Do executives have fixed-effects on firm-level stock price crash/jump risk? Evidence from CEOs and CFOs.

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Abstract

This paper investigates whether individual CEOs and CFOs have "styles" (i.e. managers' fixed-effects) when it comes to withholding bad and good corporate news, which is captured using the firm-level future stock price crash and jump risk. Tracking managers that move across firms and employing a manager fixed effect model, we find that both CEOs and CFOs have fixed-effects on firm-level future stock price crash and jump risk, using multiple crash (jump) risk measures adopted from previous studies (for example, Kim et al. 2011a,b). Such effects are subjected to a battery of robustness tests, including using a placebo data. In addition, we document that besides bad news withholding channels suggested in the existing literature (e.g. earnings management, management guidance, and tax avoidance), managers have fixed-effects on "other channels" of news withholding, which is measured parsimoniously using a crash risk residual. We also find that CEOs have stronger fixed-effects than CFOs in affecting firm-level stock price crash and jump risk. Lastly, we find that certain demographic characteristics, including past professional qualifications (CPA license), educational background (MBA and JD degree), past military experience, and family status are associated with the crash and jump risk of the firm.

JEL classification: G3, M40, M5.

Keyword(s): manager fixed-effects; bad news hoarding; stock price crash and jump risk

1. Introduction:

What affects the stock price crash and jump risk of a firm? Recent empirical studies in this field follow Jin and Myers's (2006) theoretical framework that explains stock price crash and jump from the agency theory perspective, suggesting that information asymmetry and a given firm's bad/good news withholding contributes to it. Specifically, these studies have found that firm-level bad (and good) news withholding manifests as firm-specific characteristics, including discretionary accruals, accounting conservatism, tax avoidance, executive equity compensation, and possibly management guidance – and is associated with the likelihood of future stock price crashes and jumps (Kim, Li and Zhang 2011a, b, Kim and Zhang 2015, Hamm, Li and Ng [2015 working paper]). This paper intends to explore another aspect of the causes of stock price crashes and jumps: firm managers. We examine whether there are manager fixed-effects of CEOs and CFOs on firm-level stock price crash and jump risk; and if so, are managers' unique experiences, evidenced in the observable demographic characteristics, such as their educational background, professional qualification, marital status, and so on, associated with firm-level stock price crash and jump risk?

While the neoclassical theory ignores the heterogeneity in the roles of corporate managers in influencing firm outcome (for instance, Weintraub 2002; Jensen and Meckling 1976; Bertrand and Schoar 2003), the upper echelon theory (Hambrick and Mason 1984) suggests that when operating in a complex, ambiguous situation and with bounded rationality, managers make choices that could be influenced by their idiosyncratic cognitive styles and experiences. A number of empirical studies have documented managers' idiosyncratic styles (referred to as

manager fixed-effects hereafter) in firm policies, including but not limited to investing, financing, and organizational policies; financial reporting; voluntary disclosures (for instance, management guidance issuance); tax avoidance; and conference call tones (Bertrand and Schoar 2003; Ge, Matsumoto and Zhang 2011; Bamber, Jiang and Wang 2010; Dyreng, Hanlon and Maydew 2010; Davis, Ge, Matsumoto, and Zhang 2014). However, none of these studies examined the direct impact of manager fixed-effects on firm-level stock price crash and jump risk. Our paper aims to fill this void in the literature.

Managers with heterogeneous personal preferences of honesty, conservatism, risk-taking, and cognitive basis (for instance, knowledge of assumptions, alternatives, and consequences of future events) may exhibit different degrees of tolerance regarding bad and good news withholding. Information asymmetry between corporate managers and external stakeholders allows managers to conceal and accumulate bad and good news, eventually culminating in stock price crashes and jumps (Jin and Myers 2006; Kothari, Shu, and Wysocki 2009; Yermack 1997; and Aboody and Kasznik 2000). Therefore, it is expected that there exists a management-specific component in the stock price crash and jump risk.

Prior studies seem to suggest such a link given the findings of manager fixed-effects on several bad news withholding channels, including financial reporting opacity (Ge et al. 2011), voluntary disclosure (Bamber et al. 2010) and tax avoidance (Dyreng et al. 2010). However, we argue that, in addition to these channels, managers may exercise other channels of news withholding, such as social media, word-of-mouth, form 8-K, press releases, and so on, which have not been systematically captured by existing studies. Manager fixed-effects encompass a

wide range of idiosyncratic news withholding incentives and preferences in various news withholding channels of managers.

However, we may not find managers' fixed-effects on the firm-level stock-price crash and jump risk for the following reasons. First, neoclassical theory and agency theory allow no or a very limited possibility for idiosyncratic differences between individual managers to affect organizational outcomes (Weintraub 2002, Christensen and Feltham 2003). Managerial discretion is viewed to be severely constrained by compensation incentives and corporate governance. Second, in a fully efficient market, the market may price in manager style ex-ante given that information on corporate executives and corporate events are usually widely available to the public nowadays. If this is the case, the release of accumulated bad news per se may not warrant a decline in price that contributes to a crash – and vice versa for jumps.
It remains an empirical question whether there is manager fixed-effects on the firm-level crash and jump risk.

Similar to prior literature (Kim et al. 2010 ab, Kim and Zhang 2016, and so on), we use (1) the number of stock price crashes and jumps in a year, (2) negative conditional skewness of firm-specific weekly returns, and (3) the down-to-up return volatility ratio of firm-specific weekly returns in year t+1 to capture the firm-level stock price crash and jump risk in the future. Tracking CEOs and CFOs who move from firm to firm (switching managers) in our sample period of 1992–2013, we employ the manager fixed-effects model, following previous work, to investigate whether managers possess idiosyncratic styles that have an incremental

influence on the future crash/jump risk of their firms (for instance, Ge et al. 2011, and so on).[1] To delineate manager-specific effects from that of the unobserved, firm-specific, and time-varying confounding factors on our dependent variables, we further control for firm- and year-fixed-effects in our OLS regression models.

For sample of 133 switching CEOs and 299 switching CFOs, we find evidence that both CEOs and CFOs have fixed-effects on firm crash and jump risk, suggesting that they have idiosyncratic styles when it comes to withholding bad and good news. Moreover, our results are robust to a number of additional analyses, such as (1) restricting manager tenure to two years or more to allow managers to imprint their style on firm policies (for instance, Bertrand and Schoar 2003, Ge et al. 2011, and so on), (2) the alternative big-bath explanation, (3) controlling for CEO overconfidence (Kim et al. 2016), and (4) the placebo test.

Furthermore, in addition to previously documented news withholding channels including earnings management, management guidance, and tax avoidance, we document that managers have fixed-effects on the portion of stock price crash/jump risk that is associated with the "other channels" of news withholding, including but not limited to press releases, social media, word-of-mouth, SEC 8-K forms, and so on. The "other channels" are measured using the OLS regression residual from the crash/jump risk model, where the three major aforementioned news withholding channels are controlled for. We also find that CEOs have stronger fixed-effects than CFOs in influencing firm-level stock price crash risk by comparing the coefficients

[1] We did not impose the "two-year minimum" tenure requirement in our main test since it will reduce our sample greatly and the test power. However, our results are robust to the tenure requirement as discussed in the robustness test section of the paper.

of the two manager groups. This finding is consistent with findings in the previous literature suggesting that the CFO may succumb to the CEO's power when engaging in earnings manipulation (Feng, Ge, Lup, and Shevlin 2011).

Lastly, we examine whether the variation in CEO's and CFOs' styles in influencing the firm-level stock price crash and jump risk could be explained by managers' observable, demographic characteristics, such as civic position, age cohort, professional qualifications, educational background, past military experience, marriage status, political orientation, and gender. We find that CEOs with CPA qualifications are associated with a higher crash risk, while those with MBA degrees are associated with a lower crash risk. We also find that CFOs who are married with children are associated with a lower crash risk and higher jump risk, consistent with prior findings that marriage is associated with more conservative managerial reporting. Also, we find that CFOs' military experience is associated with a higher crash risk, consistent with Cain and McKeon's (2016) suggestion that past military experience may increase CEOs' risk-taking.

This study has important implications for the stock price crash/jump risk literature in several ways. First, this paper underscores the importance of idiosyncratic styles of managers in withholding corporate bad news and good news (Kim and Zhang 2016; Liu 2019; Li and Zeng 2019) and documented the one-on-one relationship between individual manager and firm-level stock price crash/jump risk. More importantly, in addition to the news withholding channels documented in the existing literature including reporting capacity (for instance, earnings management), voluntary disclosure (for instance, management guidance) and tax avoidance

transactions, we parsimoniously capture and document managers' fixed-effects in the portion of crash/jump risk that is associated with "other news disclosing channels." Furthermore, our evidence that CEOs have stronger fixed-effects than CFOs in stock price crash and jump risk sheds lights on the dynamics between the members of the C-suite in influencing corporate policies.

Second, the evidence on whether the capital market perceives individual managers differently has been mixed. Some studies find negative market reactions around voluntary CEO departure and around the death of high-ability CEOs, implying that investors do recognize the differences in managers from the manager ability aspect (Hayes and Schaefer 1997; Dasgupta and Hilary 2010; Nguyen and Nielsen 2014; Salas 2010). However, Kim et al. (2016) has found that overconfident CEOs are associated with greater stock price crash risk, suggesting that the market cannot differentiate managerial overconfidence ex-ante. Our study adds to this debate by providing evidence that supports the latter, implying that the market does not recognize the differences in tendencies of bad news withholding among managers ex-ante and thus fails to incorporate such risk into asset-pricing.

The remainder of the paper is divided as follows: Section 2 is the literature review and hypothesis development; Section 3 is the methodology and sample; Section 4 is the results and robustness tests; Section 5 is the conclusion.

2. Literature review and hypotheses development:

2.1. Bad (good) news withholding and firm-specific crash (jump) risk

While some early research has been focused on the capital market mechanism of stock price crashes and jumps, such as leverage effects (Pindyck 1984; Christie 1982), volatility feedback (Campbell and Hentschel 1992; French, Schwert, and Stambaugh 1987; Lee 1998), and stochastic bubbles (Blanchard and Watson 1982), other research models the stock price crash as a function of information asymmetry among investors and market frictions, including short sale constraints and heterogeneity in investors' opinions (Chen, Hong, and Stein 2001; Cao, Coval, and Hirshleifer 2002; Hong and Stein 2003).

