management turnover risk. The results support the moderating effect of risk on the relation between CFO gender and conservatism, and provide a direct link between risk-aversion of female CFOs and accounting conservatism. To further explore how risk-aversion of female CFOs affects accounting conservatism, we examine how male to female CFO transition affects the structure of compensation contract, investment decisions, and payout policy. First, we find that female CFOs are less likely to choose equity-based compensation. Second, male to female CFO transition changes firms' investment patterns from more intangible assets and growth options to more tangible assets. Third, female CFOs are more likely to reduce dividend payout. These changes are consistent with an increase in accounting conservatism following male to female CFO transition.

This study extends existing research on the determinants of financial reporting conservatism. Watts (2003a) summarizes four explanations for the existence and continuation of conservatism in the financial reporting process. This is the first study that provides evidence that gender of top executives plays an important role in financial reporting conservatism decision-making. This paper also fits in the emerging literature in accounting research that examines how managerial characteristics and styles affect financial reporting practices. Using the quasi-natural experiment of a change in the gender when there is a CFO turnover, we are able to more adequately control for those unobservable differences beyond gender, thereby enabling us to overcome the drawbacks of earlier studies that examine the impact of gender on accounting decision-making. In addition, we explore why and how female CFOs affect accounting decision-making, which are questions that have not been examined by prior studies. Thus, our study complements and extends the literature and answers the call by Birnberg (2011) by demonstrating that because of risk attitudes of females, a gender effect does exist in accounting decision-making.

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TABLE 1
Summary statistics

Panel A: Summary statistics and univariate comparisons

	Male to female transition sample			Pre-transition (Male CFOs)		Post-transition (Female CFOs)		Mean difference	
	N	Mean	STD	Mean	STD	Mean	STD	Difference	T-statistics
CON_MTB	974	1.809	1.395	1.718	1.201	1.874	1.454	0.156*	1.82
CON_ACCRUAL	125	0.017	0.013	0.012	0.009	0.022	0.015	0.010***	4.57
CON_SKEWNESS	166	-0.159	2.411	-0.906	2.308	0.652	2.353	1.558***	4.32
Log (Assets)	974	7.239	1.918	6.867	2.001	7.710	1.687	0.843***	6.97
Profitability	974	0.141	0.107	0.140	0.005	0.142	0.004	0.002	0.38
Leverage	974	0.236	0.175	0.247	0.185	0.222	0.160	-0.025**	-2.25
Sales growth	974	0.241	0.662	0.319	0.834	0.142	0.311	-0.177***	-4.19
R&D	974	0.030	0.066	0.036	0.080	0.023	0.042	-0.013***	-3.01
Cash holding	974	0.138	0.169	0.136	0.179	0.141	0.158	0.005	0.43
Discretionary accruals	613	0.013	0.207	0.029	0.234	-0.008	0.088	-0.037*	-1.92

Panel B: Pairwise Correlations

	1	2	3	4	5	6	7	8	9	10	11
1. CON_MTB	1.00										
2. CON_ACCRUAL	0.03 (0.79)	1.00									
3. CON_SKEWNESS	0.07 (0.35)	0.26 (0.00)	1.00								
4. Post	0.06 (0.07)	0.38 (0.00)	0.32 (0.00)	1.00							
5. Log (Assets)	-0.34 (0.00)	-0.05 (0.57)	-0.07 (0.34)	0.22 (0.00)	1.00						
6. Profitability	0.29 (0.00)	0.20 (0.02)	0.17 (0.03)	0.01 (0.70)	0.04 (0.18)	1.00					
7. Leverage	-0.28	0.24	0.18	-0.07	0.25	0.01	1.00				

	(0.00)	(0.01)	(0.02)	(0.02)	(0.00)	(0.92)					
8. Sales growth	0.20	-0.18	-0.11	-0.13	-0.22	-0.14	-0.12	1.00			
	(0.00)	(0.05)	(0.18)	(0.00)	(0.00)	(0.00)	(0.00)				
9. R&D	0.24	0.27	-0.08	-0.10	-0.32	-0.22	-0.21	0.14	1.00		
	(0.00)	(0.00)	(0.29)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)			
10. Cash holding	0.49	-0.04	-0.13	0.01	-0.38	-0.22	-0.44	0.23	0.47	1.00	
	(0.00)	(0.69)	(0.10)	(0.67)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
11. Discretionary accruals	0.03	-0.07	-0.08	0.04	-0.01	0.01	-0.04	0.01	0.01	0.05	1.00
	(0.18)	(0.45)	(0.86)	(0.08)	(0.43)	(0.72)	(0.04)	(0.97)	(0.60)	(0.02)	

This table presents summary statistics, univariate comparisons, and correlations among main variables. The sample includes 92 S&P 1,500 firms who change their CFOs from male to female in the 1988-2007 periods. CON_MTB is the ratio of market value to book value of a firm. CON_ACCRUAL is the cumulative non-operating accruals divided by cumulative total assets, multiplied by -1. For the pre-transition period, it is measured using all available data up until the year t-1. For the post-transition period, it is measured using all available data from year t+1 until one year before next turnover of CFOs. CON_SKEWNESS is the skewness of earnings divided by the skewness of cash flow from operations, multiplied by -1. For the pre-transition period, it is measured using all available data up until the year t-1. For the post-transition period, it is measured using all available data from year t+1 until one year before next turnover of CFOs. Asset is the total assets of a firm. Profitability is earnings before interest, taxes, and depreciation divided by total assets. Leverage is the total long term liabilities divided by total assets. Sales growth is annual growth in total sales. R&D is the research and development costs divided by total assets. Cash holding is the cash and short investment divided by total assets. Discretionary accruals are calculated based on modified cross-sectional Jones (1991) model as described in Dechow et al. (1995). The p-values are reported under the correlation coefficients in Panel B.

TABLE 2
Female CFOs and accounting conservatism: Baseline regression

Variables	Predicted sign	(1) CON_MTB	(2) CON_ACCRUAL	(3) CON_SKEWNESS
Post	+	0.273*** (3.90)	0.007** (2.16)	1.520** (2.24)
Log (Asset)	-	0.103 -0.129*** (-5.91)	0.271 -0.001 (-0.58)	0.329 -0.305** (-2.38)
Profitability	+	-0.187 5.000*** (7.29)	0.052 0.027** (2.47)	-0.242 3.439* (1.72)
Leverage	+	0.405 -0.114 (-0.47)	0.179 0.021*** (2.88)	0.141 2.456* (1.72)
Sales growth	+/-/-	-0.015 0.242*** (4.55)	0.287 -0.003** (-2.33)	0.186 -0.295 (-1.12)
R&D	+	0.121 1.247 (1.21)	-0.133 0.048* (1.95)	-0.087 -2.054 (-0.46)
Cash holding	+	0.063 3.457*** (9.82)	0.194 0.007 (0.72)	-0.053 -0.854 (-0.43)
Litigation risk (Dummy)	+	0.440 -0.225* (-1.86)	0.094 -0.001 (-0.46)	-0.062 0.867 (1.38)
SOX (Dummy)	+	-0.070 0.889 (1.62)	-0.043 0.002 (0.59)	0.146 -0.409 (-0.56)
Management gender diversity	+	0.293 0.552 (0.81)	0.081 0.009 (0.90)	-0.085 3.681** (2.47)
Board gender diversity	+	0.026 0.048 (0.10)	0.085 0.002 (0.33)	0.189 2.551** (2.20)
Observations		0.003 971	0.021 118	0.116 157
Adjusted R-squared		0.457	0.366	0.179

This table presents regression results on how the change from male to female CFOs affects accounting conservatism. Our sample includes 92 S&P 1,500 firms who change their CFOs from males to females in the 1988-2007 periods. The dependent variables are three measures of accounting conservatism. Litigation risk is a dummy variable that equals one if a firm belongs to high-litigation-industries (SIC code 2833–2836, 3570–3577, 7370–7374, 3600–3674, and 5200–5961), and zero otherwise. SOX is a dummy variable that equals one if a year is after 2002 and zero otherwise. Management gender diversity is the proportion of female executives in the top management team. Board gender diversity is the proportion of female directors in the boardroom. All other variables are defined in Table 1. We also control for year effect, two-digit SIC code industry effect in the regressions. For CON_MTB, firm level control variables are measured one year prior to the dependent variable measured year. For CON_ACCRUAL and CON_SKEWNESS, firm level control variables are measured by the average value of the whole pre-transition period or the average value of the whole post-

transition period. Values of heteroskedasticity robust t-statistics are in parentheses. Standardized beta coefficients are also reported under the t-statistics. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

TABLE 3
Female CFOs and accounting conservatism: Robustness checks

	(1)	(2)	(3)	(4)
	Difference-in-differences	Propensity-score matching	Sample without concurrent CEO changes	Female to male transition sample
Variables	CON_MTB	CON_MTB	CON_MTB	CON_MTB
Female	0.157*** (2.77)	0.273*** (4.73)		
Post			0.275* (1.80)	-0.769** (-2.51)
Δ Log (Asset)/ Log (Asset)	-0.048* (-1.78)	-0.111*** (-3.34)	-0.034 (-0.86)	-0.030 (-0.45)
Δ Profitability/ Profitability	2.169*** (4.72)	6.581*** (7.76)	3.807*** (6.27)	5.538*** (5.31)
Δ Leverage/ Leverage	0.312 (1.26)	0.058 (0.15)	-1.379** (-2.30)	-1.452** (-2.30)
Δ Sales growth/ Sales growth	0.065 (0.72)	0.546** (2.32)	0.259** (2.57)	0.017 (0.85)
Δ R&D/ R&D	1.400 (1.29)	7.168*** (3.40)	1.758 (1.45)	6.778*** (3.18)
Δ Cash holding/ Cash holding	0.599** (2.09)	2.672*** (5.08)	2.954*** (5.40)	2.884*** (3.70)
Litigation risk (Dummy)		0.034 (0.19)	0.168 (0.70)	0.097 (0.33)
Δ SOX (Dummy)/ SOX (Dummy)	0.033 (0.39)	1.116* (1.84)	0.068 (0.14)	0.304 (0.66)
Δ Management gender diversity/ Management gender diversity	0.002 (0.01)	0.952 (1.03)	0.769** (2.23)	0.845** (2.49)
Δ Board gender diversity/ Board gender diversity	0.436 (0.99)	0.144 (0.29)	0.214 (0.30)	0.420** (2.52)
Observations	410	806	331	240
Adjusted R-squared	0.154	0.561	0.395	0.454