More recent studies explore this topic using the framework of agency theory, suggesting that information asymmetry between managers and shareholders exacerbates the agency issue and eventually manifests as news withholding and extreme stock price movements in the next period (Jin and Meyers 2006). Empirically, Kothari, Shu, and Wysocki (2009) have shown that managers tend to withhold bad news and delay the disclosure of bad news due to reputation, compensation, and career concerns, such as promotion, equity incentives, outside employment opportunities, and so on. When a negative signal arrives, managers may choose to conceal and accumulate the bad news into current performance. When the accumulated bad news finally reaches a tipping point, managers will have to release it suddenly to the market, resulting in a stock price crash (Jin and Meyers 2006; Hutton et al. 2009; Kim et al. 2011a; and so on). In addition, concealment of bad news also prevents investors from discerning negative NPV projects from positive NPV projects on a timely basis. A stock price crash can occur when the bad performance of the negative NPV projects accumulates and eventually materializes (Bleck and Liu 2007).

Past studies have documented several firm-level channels of bad news hoarding that are associated with firm-level stock price crash risk. For example, firm-level financial reporting opacity is positively associated with stock price crash risk, as it allows managers to embed bad news through earnings management, such as discretionary accruals and earnings smoothing (Hutton et al. 2009; Chen, Kim and Yao 2017; Khurana, Pereira and Zhang 2018). Kim, Li, and Zhang 2011b have found that tax avoidance activities, which enable managers to bury bad news in complicated tax transactions, are associated with higher stock crash risk. Hamm et al. (2015 working paper) seem to suggest that managers manipulate management guidance to withhold bad news, and the frequency of management guidance is positively associated with stock price crash risk. A plethora of studies have found that certain other firm characteristics are also associated with bad news withholding and crash risk, including corporate social responsibility (CSR) (Kim et al. 2014), financial statement comparability (Kim, Li, Lu and Yu 2015), financial report readability (Kim, Wang and Zhang 2015), accounting conservatism (Kim and Zhang 2015), internal controls (Kim, Yeung and Zhou 2013), and so on.

More recently, research has been starting to look into the role of corporate managers' characteristics in affecting firm-level stock price crash risk. For example, Kim, Wen, and Zhang (2016) have found that CEO overconfidence is positively associated with firm-level stock price crash risk because overconfident managers tend to overestimate future returns of the project, resulting in incentives to withhold bad news – thus leading to a higher stock price crash risk. Following the same line of argument, studies have found that other managerial characteristics, such as a CEO's age, religiosity, power, duality, and ability, as well as a CFO's

equity incentives, gender, and cultural background, are all determinants of firm-level stock price crash risk (Callen and Fang 2016; Kim and Zhang 2016; Kim et al. 2011a; Mamum, Balachandran and Duong 2016; Chen, Huang, and Zhang 2015 [working paper]; Kim and Zhang 2016; Fu and Zhang 2019; Li and Zeng 2019; Habib and Hasan 2016; and so on). One issue with these studies is that the observable demographic characteristics are crude and incomplete measures of a manager's innate cognitive ability, capturing a particular dimension of the drivers of managerial decision-making. Evidence of the association between idiosyncratic managerial style and stock price crash has been scarce.

Prior research on good news withholding and stock price jumps have been mixed. Hutton et al. (2009) have suggested that management does not have incentives to withhold good news as much as bad news using discretionary accruals. Other studies have found that managers tend to accumulate good news for various reasons, including lowering the exercise price of the management's option grants (Yermack 1997 and Aboody and Kasznik 2000), increasing bargaining power against the labor unions (Chung, Lee, Lee and Sohn 2015; Bova 2013), and so on. Similar to a stock price crash, there might be a stock price jump at the point when the large quantity of accumulated good news is suddenly released to the market (Hamm et al. 2015 [working paper]).

2.2. Manager fixed-effects on firm policies:

The neoclassical economic theory (Weintraub 2002, Cyert and Charles 1972) and the agent principle theory typically allow no or very limited roles of managers in affecting corporate outcomes because it is considered that managers are largely constrained by compensation

contracts and monitoring mechanisms such as corporate governance (Jensen and Meckling 1976; Christensen and Feltham 2005).

Nevertheless, the upper echelon theory (Hambrick and Mason 1984) argues that managers make corporate decisions relying not only on a rational analysis of techno-economic factors but also on their personal values and cognitive basis, especially in the face of conflicting targets and different level of aspirations. Therefore, the organization's strategic decisions may reflect the manager's idiosyncratic characteristics, arising from "knowledge or assumptions about future events, knowledge of alternatives and consequences attached to each alternative" (pg. 195).

Following the "Upper Echelons Theory," several studies report empirical findings of manager's fixed-effects on firm-level policies including financing, investment and organizational policies (Bertrand and Schoar 2003), accounting policies (Ge et al. 2011), voluntary disclosures including management guidance (Bamber et al. 2010), tax avoidance (Dyreng et al. 2010), tones of the earnings conference calls (Davis, Ge, Matsumoto and Zhang 2015) and executive compensation (Graham, Li and Qiu 2012).

2.3. Manager's fixed-effects and firm-level stock price crash and jump risk

According to the Upper Echelon Theory, managers possess different sets of values and cognitive basis that determine their perceptions and decision outcomes, including news withholding and disclosure (Hambrick and Mason 1983). Thus, assuming a negative signal on the operational, financial, or strategic management of the firm arrives, there may be cross-manager variation in the decision on whether to withhold the news and the extent of the news to be withheld. For example, a manager who has a more aggressive risk appetite combined with

a heightened level of honesty and ethical awareness may choose to disclose more information to the public than a similarly aggressive manager who is, however, more dishonest. Both managers' bad news withholding may be more pronounced than managers who are more risk-averse and has a moderate level of ethical awareness and honesty. It is possible that such combination of traits which manifest into an idiosyncratic stance on news withholding persists along the individual's career horizon and across the firms that employ such agent.

Prior studies seem to suggest such a link given the findings of manager fixed-effects several bad news withholding channels, including financial reporting opacity (Ge et al. 2011), voluntary disclosure (Bamber et al. 2010) and tax avoidance (Dyreng et al. 2010). Nevertheless, we argue that managers' fixed effect extends to channels beyond the ones that are documented. Not all bad/good news withholdings are captured by firm earnings disclosure and tax planning.[2] Such "other channels" include but are not limited to disclosures through social media, press release, 8-K disclosure of significant corporate events[3], and word-of-mouth.

[2] Such events may be have arisen well before the fiscal year end and/or the next conference call about earnings and may affect the productivity and profitability – or even the strategic focus – of the business in the near future. For example, managers may choose to withhold and delay the announcement of a manufacturing glitch discovered in the current production period. The production glitch may increase the probability of future product recalls, resulting in lower future earnings. Another example is a cost overrun. Managers may conceal the additional cost, as well as the delayed deadline, from investors in the hope that future costs will drop and progress recover in the future. Managers may choose to disclose a cost overrun only when the room for absorbing bad news becomes less than minimal. Other examples include the loss of a major client due to the change of management in the client, the failure to negotiate a long-term contract with an incumbent outsourcing partner, distributor, or supplier, or any events that adversely affect a firm's future performance.

[3] SEC encourages filing of an 8-K for events that affect shareholders, but such disclosure is at the company's discretion, and 8-K forms are used as "needed". However, an 8-K is required when a business changes accounting firms used for certification. Changes in corporate governance, such as control of the registrant, amendments to the articles of incorporation or bylaws, changes in the fiscal year, and amendments to the registrant's code of ethics are also required to be disclosed.

Overall, it is reasonable to expect that there are manager fixed-effects on firm-level stock price crash risk and jump risk.

However, it is also possible that there is no association between idiosyncratic managerial characteristics and stock price crash and jump risk. First, neoclassical economics suggest that managers are "identical substitutes" and are passively selected by firms based on a firm's strategic needs, which manifest as a persistent pattern of firm policies (Weintraub 2002; Betrand and Schoar 2003). In addition, agency theory suggests that a manager's fixed effect may be constrained by the manager's compensation incentives and other monitoring mechanisms, such as corporate governance. Second, in a fully or semi-efficient market, the market may have incorporated managers' disclosure styles into a firm's valuation since manager-specific information (for example, age, gender, educational and working background, religion, and so on) is readily available to the public nowadays. For example, past studies have found that market reaction to CEO departure is associated with the CEO's ability and pay, suggesting that the market does differentiate managers based on their managerial traits (Dasgupta and Hilary 2010; Nguyen and Nielsen 2014). If this is the case, the release of accumulated news may not warrant a stock price crash or jump.

Therefore, it remains an empirical question whether individual managers have fixed-effects on the firm-level crash and jump risk. We present our null hypothesis in the following form:

H1$_a$: There is no association between individual CEOs and future firm-level crash risk.

H1$_b$: There is no association between individual CFOs and future firm-level crash risk.

2.4. Managers' observable characteristics and stock price crash/jump risk

The upper echelon theory suggests that the cross-sectional differences in managers' demographic and personal characteristics shape their values and cognitive basis, which in turn affect their managerial styles and firm's policies (Hambrick and Mason 1984). Empirical studies have documented the fact that observable, demographic characteristics of managers are associated with firm-level policies, including managers' age, gender, age cohort, educational background (for example, CPA, JD, MBA degree, or undergraduate business majors) and functional career background (for example, military experience, accounting/finance/law work background, and so on). For example, Ge et al. (2011) have found that older CFOs are more conservative in reporting earnings than younger CFOs, which is evidenced by lower non-operating accruals and more timely disclosure of bad news. Bamber et al. (2010) have found that executives with legal and military backgrounds appear to be more conservative and provide less good news forecasts than their counterparts, while executives with MBA degrees display more aggressive forecasting strategies by providing more good news forecasts than non-MBA executives. Law and Mills (2017) have found that managers with past military experience are more conservative in pursuing tax avoidance and are associated with lower tax avoidance.

Therefore, we conjecture that managers' demographic characteristics, such as civic titles, age, gender, professional qualifications, educational background, and past military experience, are associated with their preferences in withholding bad (good) news, which is reflected in the firm-level stock price crash/jump risk.

H2: Certain demographic characteristics of managers are associated with the firm-level stock price crash/jump risk.

3. Sample and Research Design

3.1. Manager Fixed-effects Test

Sample Construction and Data

Following the methodology in the current fixed-effects literature (Bertrand and Schoar 2003, and so on), we identify CEOs and CFOs in the ExecuComp database who worked for at least two firms, denoting them as "switchers." We tracked these switchers as they move from one firm to another to examine whether they bring their idiosyncratic impact on firm-level crash/jump risk with them. This methodology allows us to disentangle unobservable firm-level characteristics that may correlate with the firm-level crash risk and managers' presence in those firms. We include firm-years available before or after the switchers, matching manager-years, as controls (Diagram 1).

Diagram1

	Period 0	**Period 1**	**Period 2**	**Period 3**
Firm A	Matching Manager Firm-years	**Switcher**	Matching Manager Firm-years	
Firm B	Matching Manager Firm-years		**Switcher**	Matching Manager Firm-years

Table 1 Panel A presents the sample selection procedure. We started with the CEOs and CFOs listed in the ExecuComp database in the period from the fiscal years 1992–2013 and

identified 759 switcher CEOs and 576 switcher CFOs. After subtracting missing observations as a result of calculating (1) crash/jump risk using Center of Research of Stock Price (CRSP) stock returns and (2) control variables using variables on COMPUSTAT, our final regression sample consists of 133 switcher CEOs and 299 switcher CFOs with 2,992 firm-years and 5,472 firm-years respectively[4].

Panel B shows the number of job switches each switcher CEO and CFO had. The majority of them have worked for two firms (95% of CEOs and 84.62% of CFOs).

Panel C shows the distribution of the number of years the sample of CEOs and CFOs have worked in each firm. The majority of the CEOs and CFOs worked for two or more years (94.43% and 91.54%, respectively), implying that our sample has allowed managers to have an adequate amount of time to imprint their styles on firm policies[5].

Panel D shows the distribution of the frequency of firms that have a number of distinct CEOs and CFOs in the sample, including both switcher and non-switcher managers. The

[4] We find that after the crash risk and control variables are merged into the managers dataset, many switchers turn out to appear in only one firm in our sample. This is because observations of the other firms of the same switcher in the sample are trimmed due to missing crash/control variables. These switchers do not appear to "move from firm to firm" in the remaining sample. This violates the rationale in our research design, so we drop these switchers and their matching firm-years. In addition, some switchers in the merged sample have no matching firm-years. For example, some switchers have only period 1 and period 2 firm-years in Diagram 1 in the sample. This causes collinearity in the regression, as the firm A and B dummies add up to the switcher dummy in the sample. Stata drops these switchers from the regression. To be consistent with the rationale of our research design, we exclude these switcher firm-years from our final regression sample. The two exclusions result in a drastic decrease in the number of switcher CEOs and CFOs, resulting in a drop of 441 CEOs and 221 CFOs (final regression sample contains only 133 switcher CEOs and 299 switcher CFOs).

[5] While we did not impose the two-year minimum restriction in our main test, our robustness analysis have suggested that our results are robust to the two-year tenure restriction.

majority of CEO sample firms (81.3%) have more than one CEO. This is the same for the CFO sample, where about 88.01% of firms have more than one CFO[6].

[INSERT TABLE 1 HERE]

Variables

Crash/Jump Risk

Following prior crash risk studies (Kim et al. 2011a,b, and so on), we construct crash/jump risk measures using firm-specific weekly returns estimated from the following equation:

$$r_{j,t} = \alpha + \beta_{1j} r_{m,t-1} + \beta_{2j} r_{m,t} + \beta_{3j} r_{m,t+1} + \beta_{4j} r_{i,t-1} + \beta_{5j} r_{i,t} + \beta_{6j} r_{i,t+1} + \varepsilon_{ji} \qquad (1).$$

$r_{j,t}$ is the return on stock j in week t, $r_{m,t}$ is the return on the CRSP value-weighted market index in week t, and $r_{i,t}$ is the Fama–French value-weighted industry returns in week t. It includes the lead and lag terms for the market and industry index return to allow for nonsynchronous trading (Dimson 1979; Scholes and Williams 1977). Specifically, the firm-specific weekly return for firm j in week t is $W_{jt} = \ln(1+\varepsilon_{ji})$, the natural log of one plus the residual return from the regression model (1).

[6] We notice that about 18.47% (11.99%) CEO (CFO) sample firms have only one manager in the sample period. These are switcher CEOs and CFOs who appear in firm A without having matching managers. However, all of them move to firms with matching managers in a later period. According to Ge et al. (2011), filler firm-years should be included for these managers to disentangle the manager fixed-effects on the dependent variable from the firm fixed-effects. In our robustness test (untabulated), we have included filler firm-years in the period before and/or after the presence of such managers in firm A. We drop those managers without filler-years available for COMPUSTAT and CRSP variables from our sample. As a result, we are left with 122 switch CEOs and 299 switch CFOs. The results are qualitatively the same as our main test because the F-statistics are significant at p<0.0001 for both the CEO and CFO sample.

The first crash risk measure, $FLnCrashInAYear_{j,t+1}$, is the natural logarithm of (1+ number of crash incidences in a year)[7]. A crash incidence is defined as when the firm-specific weekly return falls below 3.2 standard deviations of the mean weekly returns of the year.[8] The jump risk measure, $FLnJumpInAYear_{j,t+1}$, is defined in a similar way, except that a jump incidence is when the firm return increases to above 3.2 standard deviations of the annual mean returns. The second crash risk measure, $FNCSKEW_{j,t+1,}$ is the negative conditional skewness of the firm-specific weekly returns developed by Chen, Hong, and Stein (2001). It is calculated for a firm-year by taking the negative of the third moment of firm-specific weekly returns of the sample firm-year and dividing it by the standard deviation of firm-specific weekly returns over the year raised to the third power, as shown in the following equation:

$$FNCSKEW_{j,t+1}=-[n(n-1)^{3/2}\Sigma W^{3}{}_{j,t+1}]/[(n-1)(n-2)(\Sigma W^{2}{}_{jt+1})^{3/2}] \quad (2).$$

The third crash risk measure, $FDUVOLj,t+1$, is defined as the log of the ratio of the standard deviation of firm-specific weekly returns that are above the annual mean returns to the standard deviation of returns that are below the annual mean returns, capturing the relative volatility of firm-specific weekly returns of the "down weeks" to the "up weeks."

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[7] Note that crash incidences are a count number. We recognize that a common and theoretically appealing approach for analyzing count data is to use a nonlinear model of the Poisson model. One issue is the mathematical and computational complexity for the Poisson regression with a large number of manager dummies (McCullagh and Nelder 1989; Linden & Mantyniemi 2011; Okamura, Punt & Amano 2012; Bates et al. 2014). Such an issue results in Stata not converging to an optimal point, i.e. the quasi-complete separation problem (Altma et al. 2004), as some managers' firms never experience crashes or jumps. Nevertheless, for the count dependent variable, the OLS coefficient estimates remain unbiased and consistent, especially in large samples (Wooldrige 2005, Chap 7). Moreover, Ives (2015) has used simulations to find that in some special cases, OLS generates a type-I error that's closer to the intended one than other Generalized Linear Models, including the Poisson model and that the power loss is minimal. We take the logarithm of the dependent variable to decrease the impact of outliers on our results, therefore increasing linearity of the dependent variable and homogeneity of the variance (Pierre et al. 2017).

[8] The number 3.2 is chosen to generate a 0.1% frequency in the normal distribution.

$$FDUVOL_{j,t+1} = Log(\sigma_{down\,j,t+1} / \sigma_{up\,j,t+1}) \quad (3)$$

All crash (jump) risk measures are one year ahead (i.e. year t+1) since there is a lead-lag relationship between the accumulation of bad/good news and the actual stock price crash (jump).

Control variables

Following prior studies (Kim et al. 2011a, b, and so on), we include the following variables as controls in the tests. All financial variables are obtained from COMPUSTAT and return variables from CRSP. *DTURN* is the detrended share turnover, which is a proxy for investor heterogeneity, or the difference of opinions among investors. Firms with high stock turnovers are more likely to have stock price crashes in the future. The *NCSKEW* is the negative skewness of firm-specific stock returns in the prior year, capturing the potential persistence of the third moment of stock returns. *SdW* is the standard deviation of past firm-specific stock returns, controlling for the fact that more volatile stock is more prone to crashing in the future. *RET* is the average firm-specific weekly return over the past year, with higher past returns associated with a greater probability of crashing in the future (Chen et al. 2011). We include the standard control variables for last year's firm size (*SIZE*), market-to-book ratio (*MB*), financial leverage (*LEV*), and current year return on assets (*fROA*) (Hutton et al. 2008). In addition, *DISACC* is the modified Jones's discretionary accruals, controlling for the financial reporting opacity of the firm. Hutton et al. (2008) have found that firms can conceal bad news in manipulated earnings, and financial reporting opacity is positively associated with future stock crash risk. The natural logarithm of the current year jumps, $LnJumpInAYear_{i,t,}$ is included

in the jump risk model as a control. All continuous variables are winsorized at 1% top and bottom.

Prior literature finds that CFO's equity incentives are associated with their incentives to withhold bad news and thus stock price crash risk (Kim et al. 2011a). We argue that managers' compensation choice is either a manifestation of their personal preferences in risk and efforts or associated with firm characteristics in compensation contract design. The compensation choice could also be a combination of both aspects. Since we have controlled for firm-specific characteristics, we do not explicitly include CFOs' equity incentives in our model since the equity incentive choice itself could be endogenous of CFOs' styles (Graham, Li and Qiu 2012).

The OLS Model

Following prior research (Bertrand and Schor 2003, Ge et al. 2010, and so on), we use a manager fixed effect model to analyze CEO's and CFO's idiosyncratic effects on firm-level crash/jump risk. We employ the regression model (4) for the main test, where we include a dummy variable for each switcher manager firm-year in the sample. We also control for year and firm-fixed-effects in the regression and include robust standard errors to control for heteroskedasticity[9]. Regression model (5) is the restricted crash/jump risk model that excludes

[9] We have tested for heteroskedasticity issue in our regression sample using Breusch-Pagan test. Untabulated results show that regressions of all crash(jump) risk measures are subject to heteroskedasticity as the chi2 derived from test is significant with p-value less than 0.001, rejecting the null hypothesis of constant variance. For example, the Chi2 statistic of the Breusch-Pagan test for the first crash risk measure in the CEO sample is 454.09 with $p<0.001$.

fixed-effects of the switcher managers.[10] We compare the adjusted R-square of the two models to address the increase in explanatory power associated with the switcher managers.