This table presents robustness checks on the relation between CFO gender and accounting conservatism. For brevity, we only report results when we use CON_MTB as the dependent variable. Model 1 reports results using difference-in-differences regression. The control sample is the male-to-male CFO transition firms. All control variables are the mean differences between the post-transition period and the pre-transition period. Model 2 reports results using propensity-score matching regression. The matched sample is the male-to-male CFO transition firms. Model 3 reports results using the male-to-female transition sample but excluding firms that have concurrent CEO changes in the CFO transition year. Model 4 reports results using female-to-male CFO transition firms. Female is a dummy variable which equals one if a firm is a male to female transition firm, and zero if a firm is a male to male transition firm. All other variables are defined in Table 1 and Table 2. For models 2, 3, and 4, firm level control variables are measured one year prior to the dependent variable measured year, and we also control for year effect, two-digit SIC code industry effect in the regressions. Values of heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

TABLE 4
Female CFOs and accounting conservatism: Asymmetric timeliness measure of conservatism

Variables	Predicted sign	(1)	(2)	(3)
Return	+	0.070*** (7.32)	0.106*** (9.20)	0.656*** (10.10)
Neg		0.584*** (3.10)	0.561** (1.97)	0.433 (0.47)
Return*Neg	+	0.153*** (2.83)	-0.022 (0.28)	0.452** (2.32)
Post			0.450*** (2.59)	0.039 (0.27)
Post*Return			-0.108*** (5.45)	-0.133*** (-6.60)
Post*Neg			-0.107 (0.29)	-0.143 (-0.52)
Return*Neg*Post	+		0.403*** (3.75)	0.159*** (2.71)
Control variables and their interactions with Return, Neg, and Return*Neg		N	N	Y
Observations		806	806	806
Adjusted R-squared		0.089	0.123	0.369

This table presents pooled regression results of how the change from male CFOs to female CFOs affects accounting conservatism

based on modified Basu (1997) model as follows:

$$X_{i,t}/P_{i,t-1} = \alpha_0 + \alpha_1 \text{Neg}_{i,t} + \beta_0 \text{Return}_{i,t} + \beta_1 \text{Return}_{i,t} * \text{Neg}_{i,t} + \gamma_0 \text{Post}_{i,t} + \gamma_1 \text{Post}_{i,t} * \text{Neg}_{i,t} + \gamma_2 \text{Post}_{i,t} * \text{Return}_{i,t} + \gamma_3 \text{Post}_{i,t} * \text{Return}_{i,t} * \text{Neg}_{i,t} + \text{Controls}_{i,t} + \varepsilon_{i,t}$$

where $X_{i,t}$ is the earnings per share of firm i in fiscal year t , $P_{i,t-1}$ is the price per share of firm i at the beginning of fiscal year t , $\text{Return}_{i,t}$ is the 12-month return of firm i ending three months after the end of fiscal year t , $\text{Neg}_{i,t}$ is a dummy variable equal to one if $\text{Return}_{i,t} < 0$ and zero otherwise, and $\text{Post}_{i,t}$ is a dummy variable which equals one if firm i in fiscal year t is after transition year and zero if firm i in fiscal year t is before transition year. The sample includes 92 S&P 1,500 firms who change their CFOs from males to females in the 1988-2007 periods. Other control variables are the same as those in Table 2. In Model 3, all control variables are interacted with Return, Neg and Return*Neg. Values of the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

TABLE 5
Female CFOs and accounting conservatism: Other CFO personal characteristics and corporate governance

Variables	(1) CON_MTB	(2) CON_ACCRUAL	(3) CON_SKEWNESS
Post	0.158** (2.05)	0.007* (1.78)	2.203*** (3.13)
Log (Asset)	-0.056* (-1.79)	0.001 (0.32)	-0.812*** (-4.71)
Profitability	6.356*** (12.38)	0.021 (1.19)	1.960 (0.77)
Leverage	-0.357 (-1.30)	0.016* (1.73)	0.894 (0.57)
Sales growth	0.292*** (3.98)	-0.004* (-1.86)	-0.638* (-1.75)
R&D	1.923 (1.55)	0.052 (1.35)	-5.175 (-0.81)
Cash holding	3.557*** (9.98)	-0.005 (-0.41)	-2.212 (-1.03)
Litigation risk (Dummy)	-0.133 (-1.02)	0.003 (0.80)	1.124* (1.67)
SOX (Dummy)	0.323 (0.37)	0.004 (1.05)	-0.936 (-1.32)
Management gender diversity	0.476 (0.81)	0.013 (1.29)	2.996* (1.72)
Board gender diversity	0.055 (0.13)	0.004 (0.49)	1.511 (0.90)
CFO shareholding	0.269 (0.49)	0.332 (0.14)	-7.499** (-2.22)
CFO age	0.018* (1.78)	0.001 (1.02)	0.147* (1.78)
CFO prior experience (Dummy)	0.047 (0.59)	-0.003 (-1.09)	-0.477 (-1.02)
Board composition	-0.338 (-1.45)	0.018** (2.65)	-0.287 (-0.24)
Log (Board size)	-0.192 (-1.09)	-0.003 (-0.55)	0.906 (1.08)
Board duality (Dummy)	0.213** (2.09)	0.001 (0.39)	1.244** (2.14)
Board shareholding	0.003 (1.13)	0.001 (0.90)	0.032* (1.80)
G-index	-0.018 (-0.98)	0.001 (0.64)	-0.277** (-2.61)
Observations	591	85	110
Adjusted R-squared	0.478	0.422	0.255

This table presents regression results on how male to female CFO transition affects accounting conservatism after controlling for CFO individual factors and corporate governance. The sample includes 92 S&P 1,500 firms who change their CFOs from males to females. The dependent variables are three measures of accounting conservatism. CFO shareholding is the percentage of common shares holding by CFOs. CFO age is the age (average age for Model 2 and Model 3) of the CFO. CFO prior experience (Dummy) is a dummy variable which equals one if a CFO has previous CFO experience, and zero otherwise. Board composition is the ratio of the number of independent directors to total number of directors of a firm. Log (Board size) is the natural log of total number of directors in a board. Board duality is a dummy that equals one if CEO is also chairman of board, and zero otherwise. Board shareholding is the

total shares holding by total board members divided by total shares of a firm. G-index is Gompers et al. (2003) corporate governance index. For CON_MTB, firm level control variables are measured one year prior to the dependent variable measured year. All other variables are defined in Table 1 and Table 2. For CON_ACCRUAL and CON_SKEWNESS, firm level control variables are measured by the average value of the whole pre-transition period or the average value of the whole post-transition period. Values of the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

TABLE 6
Female CFOs and accounting conservatism: The moderating effect of risk

Variables	(1) CON_MTB	(2) CON_ACCRUAL	(3) CON_SKEWNESS
Panel A: Gender, litigation risk and conservatism			
Post	0.178*** (2.63)	0.005* (1.76)	1.481** (2.46)
Litigation risk (Dummy)	-0.419*** (-3.09)	-0.006 (-1.46)	0.728 (0.98)
Litigation risk (Dummy)*Post	0.478** (2.34)	0.009* (1.86)	0.279 (0.30)
Control variables	Y	Y	Y
Observations	971	118	157
Adjusted R-squared	0.462	0.381	0.173
Panel B: Gender, default risk and conservatism			
Post	0.247** (2.25)	0.001 (0.15)	0.401 (0.54)
Default risk (Dummy)	0.105 (1.18)	-0.000 (-0.09)	-0.294 (-0.56)
Default risk (Dummy)*Post	0.253* (1.93)	0.009* (1.80)	1.775** (2.34)
Control variables	Y	Y	Y
Observations	971	118	157
Adjusted R-squared	0.458	0.381	0.208
Panel C: Gender, systematic risk and conservatism			
Post	0.175* (1.92)	0.004 (1.45)	0.899 (1.20)
Systematic risk (Dummy)	-0.001 (-0.01)	-0.002 (-0.65)	-0.498 (-0.93)
Systematic risk (Dummy)*Post	0.265* (1.69)	0.011** (2.46)	1.293** (2.10)
Control variables	Y	Y	Y
Observations	971	118	157
Adjusted R-squared	0.483	0.401	0.196
Panel D: Gender, management turnover risk and conservatism			
Post	0.157** (2.16)	0.003 (0.70)	0.801 (1.19)
Turnover risk (Dummy)	0.063 (0.68)	0.002 (0.74)	0.801 (1.53)
Turnover risk (Dummy)*Post	0.218* (1.74)	0.008* (1.75)	0.922 (1.37)
Control variables	Y	Y	Y
Observations	971	117	156
Adjusted R-squared	0.460	0.385	0.221