Main Model

$$Crash/Jump\ Risk_{jt+1} = \alpha + \beta_1\ Switcher\ Dummies_{it} + \beta_2\ Controls_{jt} + \beta_3\ Firm\ fixed\text{-}effects_{jt} + \beta_4\ Year\ fixed\text{-}effects_{jt} + \varepsilon_{jt} \quad (4)$$

Restricted Model

$$Crash/Jump\ Risk_{jt+1} = \alpha + \beta_1\ Controls_{jt} + \beta_2\ Firm\ fixed\text{-}effects_{jt} + \beta_3\ Year\ fixed\text{-}effects_{jt} + \varepsilon_{jt} \quad (5)$$

The null hypothesis is that there are no fixed-effects of individual switcher managers on firm future crash/jump risk. We use the F-test to investigate whether the coefficients of individual switcher manager dummies are jointly zero (not all β_1s = 0 in model (4)). If at least one coefficient of the switching manager dummies is not zero, the null hypothesis is rejected, suggesting that individual switchers do exert idiosyncratic effects on the one-year ahead firm-level crash/jump risk.

3.2 Observable manager characteristics and firm-level crash and jump risk

Sample construction and Data

[10] Prior studies document that CFOs may succumb to the CEOs' pressure to manipulate earnings (Feng et al. 2010). Thus, it is possible that the CFO's style of bad news withholding is a manifestation of the CEO's decision style. We address this issue in the supplementary analysis by controlling for the concurrent CEOs during the switcher CFO's tenure in the sample (Get et al. 2011).

For all switcher managers in our sample, we searched for their profiles on LinkedIn, Bloomberg, Marquis Who's Who, and any other possible sources on the internet. We hand-collected variables, including manager's birth year, political affiliation, marital status, professional qualifications (including CPAs, MBA degree and JD degree), gender, and past military experience. Because of missing information on some managers' demographic characteristics, we lose a number of managers in our sample and are left with 329 CEOs and 237 CFOs. The final regression sample consists of 1,887 firm-years in the CEO sample and 1,367 firm-years in the CFO sample.

The OLS Model

We run the following OLS model regression to examine the association between the stock price crash/jump risk and manager's observable characteristics:

$$Crash/Jump\ Risk_{jt} = \alpha + \sum_{n=1}^{11} \beta_n * ObservChar_{njt} + FirmFE_{jt} + YearFE_{jt} + \varepsilon_{jt} \quad (6).$$

$ObservChar_{njt}$ is the nth observable characteristic of the manager in firm j, year t. There are, in total, eleven observable characteristics in our test, measuring whether the manager has a civic position, MBA or JD degree, CPA license, military experience, Democratic or Republican Party affiliation, or a marriage with child(ren); and manager's gender and age cohort (born before the end of World War II or not). The definitions of the variables are in Appendix A. Following previous studies, we include firm and year fixed-effects as well as robust standard

errors in the regression. We are interested in knowing whether the β of each observable characteristic variable is significantly different than zero.

4. Results:

4.1. Descriptive statistics:

Table 2 presents the descriptive statistics of the variables in our sample. Panel A shows the descriptive statistics of the variables in the sample of our main regression. The one-year forward mean number of the stock price crashes and jumps in a firm is 0.231 and 0.14. Mean *FNCKSEW*, and *FDUVOL* is 0.142 and 0.054, qualitatively consistent with the prior crash risk studies (Kim et al. 2011a, 2011b, Hutton et al. 2009, and so on). The average annual mean firm weekly returns (*RET*) is -0.001 with a standard deviation (*SdW*)of 0.058. The control variables are also in range with that in other crash risk studies mentioned above. Panel B presents a comparison of variables between our regression sample and the intersection of the ExecuComp, COMPUSTAT, and CRSP, including all managers in the databases. The student's t-test reveals significant differences in *FLnCrashInAYear*, *FNCKSEW*, , and *FDUVOL* between the two samples, suggesting that firms in our main regression sample are prone to a higher stock price crash risk. This is not surprising, as our sample includes only firms that have manager switches, and these tend to be large firms where managers are associated with incentives to move across firms. Large firms are associated with higher crash risk than small firms (Kim et al. 2011a,b, DeFond et al. 2014, and so on). We also find that our sample firms are associated with higher one-year forward return on assets (*fROA*) than the comparisons sample, consistent with the fact

that these are large firms. Given this sample selection bias, we recognize that our results may not be generalizable to managers who work for firms outside of the COMPUSTAT universe.[11]

[INSERT TABLE 2 HERE]

4.2 Managers' fixed-effects on firm-specific stock price crash and jump risk

Table 3 and Table 4 present the results of the CEO's and CFO's fixed-effects on the firm-specific stock price crash (jump) risk. The primary inference is that both the CEO and the CFO have statistically and economically significant fixed-effects on their firms' stock price crash (jump) risk. Panel A suggests that CEO's fixed-effects are significant at $p<0.001$, even after controlling for economic determinants as well as firm- and time-specific fixed-effects, as the F-statistic shows that the coefficients of the CEO dummies are jointly different from zero. In addition, the explanatory power of the CEO's fixed-effects is increased by a relative 10%–78% from the restricted model. For example, the adjusted-R^2 is increased to 6.55% in the main model from 5.91% in the restricted model, a relative 10.98% increase ((6.55%-5.91%)/5.91%) for the first crash risk measure. The adjusted-R^2 increase is even more pronounced for the second and third crash risk measure, which is a relative increase of 34.72% (from 6.49% to 8.72%) and 16.94% (8.84% to 10.34%). Interestingly, the explanatory power of the CEO's fixed-effects is the strongest for the firm's jump risk as the relative increase of the adjusted-R^2 is 77.38% (2.62% to 4.64%). The finding suggests that CEOs have fixed-effects on firms' bad

[11] ExecuComp covers large firms, which biases our sample toward large firms compared with the COMPUSTAT population. However, in the view of that top executives are expected to be more influential in small firms than in large firms, the selection bias toward large firms in our sample goes against the detection of systematic variation across managers in crash and jump risk (Bertrand and Schoar 2003). Prior studies on managers' styles also suffer from such an issue of sample selection bias (e.g., Ge et al. 2011; Bamber et al. 2010; Bertrand and Schoar 2003).

news and good news hoarding, which is measured by the firm-specific crash/jump risk, even after controlling for firm-level determinants.

We have also examined the economic magnitude of the CEO's fixed-effects. First, we present the distribution of CEOs' fixed-effects (coefficients of the CEO switcher dummies) in Panel B, Table 3. There are 133 switcher CEOs in our sample, and the mean fixed-effects are 0.012, -0.056; -0.023 for the first, second, and third crash risk measure; and 0.019 for the jump risk measure. We have also presented the 25th, the median, and the 75th percentile CEO fixed-effects for all crash and jump risk measures in the table. As we move from the 25th percentile to the 75th percentile group of CEOs, we would expect the number of crashes in the next year to increase by 21.7%[12]. Similarly, the increase in *FNCSKEW, FDUVOL,* and *FlnJumpInAYear* would be 78.9%, 30.0%, and 20.1% as we shift between the two quartiles.

Second, we document that the number of CEOs who are associated with fixed-effects that are significant at $p<0.1$, $p<0.05$ and $p<0.01$ level (Dyreng et al. 2011) in Panel C. For example, between 25% and 34% of the total of 133, sample CEOs have significant fixed-effects at $p<0.1$ (33 CEOs for the first and second crash risk measure, 37 for the third crash risk measure, and 45 for the jump risk measure). The descriptive statistics of CEOs with statistically significant fixed-effects risk at $p<0.05$ and $p<0.01$ level are also presented. In addition, we compute the expected number of CEOs with significant fixed-effects at three significance levels, assuming

[12] As we move from the 25th to 75th fixed-effects percentile, the FlnCrashInAYear should increase by the difference in the fixed-effects coefficient between the two percentile groups, i.e. 0.109-(-0.087)=0.196. Given the dependent variable is natural log transformed, the corresponding increase in the number of crashes in a year should be exp(0.196)-1=1.217-1=0.217.

the null hypothesis is true (for example, no CEO fixed-effects). We should expect no more than 14, 7, and 2 CEOs with significant fixed-effects in our sample, given the 10%, 5%, and 1% chances of detecting fixed effect at each significance level in a normal distribution.[13] However, our results show that the number of CEOs with fixed-effects on the four crash/jump risk measures is between 33–45, 24–26 and 7–11 for the $p<0.1$, $p<0.05$ and $p<0.01$ significance level, higher than the expected number of CEO calculated under the null hypothesis. The finding on the distribution of significant managers' fixed-effects supports our main findings that the CEO fixed-effects on crash (jump) risk we detect is statistically significant rather than by chance.

[INSERT TABLE 3 HERE]

Table 4 presents the results of our main test on the CFO sample. The main findings are similar to that of the CEO sample – CFOs have fixed-effects on firm-level stock price crash and jump risk. Panel A shows that the fixed effect of CFOs are jointly significant non-zero at $p<0.01$. In addition, there is a relative increase in the adjusted-R^2 in the amount of 5.47%, 10.06% and 1.12% from the restricted to the main model for the three crash risk measure. Note that the increase is smaller than that of the CEO sample, consistent with CFO have less influence on firm policies than CEO. Furthermore, Panel B shows that of the 299 CEOs in our

[13] Even if null hypothesis is true and managers' fixed-effects are not statistically significant, we could still observe (N x Chance Level) number of CEOs with significant fixed-effects in our sample. Given 10%, 5%, and 1% chance levels, we should see no more than 13 (133 CEOs x 10%), 7 (133 CEOs x 5%), and 1 (133 CEOs x 0.01) of CEOs having significant manager fixed-effects.

sample, the mean fixed effect is 0.006, -0.005 and 0.008 for the first, second and third crash risk measure, and is 0.004 for the jump risk measure. We would expect the number of crashes in the next year to increase by 26.03% as we move from the 25th to the 75th percentile fixed effect CFO group[14]. Similarly, the increase in *FNCSKEW*, *FDUVOL,* and $FlnJumpInAYear_{i,t}$ is 74.53%, 28.28%, and 21.04% as we shift from the bottom to the top quartile CFOs. In Panel, we show the actual number of CFOs who have fixed-effects significant at $p<0.1$, $p<0.05$ and $p<0.01$ is greater than the expected number assuming the null hypothesis is true, implying that CFOs' fixed-effects we find are not by coincidence.