This table presents regression results on how various risks affect the relation between CFO gender and accounting conservatism. The sample includes 92 S&P 1,500 firms who change their CFOs from males to females. The dependent variables are three measures of accounting conservatism. Default risk is a dummy variable which equals one if a firm's Z-score is above the median value of the sample's Z-score. Z-score equals $1.2 \text{Working capital/Total assets} + 1.4 \text{Retained earnings/Total assets} + 3.3 \text{EBIT/Total assets} + 0.6 \text{Market value of equity/Total liabilities} + 0.999 \text{Sales/Total assets}$. Systematic risk is a dummy variable which equals one if a firm's Beta is above one. Beta is calculated by regressing a firm's monthly stock return on the corresponding NYSE/AMEX/NASDAQ Value-weighted Index from CRSP in a fiscal year. Turnover risk is a dummy variable which equals one if a firm operates in an

industry with a turnover rate above the median turnover rate in the sample, and zero otherwise. We calculate the turnover rate for each industry as the total number of top managers fired in the industry scaled by the total number of firms in the industry. All other variables are defined in Table 1 and Table 2. We also control for year effect, two-digit SIC code industry effect in the regressions. For CON_MTB, firm level control variables are measured one year prior to the dependent variable measured year. For CON_ACCRUAL and CON_SKEWNESS, firm level control variables are measured by the average value of the whole pre-transition period or the average value of the whole post-transition period. Values of heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

TABLE 7
Firms risk and corporate decisions following male to female CFO changes

	Pre-transition (Male CFOs)		Post-transition (Female CFOs)		Mean difference	
	Mean	STD	Mean	STD	Difference	T-statistics
Panel A: Firm risk changes following male to female CFO transition						
Stock return volatility	0.0286	0.0152	0.0263	0.0141	-0.0023**	-2.39
Idiosyncratic risk	0.0267	0.0141	0.0236	0.0128	-0.0031***	-3.50
Panel B: Corporate decision changes following male to female CFO transition						
Advertisement	0.053	0.055	0.043	0.043	-0.010*	-1.76
Tangibility	0.300	0.011	0.340	0.012	0.040**	2.46
Capital expenditure	0.077	0.076	0.066	0.068	-0.011*	-1.95
Acquisition	0.031	0.062	0.026	0.055	-0.005	-1.29
Dividend	0.098	0.203	0.072	0.115	-0.026**	-2.31
Patent	127	400	31	54	-96*	-1.64

This table compares firm risk and corporate decisions for the pre-transition period (under the control of male CFOs) and the post-transition period (under the control of female CFOs) for the male to female transition sample. Daily stock return volatility is the standard deviation of daily stock returns. Idiosyncratic risk measures firm specific risk. We first regress a firm's daily stock returns on the corresponding NYSE/AMEX/NASDAQ Value-Weighted Index from CRSP for the whole pre- and post-transition periods. Then we use the standard deviation of the error term obtained from the market model to measure idiosyncratic risk. Advertisement is advertising expenditures divided by total assets. Tangibility is net property, plant, and equipment divided by total assets. Capital expenditure is total capital expenditures divided by total assets. Acquisition is total acquisitions divided by total assets. Dividend is total dividends divided by total assets. Patent is the total number of patents from NBER patent dataset. The means of the differences between the variables for two sub-samples and t statistics are also reported. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Figure 1: CFO compensation structure and risk-taking incentive changes after CFO transitions

Figure 1-1: Compensation structures of male CFOs at year t-1 and female CFOs at year t+1(male to female transition sample)

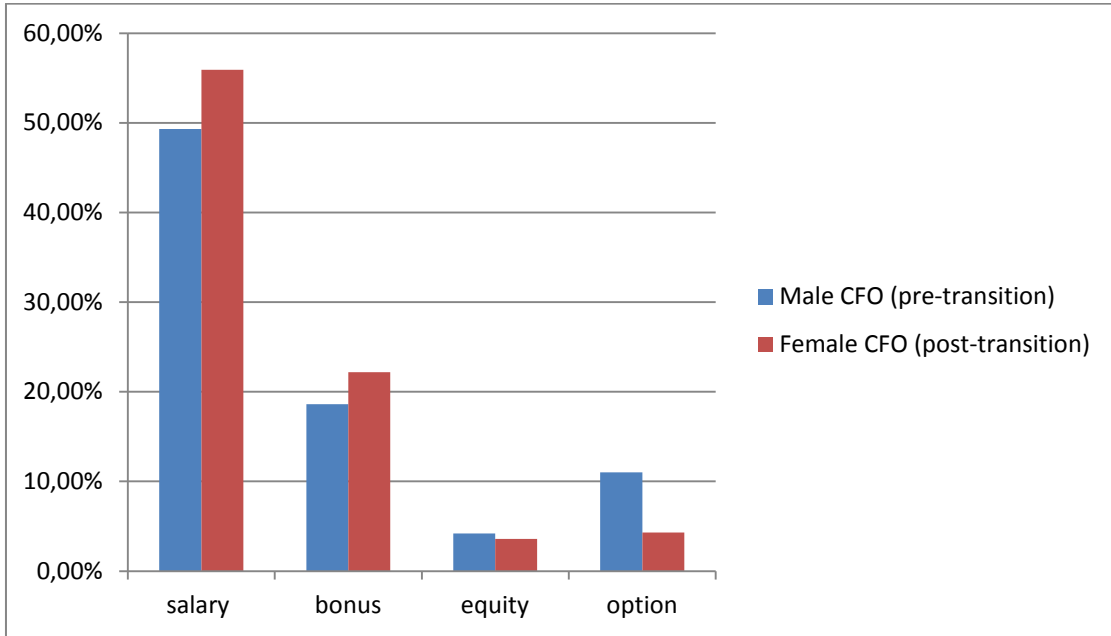
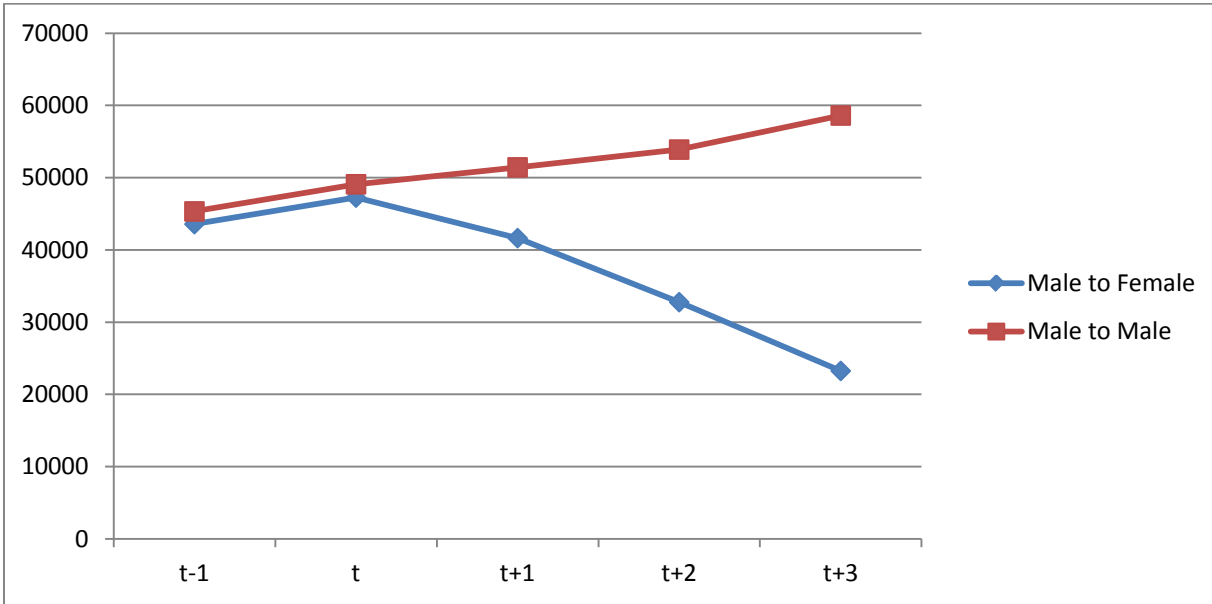


Figure 1-2: Compensation structures of male CFOs at year t-1 and male CFOs at year t+1(male to male transition sample)



Figure 1-3: CFO Vega changes following CFO transitions



Vega is the measure of managers' risk-taking incentives. It is defined as the dollar gain in the manager's personal portfolio as the firm's stock return volatility goes up by 1%.