[INSERT TABLE 4]

4.3 Supplementary analysis

We have conducted a battery of tests as follows to address the robustness of our findings.

Robustness Tests

First, prior research has argued that managers may need time to imprint their style on firm policies (Bertrand and Schoar 2003, and so on). We repeat our analysis by restricting our switcher managers in the sample to those with a tenure of at least two years. We lose a significant number of observations (56 CEOs and 156 CFOs) because of the tenure restriction and are left with 77 switcher CEOs and 143 switcher CFOs in the sample. The untabulated results show that the manager fixed-effects hold.

[14] As we move from the 25th to 75th fixed-effects percentile, the FlnCrashInAYear should increase by the difference in the fixed-effects coefficient between the two percentile groups, i.e. 0.117-(-0.115)=0.231. Given the dependent variable is natural log transformed, the corresponding increase in the number of crashes in a year should be exp(0.231)-1)=0.2603.

Second, we repeat our analysis by dropping the first-year observation of the switcher manager's new employment after they change firm. Prior research has documented the "big-bath" phenomenon for new incoming managers. Pourciau (1993) suggests that incoming executives tend to record large write-offs and income-decreasing special items in the year they enter management and increase earnings in the following year. To rule out the possibility that our findings of managers' effects are driven by the big-bath managers in our sample, we conduct our main tests by excluding the first year of the switcher manager's new appointment. Untabulated results show that our main findings hold after the exclusion of the big-bath firm-years in question.

Third, it is possible that the manager fixed effect we have documented is *only* a manifestation of managerial overconfidence (Kim et al. 2016). To rule out this possibility, we construct the CEO overconfidence measure based on the CEO's option holding behaviors following Kim et al., (20116) and include it in our main test as a control variable. The untabulated results show that the F-statistic continues to be significant at $p<0.001$ for all crash and jump risk measures in both the CEO and CFO sample, suggesting manager fixed-effects on stock price crash and jump risk encompass managerial characteristics besides overconfidence. Third, it is possible that CFOs' fixed-effects on firm crash/jump risk are a manifestation of CEOs' styles since CFOs may succumb to the CEO's pressure to manipulate earnings (Feng et al. 2010). To address this issue, we include CEOs who work concurrently with our switcher

CFO in a given firm-year to control for the CEO's effect on firm crash/jump risk.[15] Untabulated results suggest that, even after controlling for concurrent CEO's fixed-effects, CFO fixed-effects on firm-level stock price crash/jump risk remain significant at $p<0.001$ level for both the main sample and the sample with the two-year minimum tenure restriction.

Fourth, to rule out the possibility that managers' fixed-effects are concentrated in a few industries (Dyreng et al. 2011, Ge et al. 2011), we examine the distribution of coefficients of the switcher manager dummies in model (4) across the industry categories.[16] We classify firms into different industry categories based on the first two digits of the SIC code and conducted the one-way analysis of variance (ANOVA) of the fixed effect coefficients across industry groups. Untabulated results show that the between-group variance of the coefficients across industry classifications is smaller than within-group variance, suggesting that there are no significant differences in managers' fixed-effects across industries and that our results are not concentrated in certain industries.

Fifth, we cluster firm standard errors following Peterson (2009) and Dyreng et al. (2011). Testing for the joint significance of manager coefficients, in this case, may result in the number of parameters equaling to or exceeding the number of effective degrees of freedom in the F-test,[17] reducing the number of testable managers in our sample. By limiting the sample

[15] The majority of the concurrent CEOs are unique to each firm in the sample; thus, these CEOs are collinear with the firm fixed-effects, suggesting that the firm fixed-effects in our main test have been a good control for influence in the CFO sample.

[16] In addition, in the calculation of the firm-specific weekly returns, we have included the value weighted industry-returns (based on the Fama–French 48 industry classifications) as shown in model (3). In other words, the crash/jump risk measures capture non-industry wide stock price movements that are caused by firm-specific news disclosure per se. This has moderated the probability that our results between managers and firm-specific stock price crashes and jumps are driven primarily by industry factors.

[17] It is not possible to carry out a F-test with testing more linear restrictions than the effective degrees of freedom.

managers to only those who are associated with significant fixed-effects at $p<0.1$ level, we find that our results are robust to using the clustered firm standard errors. Results are untabulated.

The Placebo Test

We also conduct a placebo test (Bertrand and Schoar 2003; Ge et al. 2011) to further examine whether the persistent manager fixed-effects across firms is a manifestation of firm-level characteristics. Ge et al. (2011) and Dyreng et al. (2010) have emphasized the possibility that the manager fixed-effects results are driven by the similarity among the firms the sample managers are employed with rather than by managers' active influence on firm policies. For example, a firm that has recently implemented a strong reporting monitoring mechanism may select managers from another firm that shares the same philosophy in ensuring reporting quality. Thus, the bad news withholding style and stock price crash risk of both firms may appear to be correlated with the employment of the managers.

To implement the placebo test, we first calculate the residual from the regression model (4) without including the manager dummies. Since the main control variables and the firm and year-fixed-effects are included, the residual is arguably a measure of the portion of crash risk affected by managers only. We focus only on managers with strong fixed-effects in the model (4), those whose manager coefficients are significant at $p<0.1$. We regress the residuals in the firm the manager is currently employed with on the residuals of the firm of her previous employment. The residuals of all the firms associated with the same manager are collapsed into

Cluster firm standard errors lead to restricting the degrees of freedom to the number of clusters (which is the number of firms).

the average residuals of each manager-firm unit. For example, if Manager X worked for two firms in the sample, Firm A and Firm B, we regress the average crash/jump risk residuals of Firm A on that of Firm B as suggested in the following model

$$CrashRiskResidual_{Mgr\ i,\ FirmA} = \alpha + \beta_1 CrashRiskResidual_{Mgr\ i,FirmB} + \varepsilon \quad (7).$$

The results of these regressions are used as the benchmark against the results of the placebo test. If our results are driven by persistent manager fixed-effects, we should observe a positive association in the residuals of the same manager between firm A and B.

Second, we create placebo data in which we assume Manager X joins firm B three years prior to the actual turnover (from B to A) and leaves on the actual turnover date. Then we regress the residuals of firm B of the three pre-tenure years on the residuals of the same three years of firm A. The three pre-tenure years in B are referred to as the placebo manager-years hereafter since in actuality manager X was not present in firm B during those years. Essentially, we are investigating whether there are any associations in the residual crash risk between the "placebo manager-years" (firm-years in which in actuality X was absent) and the same three years in firm A ("real manager-years" where X was present). If our results are driven by firm style rather than manager style, we would expect to see a positive association between the residual crash/jump risk measures of the placebo manager-years and the real manager-years.

Table 5 presents the results for both the CEO (Panel A) and CFO (Panel B) sample. Panel A, column (1) shows that for our switcher CEOs, the crash and jump risk in Firm B is positively associated with the crash and jump risk in the Firm A. Specifically, this association is statistically significant for the first and third crash risk measures ($p<0.1$) and also for the

jump risk measure ($p<0.05$). Column (2) shows that in the placebo test, the residuals of the placebo manager-years of firm B are not associated with those of the real manager-years in firm A. All coefficients are not significant at $p<0.1$ level. Similarly, Panel B column (1) shows that for switcher CFOs, the association between Firm A and Firm B is statistically significant for all three crash risk measures and the jump risk measure ($p<0.001$). However, in column (2), there is no statistically significant association in the residuals between the placebo and real manager-years. The results are consistent with our conjecture that the manager fixed-effects documented are not merely a manifestation of similarities among firms.

[INSERT TABLE 5 HERE]

Managers' Fixed-effects on the "Other Channels" of News Withholding

Existing studies have documented the main channels via which firms exercise bad news withholding, such as earnings management (Kim et al. 2011a), management guidance (Hamm et al. 2014, Working Paper), and tax avoidance (Kim et al. 2011b). Given the evidence of managers' fixed-effects on these news withholding channels (Ge et al. 2011; Dyreng et al. 2011; Bamber et al. 2010), it is not surprising that we would find an association between individual managers and firm-level stock price crash risk.

We argue that managers could also manipulate bad/good news withholding and disclosure through other channels (referred to as "Other Channels" hereafter) such as social

media, press releases, corporate filings such as 8-K, or even word-of-mouth[18], and so on. While it is difficult to obtain an inclusive measure of all of these news dissemination channels at once, we use a parsimonious measure – the residuals from the crash/jump risk regression model – to proxy for such channels. In the main model, the major bad news withholding channels (for example, earnings management, management guidance, and tax avoidance) are controlled for when calculating the residuals. We use Jones's modified discretionary accruals (Jones 1996) to measure managers' bad news withholding through opaque financial reporting (Hutton et al. 2009). We use the number of annual management earnings forecasts to proxy managers' bad news withholding through issuing frequent management guidance (Hamm et al. 2015 [working paper]). We use the GAAP and cash effective tax rate (Dyreng et al. 2011) to measure the extent of bad/good news concealed in tax avoidance (Kim et al. 2011b).

Our test has two steps. First, we estimate the residual u_{jt} from model (7)[19] and use it as a measure of a manager's use of "Other Channels" to withhold bad/good news independent of earnings management, management guidance, tax avoidance, and other firm-fixed-effects.

[18] Although lacking formulated academic evidence, it would not be surprising that firm and managers would actively engage in word-of-mouth campaigns to manipulate bad vs. good news withholding, as they understand the effectiveness of word-of-mouth on product sales and investors' perceptions. Past studies have suggested that word-of-mouth influences money managers' decisions to trade on their portfolio holdings (Hong, Kubik, and Stein 2005), individual investors' choice of stocks (Shiller and Pound 1989), and the spread of bad news around bank panics (Kelly and Grada 2000).Word-of-mouth has also been used widely by firms' marketing managers to influence customers' purchase decision, establish product reputation, and increase sales (*Marketing and Sales Practice, McKinsey Quarterly* April 2010; Hajili 2014; Meiners, Schwarting, & Seeberger, 2010). Hornik, Satchi, Cesareo, and Pastore (2015) have also suggested that consumers disseminate negative online information more quickly than good news, providing managerial insights into designing more effective word-of-mouth and publicity campaigns.