Figure 2: Firm Investment and payout decision changes following CFO changes

Figure 2-1: R&D

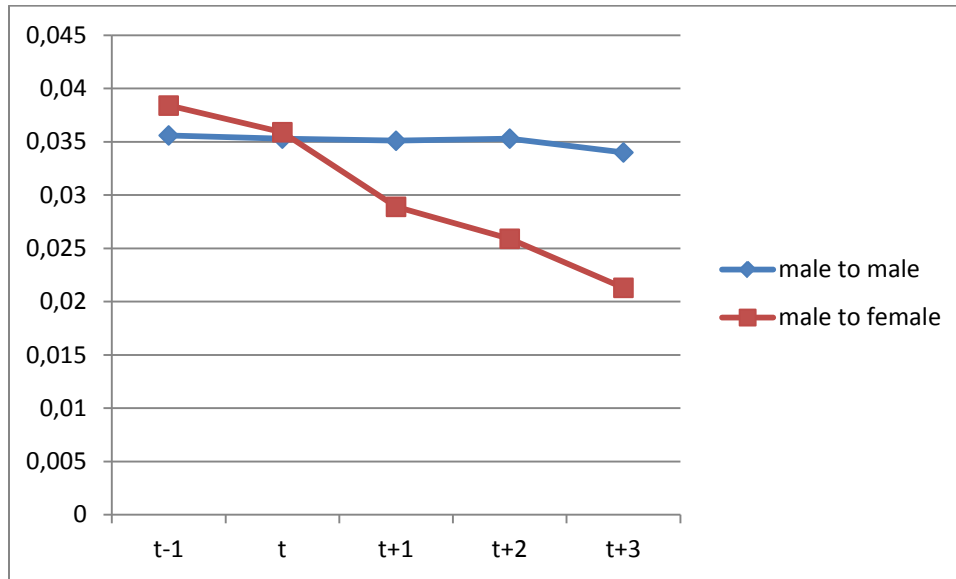


Figure 2-2: Advertisement

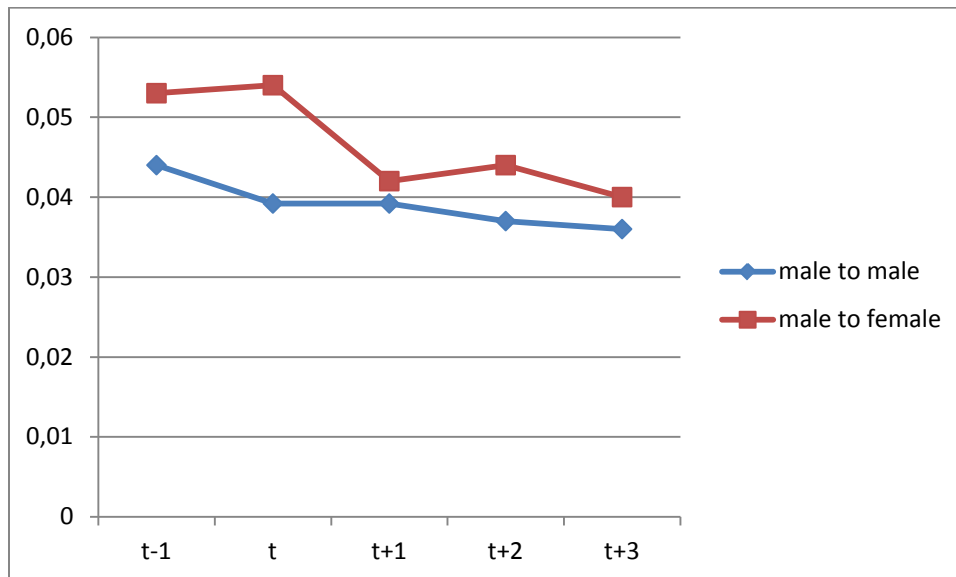


Figure 2-3: Tangibility

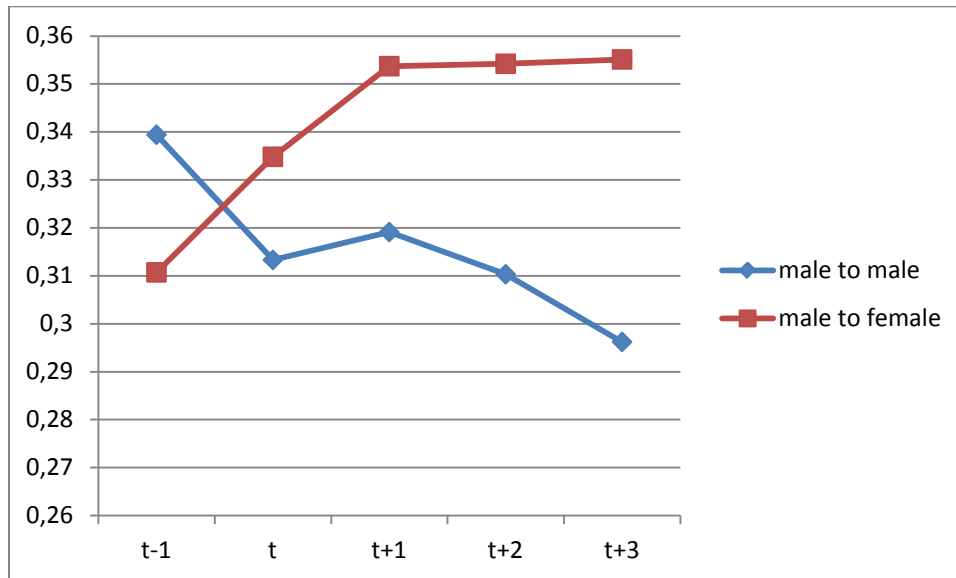