[19] Robust standard errors are used in this regression to correct for heteroskedasticity.

$$Crash(Jump)Risk_{jt+1} = \alpha + \beta_1 Controls_{jt}^{20} + \beta_2 NumGuidance_{jt} + \beta_3 TaxAvoidance_{jt} + Firm\ Fixed\text{-}effects + Year\ Fixed\text{-}effects + ConcurrentCEO_{jt} + u_j + \varepsilon_{jt} \quad (7).$$

Note that for the CFO sample, we include concurrent CEOs in model (7). u_{jt} is denoted as $ResFlnCrashInAYear_{it}$, $ResFlnJumpInAYear_{it}$, $ResNCSKEW_{it,}$, and $ResDUVOL_{it,}$ respectively, in the results table. Second, we regress u_{jt} on the switcher CEO and CFO dummies and test for the joint significance of the coefficients of the manager dummies (model [8a, 8b]).

$$u_{jt} = \alpha + \beta\, SwitchingCEODummies \quad (8a)$$

$$u_{jt} = \alpha + \beta\, SwitchingCFODummies \quad (8b)$$

Table 6 presents the results. Because of limited data on the management guidance variable from the Corporate Issued Guidelines database (the historical Thomson's First Call data) and on the tax variables on COMPUSTAT, our final sample is reduced to 92 CEOs and 208 CFOs. We find that both CEOs and CFOs have fixed-effects on the residual crash/jump risk, to wit, the "other channels" of bad (good) news withholding, in addition to the previously documented channels, control variables, and firm fixed-effects. However, the CEO's fixed-effects on the first crash risk measure via the "other channels" is only marginally significant at $p<0.1$, while the CEO's and CFO's fixed-effects on the "other channels" are significant at $p<0.05$ and $p<0.01$ level for all other crash and jump risk measures. To sum up, we document indirectly that CEOs and CFOs have fixed-effects on bad (and good) news withholding

[20] Note that conventional control variables of the crash risk model have included the discretionary accruals as an earnings management measure. We use that to capture managers' bad news withholding using annual reported earnings.

channels beyond the ones that are documented by the existing literature (such as earnings, management guidance, and tax transactions).

[INSERT TABLE 6 HERE]

The Comparison of CEO and CFO Fixed-effects

We examine if either the CEO or the CFO has a stronger influence on the firm's news withholding and stock price crash/jump risk. We merge our CEO and CFO sample by firm and year, resulting in a sample containing both the switcher CEOs and CFOs. We modify model (4) by including the dummies for both the switcher CEO and CFO as follows:

$$Crash/JumpRiskMeasures_{jt+1} = \alpha + \beta_1 SwitchingCEODummies_{jt} + \beta_2 SwitchingCFODummies_{jt} + \beta_3 Controls_{jt} + \beta_4 Firm\ fixed\text{-}effect_{jt} + \beta_5 Year\ fixed\text{-}effect_{jt} + \varepsilon_{jt} \quad (9).$$

First, we perform the F-test of equality of coefficients to test the null hypothesis CEO coefficients equal to that of the CFO coefficients illustrated as follows[21]:

$$\left(\sum_{CEO_i \in \{CEO_i : CoefFE_{CEO_i} > 0\}} CoefFE_{CEO_i} - \sum_{CEO_i \in \{CEO_i : CoefFE_{CEO_i} < 0\}} CoefFE_{CEO_i}\right)/N_{CEO} = \left(\sum_{CFO_m \in \{CFO_m : CoefFE_{CFO_m} > 0\}} CoefFE_{CFO_m} - \sum_{CFO_m \in \{CFO_m : CoefFE_{CFO_m} < 0\}} CoefFE_{CFO_m}\right)/N_{CFO} \quad .$$

CEO_i *and* CFO_m refers to the i^{th} and m^{th} manager in our CEO (N=133) and CFO (N=299) sample. We used the one-tailed Student's t-test to examine whether the *average absolute value*

[21] While fixed-effects coefficients are directional, i.e. positive or negative, we take the absolute value of all CEO and CFO coefficients and conduct the F-test on the mean of the absolute β_1s and β_2s. We are interested in the comparative magnitude of CEOs' vs. CFOs' fixed-effects instead of the direction of the coefficients. We use the clustered firm standard errors in our regression in estimating manager coefficients.

of the CEO's fixed effect coefficients is greater than that of the CFO's fixed effect coefficients[22].

Table 7 presents the results. We find that the F-test statistic is significant for *FNCSKEW, FDUVOL*, and *FlnJumpInAYear* at $p<0.05$ and $p<0.001$ level, suggesting that the fixed-effects coefficients of CEOs are significantly different from those of the CFOs. Also, the mean absolute coefficients of CEOs are significantly larger than that of the CFOs for the crash and jump risk measure of *FNCSKEW, FDUOVL, and FlnJumpInAYear*. This is consistent with our directional conjecture that CEOs have a stronger influence than CFOs when it comes to affecting firm-level policies (Feng et al. 2010, Friedman 2014).[23]

We also use the two-sample Kolmogorov-Smirnov test for equality of distribution function to compare the p-values of coefficients of switcher manager dummies in the CEO and CFO sample. Untabulated results show that the p-value is larger in the CEO sample than that in the CFO sample for the second and third crash risk measure and the jump risk measure.

[INSERT TABLE 7]

4.4. Manager observable characteristics and firm crash/jump risk

[22] Prior literature suggests that powerful CEOs have influence over CFOs' decisions and that CFOs may succumb to a CEO's pressure to engage in earnings manipulation for the CEO's personal benefits (Bishop, DeZoort, and Hermanson 2017; Feng et al. 2011; Adams, Almeida and Ferreira 2005). Given the findings that CEO in general has stronger influence over firm policies, we hypothesize a directional relationship between the CEO and CFO's fixed-effects.

[23] However, our result is not consistent with Kim et al. (2011)'s findings where CFO's equity incentives plays a stronger role in affecting firm's stock price than that of the CEO's. However, Kim et al. have only examined one observable manager trait – equity incentives – which only reflects a small fraction of an individual's idiosyncrasies. It is not surprising that after including a stronger, more comprehensive measure of individual idiosyncrasies – managers' fixed-effects – the result changes.

Table 8 presents the descriptive statistics of CEO's and CFO's demographic variables: civic position,[24] age cohort (whether the manager was born before or after the end of World War II), political orientation (Democratic vs. Republican Party affiliation), family status (married with children or not), professional qualifications (CPA, Juris Doctor, and MBA degrees), gender (male and female), and military experience. The sample contains only switcher CEOs and CFOs identified from the ExecuComp database with non-missing crash/jump risk measures, control variables, and demographic information. Our final regression sample is reduced to 329 CEOs and 237 CFOs with 1,887 and 1,367 firm-years, respectively.[25] The table shows that about half of the sample CEOs hold civic position(s) at least once during their career, and about one-third of the sample CFOs do. 35.6% of CEOs and 9.3% of CFOs are born before the end of World War II. While less than 1% of CEOs and CFOs are Democrats, around 10% and 7% of them are Republicans. More than half of our CEOs are married with children, while only about 38% of CFOs are so. Only 8.5% of our sample CEOs have CPA qualifications, while close to half (45.6%) of the CFOs have CPAs. Interestingly, more than half the CFOs have an MBA degree, while only a little more than a third of the CEOs have such

[24] We obtain executive's civic position titles from Marquis Who's Who. A civic title refers to a membership title of someone who advises on and supervises the activities of a non-profit organization that addresses public concerns and promotes quality of life in the community. One example of executives holding a civic position is Gary Heminger, CEO of Marathon Petroleum since 2011, who also holds a civic position as the Chairman of the Board of Trustees of Tiffin University. Another example is Christopher J. Nassetta, President and CEO of HILTON WORLDWIDE HOLDINGS since 2007, who also hold the following positions: member of the Board of Directors of the Wolf Trap Foundation for the Performing Arts, Member of the Advisory Board of the University Virginia McIntire School Commerce, etc. It is possible that executives with civic positions are associated with higher ethical standards or reputational concerns, and thus are associated with a lower level of bad news hoarding.

[25] Unlike our main fixed-effects test, we did not specifically exclude those managers who lose matching managers as a result of merging multiple databases. This is because instead of trying to capture the incremental, idiosyncratic fixed-effects of switching managers relative to their matching managers, we are primarily interested in effects of the cross-sectional variation in manager's observable characteristics on the firm-level stock price crash and jump risk. We include firm and year fixed-effects to control for unobserved time and firm factors and use the robust standard errors to control for heteroskedasticity.

a degree. About 15% of CEOs have a law degree, while only less than 5% of the CFOs have a law degree. In addition, males are overwhelmingly represented in the CEO and CFO sample (more than 90%). Also, a little less than 10% of CEOs previously served in the military, while less than 5% of CFOs have military experience.

[INSERT TABLE 8 HERE]

Table 9 presents the results of the effect of CEOs' observable characteristics on the firm-level stock price crash/jump risk. We find that CEO's CPA qualifications are associated with higher firm-specific stock price crash risk. This is not surprising, as CEOs with CPAs are more capable of concealing bad news in accounting numbers given their accounting expertise, and they are more likely to persuade CFOs to collaborate with this. The MBA degrees of CEOs are associated with lower stock price crashes. This is not surprising, as prior research has suggested that MBAs may be more likely to be aware of penalties from the market when they fail to meet their own earnings forecast (Chen 2004), resulting in a more conservative disclosure style. They also tend to value conformity and conventionality as a group of social elites (Finkelstein and Hambrick 1994). We also find that managers with JD degree are associated with higher jump risk, and this is consistent with the notion that lawyers are more conservative in disclosing good news as they understand well the litigation risk associated with it. The evidence on the association between holding a civic position and stock price crash risk is inconclusive as we find a statistically significant association only for the first crash risk measure.

[INSERT TABLE 9 HERE]

Table 10 presents the results of the effect of CFOs' observable characteristics on firm-level crash/jump risk. Interestingly, we find that CFOs with military experience are associated with higher stock price crash risk, suggesting they tend to be more aggressive in withholding bad news.[26] In addition, we find that CFOs who are married with kids are associated with lower crash risk, consistent with prior findings that married managers (CEOs) exhibit lower firm-level earnings management and are thus less likely to embed bad news in earnings numbers (Hillary, Huang, and Xu 2017). We find marginal evidence that CFOs born before WWII are more conservative and are associated with lower crash risk as the coefficient of WWIICohort is marginal negative for the first crash risk measure. Also, we find marginal evidence that Republican CFOs are associated with a higher number of crashes. In addition, there is some evidence that married CFOs are associated with a higher stock price jump risk – they tend to have a more conservative good news withholding style. This is not surprising, as a manager who has a family to raise may have a greater sense of responsibility and tend to be more conservative and risk-averse (Roussanov and Savor 2014).

[INSERT TABLE 10]

5. Conclusion:

[26] This is contrary to findings of previous studies that military CEOs tend to be associated with more conservative managerial decisions such as financial reporting (Bamber et al. 2010; Law and Mills, 2016; Schoar and Zuo 2016). However, Cain and McKeon (2016) have also suggested that past military experience may be associated with risk taking and correlated with the likelihood that a CEO possesses a pilot's license.

Prior literature has documented that managers' bad/good news withholding, which manifests as a number of firm-level characteristics, culminates in a firm-level stock price crash and jump risk (Jin and Myers 2003, Kim et al. 2011, 2014, 2016, and so on). Driven by previous findings that managers bring their idiosyncratic managerial styles to the firms they work for (for example, Ge et al. 2011; Bertrand and Schoar 2003), we link the two streams of literature and investigate the cause of stock price crashes/jumps from the perspective of managerial fixed-effects.

Following the empirical framework in the fixed-effects literature, we track 133 CFOs and 299 CEOs who worked for multiple firms in a sample period of 1992 to 2013 and examine whether these managers' idiosyncratic effects on firm-level stock price crash and jump risk moved with them. We use the one-year forward number of stock price crashes (and jumps), negative skewness of stock return distribution, and down-to-up volatility ratio of the stock returns to capture firms' stock price crash and jump risk.

We find that both our CEO and CFO sample managers are associated with fixed-effects on all crash and jump risk measures at $p<0.001$ level. Our results are robust to a number of additional analyses, including the placebo test, tenure restriction, managerial overconfidence, industry analysis, the big-bath alternative explanation, and so on. In addition, we find some evidence that the CEO's fixed-effects are stronger than those of the CFO's. Prior studies document that managers have fixed-effects on a number of bad news withholding channels, including earnings management, management guidance, and tax avoidance. We differentiate our findings from previous studies by documenting that managers have fixed-effects on

channels other than the aforementioned bad/good news withholding channels. The "other channels," for example, press release, social media, SEC 8-K disclosure, and possibly word-of-mouth, are measured parsimoniously by the residual crash/jump risk after parsing out the effects of the three aforementioned firm characteristics. Lastly, we examine the observable characteristics of managers and find that a CEO's professional qualifications (for example, MBA and JD degree and CPA) and a CFO's family status and military experience seem to be associated with the stock price crash and jump risk.

This paper contributes to the literature on crash risk and of managers' fixed-effects in several ways. First, and to the best of our knowledge, this paper is the first to link the two streams of literature and document the effect of manager idiosyncrasies on firm-level stock price crash and jump risk without the need to examine specific observable personal characteristics of managers.

Second, while prior studies show that firm-level accounting and tax characteristics are predictors of future stock crash incidences (Hutton et al. 2009; Kim et al. 2011a,b; Hamm et al. 2014), our managers' fixed-effects encompass a wider range of news withholding techniques of managers, including social media, form 8-K disclosure, and so on, which are captured parsimoniously using a residual crash risk measure.

Third, our study is the first, to our knowledge, to find a stronger CEO influence over that of CFOs in affecting stock price crash/jump risk. Although our findings contradict Kim et al.'s (2011b) finding on the importance of the CFO's equity incentives on stock price crash risk, it

provides new evidence on the dynamics between the CEO and CFO and how they impact firm performance.

Lastly, this paper adds to the evidence that a semi-efficient market does not read into CEOs' and CFOs' idiosyncrasies in bad/good news withholding when evaluating a firm (Kim et al. 2016), either due to the unavailability of information regarding managers' styles or incomplete digestion of publicly available demographic characteristics of managers. It results in overestimating firm-level stock price and a price crash when the manager suddenly releases accumulated news contrary to the market's expectation. One implication of this paper is to warrant investors and boards of directors to take caution in assessing managers' behavioral patterns in bad news withholding if stakeholders are concerned with the effect of any extreme stock price movements in the future.

However, there are a few caveats to our paper. First, we do not intend to capture the information content of the news disclosure directly (Chung et al. 2015), which causes stock price crashes and jumps. In the future, one way to do so is to measure the stock returns around the 8-K disclosure and examine the manager's fixed-effects on the market reaction directly. Second, even with utilizing the manager switches sample and controlling for firm fixed-effects, we cannot fully eliminate the possibility that our results are driven by the manager-firm mutual selection based on shared managerial philosophy or styles rather than by active influence of the manager on the firm. Third, we recognize that our sample is biased by including only the large firms and firms with manager switches. Thus, our results may not be generalizable to the

manager population of smaller firms or of firms not included in the sample due to missing information on manager switches.

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Appendix A Variable Definitions

Dependent Variables

Firm-Specific-Weekly Return (W_{t+1}) is equal to ln(1+ε), where ε is the residual from the following expanded market model regression:

$$r_{j,t} = \alpha + \beta_{1j} r_{m,t-1} + \beta_{2j} r_{m,t} + \beta_{3j} r_{m,t+1} + \beta_{4j} r_{i,t-1} + \beta_{5j} r_{i,t} + \beta_{6j} r_{i,t+1} + \varepsilon_{ji},$$

where $r_{j,t}$ is the CRSP return on firm j in week t , and rm,t is the fama-french industry-weighted market index in week t.

$FlnCrashInAYear_{t+1}$ is the forward one-year of the natural logarithm of (1+Number of Crash Incidences In A Year). A crash incidence is when firm-specific weekly returns falls 3.2 standard deviation below the mean firm-specific weekly returns, following prior literature (Hutton et al. (2009), Kim et al.(2010ab), Kim and Zhang (2014), etc).

$FlnJumpInAYear_{t+1}$ is the forward one-year of the natural logarithm of (1+Number of Jump Incidences In A Year). A jump incidence is when firm-specific weekly returns goes up to 3.2 standard deviation above the mean firm-specific weekly returns, following prior literature (Hutton et al. (2009), Kim et al.(2010ab), Kim and Zhang (2014), etc).

$FNCSKEW_{t+1}$ is forward one-year negative skewness of future firm-specific-weekly return over the fiscal year period, calculated in the following equation

$$Crash2_{j,t+1} = -[n(n-1)^{3/2} \Sigma W^3_{j,t+1}] / [(n-1)(n-2)(\Sigma W^2_{jt+1})^{3/2}].$$

where n is the number of firm-specific weekly returns in a year, and W is the firm-spcific weekly return.

$FDUVOL_{t+1}$ is the forward one-year log of the ratio of the standard deviations of down-week to up-week firm-specific returns.

$ResFlnCrashInAYear_{t+1}$, $ResFJumpInAYear_{t+1}$, $ResFNCSKEW_{t+1}$, $ResFDUVOL_{t+1}$ are the residual crash/jump risk measures estimated from model (7) as a measure of the residual crash/jump risk that is explained by manager's fixed effects after controlling for firm fixed-effects , main bad news withholding channels documented by existing literature and main control variables.

Independent Variables -- Control Variables

$DTURN_{t+1}$ is the average monthly share turnover over the current fiscal year period, minus average monthly share turnover over the previous fiscal year period, where monthly share turnover is calculated as the monthly trading volume divided by total number of shares outstanding during the month.

NSKEWt is the current year negative skewness of firm-specific weekly returns, defined in $Crash2_{t+1}$.

SdW_t is the standard deviation of the firm-specific-weekly return over the fiscal year period.

This appendix continues on the next page.

RET_t is the mean of the firm-specific-weekly return over the fiscal year period.

$Size_t$ is the log of total asset.

MB_t is the market value of equity divided by book value of equity.

LEV_t is the total long-term debts divided by total assets.

$fROA_{t+1}$ is the future return on asset, return on asset is defined as income before extraordinary items divided by lagged asset.

$DISACC_t$ is the signed discretionary accruals, where discretionary accruals are estimated from the modified Jones model (Dechow et al., (1995)).

OC_t =1 if manager is an overconfident manager in year t, 0 otherwise. Overconfidence is defined following Kim,Wang and Zhang (2016) as a manager-years starting the second time that the manager hold stock options that are more than 100% in-the-money.

Demographic Variables

Civic =1 if manager hold a civic position, 0 otherwise.

WWIICohort =1 if the manager is a pre-WWII cohort, i.e. born before year 1945, 0 otherwise.

PolitDem =1 if manager is a democratic party member, 0 otherwise.

PolitRep =1 if manager is a republican party member, 0 otherwise.

MarriedwChildren =1 if manager is married with children, 0 otherwise.

CPA =1 if manager has a Certified Public Accountant qualification, 0 otherwise.

MBA =1 if manager has a MBA degree, 0 otherwise.

JD =1 if manager has a Juris Doctor degree, 0 otherwise.

Gender =1 if manager is male, 0 if female.

Table 1 Sample Selection and Sample Description

Panel A Sample Selection

Sample period of fiscal-year 1992-2013	Number of CEO	CEO sample observations	Number of CFO	CFO sample observations
All managers on ExecuComp	6,898	37,361	6,754	29,884
Switcher managers identified	759	10,495	576	10,243
Observations loss due the calculation of crash(jump) risk measures	-124	-2302	-19	-2684
Remaining	635	8,193	557	7,559
Observations loss due the calculation of conrol variables	-61	-815	-37	-219
Remaining	574	7,378	520	7,340
Observations associated with switcher managers who lost matching managers due to database merging and the calculation of control variables	-441	-4386	-221	-1868
Final Regression Sample	133	2,992	299	5,472

Table continues on the next page

Table 1 Continued

Panel B Frequency of managers based on number of job changes

CEO sample				CFO sample			
N of changes	Freq of CEOs	Percentage (%)	Number of CEO-firm	N of changes	Freq of CFOs	Percentage (%)	Number of CFO-firm
1	126	95%	972	1	253	84.62%	1,667
2	7	5%	69	2	40	13.38%	378
Total	133	100%	1,041	3	6	2.01%	59
				Total	299	100.00%	2,104

Panel C Frequency of switching managers based on work tenure at each firm

CEO sample			CFO sample		
Years in each firm	Number CEOs	Percentage (%)	Years in each firm	Number CFOs	Percentage (%)
1	58	5.57%	1	178	8.46%
2	118	11.34%	2	268	12.74%
3	132	12.68%	3	255	12.12%
4	104	9.99%	4	340	16.16%
5	105	10.09%	5	335	15.92%
6	132	12.68%	6	246	11.69%
7	98	9.41%	7	217	10.31%
8	72	6.92%	8	136	6.46%
9	45	4.32%	9	18	0.86%
10	50	4.80%	10	30	1.43%
11	33	3.17%	11	44	2.09%
12	36	3.46%	12	24	1.14%
13	13	1.25%	13	13	0.62%
14	14	1.34%	Total	2104	100.00%
15	15	1.44%			
16	16	1.54%			
Total	1041	100.00%			

Table continues on the next page.