Figure 2-4: Capital expenditure

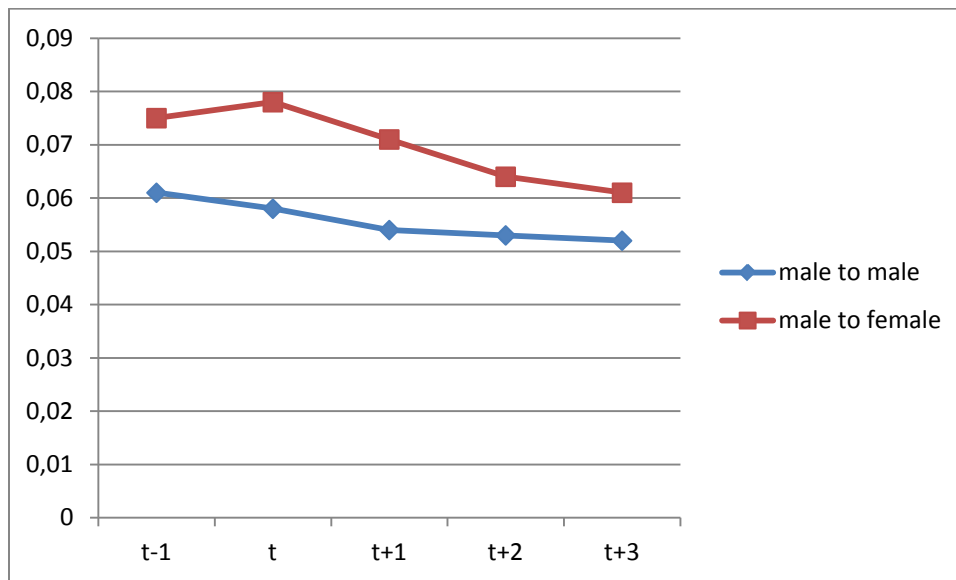


Figure 2-5: Acquisition

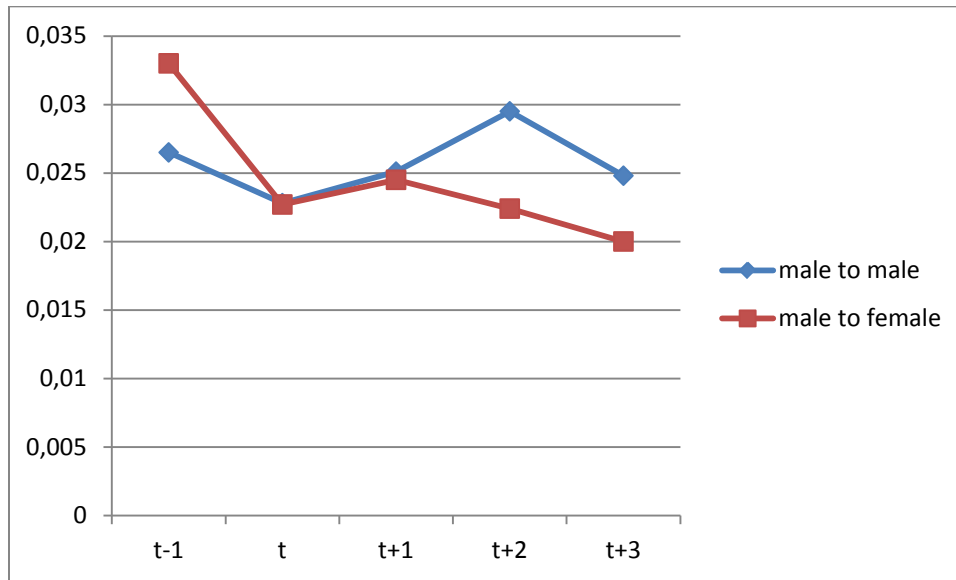
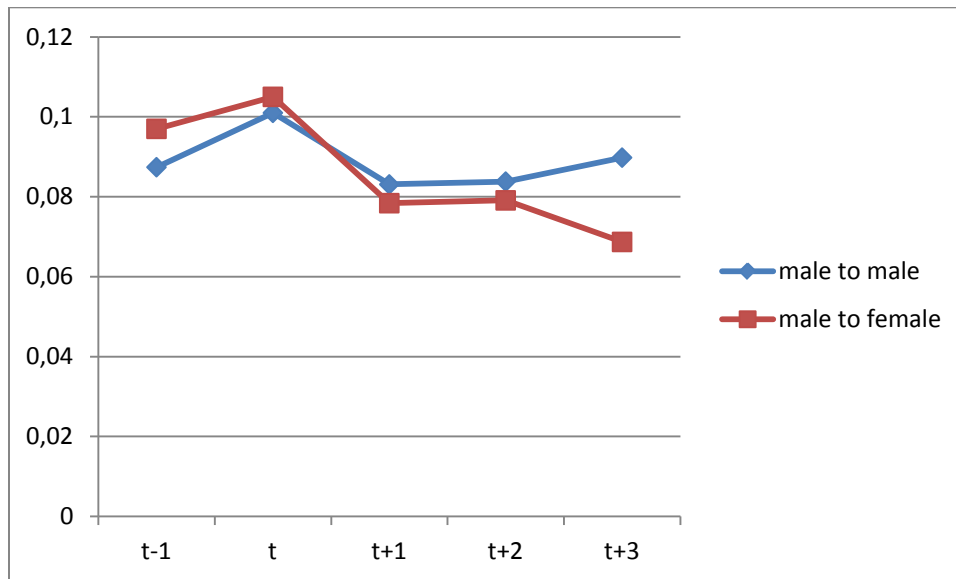


Figure 2-6: Dividend



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