Table 1 Continued

Panel D Frequency of firms based on the number of different managers

NumberCEOs	Freq of firms	Percentage %	CEO firm-yeras	NumberCFOs	Freq of firms	Percentage %	CFO firm-years
1	46	18.47%	166	1	64	11.99%	208
2	60	24.10%	551	2	130	24.34%	927
3	61	24.50%	844	3	143	26.78%	1,660
4	59	23.69%	1,002	4	121	22.66%	1,609
5	17	6.83%	309	5	56	10.49%	763
6	5	2.01%	100	6	13	2.43%	187
7	1	0.40%	20	7	6	1.12%	102
Total	249	100.00%	2992	8	1	0.19%	16
				Total	534	100.00%	5472

Panel A illustrates the sample selection process. Panel B shows the frequency of managers' job changes for the manager-firm matched sample. Panel C shows the frequency of managers based on the number of years in their tenure in each firm in our sample. Panel D presents the frequency of the firms for the CFO-firm matched sample, based on how many different managers have worked in each firm.

Table 2 Sample Descriptive Statistics of Dependent and Independnet Variables

Panel A Main Fixed Effects Sample (illustrated in the combination of the CEO and CFO sample)

Variables	N	Mean	Std.Dev	Min	p25	p50	p75	Max
FlnCrashInAYear	7,472	0.231	0.437	0.000	0.000	0.000	0.000	2.000
FlnJumpInAYear	7,472	0.140	0.352	0.000	0.000	0.000	0.000	2.000
FNCSKEW	7,472	0.142	0.806	-5.390	-0.293	0.092	0.500	5.693
FDUVOL	7,472	0.054	0.353	-1.493	-0.172	0.052	0.266	1.799
DTURN	7,472	0.006	0.121	-2.049	-0.023	0.004	0.033	2.403
NCSKEW	7,472	0.140	0.730	-1.671	-0.292	0.087	0.491	2.707
MeanW	7,472	-0.001	0.009	-0.033	-0.005	0.000	0.004	0.023
SdW	7,472	0.058	0.031	0.018	0.037	0.051	0.071	0.182
Size	7,472	7.577	1.528	3.890	6.526	7.478	8.580	11.387
MB	7,472	3.043	3.877	-12.952	1.431	2.158	3.514	28.724
LEV	7,472	0.191	0.162	0.000	0.049	0.168	0.294	0.746
DISACC	7,472	-0.003	0.094	-0.362	-0.044	-0.003	0.040	0.307
fROA	7,472	0.045	0.098	-0.374	0.014	0.047	0.090	0.342

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Table 2 Continues

Panel B. Comparison of the Main Fixed Effects Regression Sample and the Intersection of ExecuComp, Compustat and CRSP

	Main Fixed Effects Regression Sample (a)		Intersection of the ExecuComp, Compustat and CRSP sample (b)		Mean of Sample (a) - Mean of Sample (b)	
Variables	N	Mean	N	Mean	Diff.	t-stat
FlnCrashInAYear	7,472	0.231	29,055	0.217	0.014 **	0.011
FlnJumpInAYear	7,472	0.140	29,055	0.145	-0.004	0.339
FNCSKEW	7,472	0.142	29,055	0.107	0.033 ***	0.001
FDUVOL	7,472	0.054	29,055	0.035	0.019 ***	0.000
DTURN	7,472	0.006	29,055	0.005	0.001	0.434
NCSKEW	7,472	0.140	29,055	0.105	0.035 ***	0.000
MeanW	7,472	-0.001	29,055	-0.001	0.000 **	0.019
SdW	7,472	0.058	29,055	0.059	0.000	0.395
Size	7,472	7.577	29,055	7.063	0.513 ***	0.000
MB	7,472	3.043	29,055	3.082	-0.039	0.381
LEV	7,472	0.191	29,055	0.181	0.010 ***	0.000
DISACC	7,472	-0.003	29,055	0.000	-0.003	0.047
fROA	7,472	0.045	29,055	0.051	-0.005 ***	0.000

This table shows the descriptive statistics of the dependent and independent variables in our main regression which examines CEO and CFO's fixed effects on crash/jump risk. In Panel A, we show the statistics for a CEO and CFO combined sample for illustrative purporse here. In Panel B, we show a comparison of our main fixed effects sample which includes only firms with switching managers and a regular sample which is a natural intersection of the ExecuComp, Compustat and CRSP. We test for difference in means of the dependenat and independent variables between the two samples using the student's t-test. Two-tailed p-values and signifciance levels are reported. Please see the Appendix for variable definition. All variables are winsorized at 1% top and bottom. The significance levels are denoted using ***, ** and * for $p<0.1$, $p<0.05$ and $p<0.01$.

Table 3 CEO fixed-effects on firm-specifci stock price crsah(jump) risk

Panel A F-test of the fixed-effects of the switching CEOs

	FlnCrashInAYear	*FlnJumpInAYear*	*FNCKSEW*	*FDUVOL*
F-test Mgr Fixed F-test	F(133, 2581) = 4.07 Prob > F = 0.0000	F(133, 2581) = 14.53 Prob > F = 0.0000	F(133, 2581) = 2.69 Prob > F = 0.0000	F(133, 2581) = 2.80 Prob > F = 0.0000
F-test Economic Parameters, firm and year fixed effects	F(9, 2581) = 4.87 Prob > F = 0.0000	F(9, 2581) = 2.42 Prob > F = 0.0097	F(9, 2581) = 6.52 Prob > F = 0.0000	F(9, 2581) = 8.84 Prob > F = 0.0000
N CEO	133	133	133	133
N	2,992	2,992	2,992	2,992
Adj R^2	6.55%	4.65%	8.74%	10.34%
Adj R^2 *of the restricted model*	5.91%	2.62%	6.49%	8.84%
Raw % of increase	0.65%	2.03%	2.25%	1.50%
Relative % of increase	10.98%	77.39%	34.72%	16.94%
Firm fixed-effects	yes	yes	yes	yes
Year fixed-effects	yes	yes	yes	yes
Robust standard errors	yes	yes	yes	yes

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Table 3 Continued

Panel B Distribution of CEOs fixe- effects

	Fixed-effects of switching CEOs in regression						
	N	Mean	25th pctile	Median	75th pctile	**Δ**(75th-25th)	Increase in Crash(Jump)
FlnCrashInAYear	133	0.012	-0.087	-0.001	0.109	0.196	0.217
FNCSKEW	133	-0.056	-0.327	-0.002	0.255	0.582	0.789
FDUVOL	133	-0.023	-0.132	-0.018	0.131	0.262	0.300
FJumpInAYear	133	0.019	-0.100	-0.026	0.084	0.183	0.201

Panel C Comparison of Actual and Expected Number of Managers with Significant Fixed-Effects

	Number of CEOs	Manager FE significant at p<0.1		Manager FE significant at p<0.05		Manager FE significant at p<0.01	
		Actual	Expected	Actual	Expected	Actual	Expected
FlnCrashInAYear	133	33	13.3	26	7	7	1.33
FNCSKEW	133	33	13.3	26	7	9	1.33
FDUVOL	133	37	13.3	24	7	11	1.33
FJumpInAYear	133	45	13.3	25	7	10	1.33

Panel A presents the results of the F-test on the joint significance of switcher CEO dummies , after controlling for economic determinants, and year- and firm-specific fixed effects. Robustness standard erorrs are used for correct for heterskedasicity. We have also computed the the increase in the adjusted R-square of model (4) (main model) from the restricted model (model (5)) both in the absoluate percentage and the relative percentage. The relative percentage is calculated as the (Adj.R^2 of full model - Adj.R^2 of restricted model)/Adj.R^2 of restricted model. The significance levels are denoted using ***, ** and * for p<0.1, p<0.05 and p<0.01.

Panel B shows the distribution of the coefficeints (fixed effects) of our 133 switching CEOs in mean, 25th percentile, median, 75th percentile and the change in coefficients from the lower quartile to the higher quartile.

Panel C presents the comparison of the actual number of CEOs who have fixe effects on the dependent variables at each significance level (p<0.1, p<0.05 and p<0.01). The actual number of CEOs are obatined from Panel B and the expected number of CEOs are calculated as the total switching CEOs (N=133) times the probability area under each significance level. For example, the expected number of CEOs at p<0.1 level is calculated as 133 times 0.1 which equals to 13.3.

Table 4 CFO Fixed-effects on firm-specific crash(jump) risk

Panel A F-test of the fixed-effects of the switching CFOs

	FlnCrashInAYear	*FlnJumpInAYear*	*FNCSKEW*	*FDUVOL*
F-test Mgr Fixed-effects	F(299, 4610) = 6.12 Prob > F = 0.0000	F(299, 4610) = 5.08 Prob > F = 0.0000	F(299, 4610) = 2.51 Prob > F = 0.0000	F(299, 4610) = 2.10 Prob > F = 0.0000
F-test Economic Parameters	F(9, 4610) = 8.60 Prob > F = 0.0000	F(9, 4610) = 5.52 Prob > F = 0.0000	F(9, 4610) = 14.13 Prob > F = 0.0000	F(9, 4610) = 16.35 Prob > F = 0.0000
N CFO	299	299	299	299
N	5,472	5,472	5,472	5,472
Adj R^2	4.67%	3.32%	9.01%	9.61%
Adj R^2 of the restricted model	4.43%	3.18%	8.18%	9.50%
Raw increase of Adj R^2	0.24%	0.14%	0.82%	0.11%
Relative increase in R^2	5.47%	4.44%	10.06%	1.12%
Firm fixed-effects	yes	yes	yes	yes
Year fixed-effects	yes	yes	yes	yes
Robust standard errors	yes	yes	yes	yes

Is this increase too small?

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Table 4 Continued

Panel B Distribution of CEOs fixed-effects

	N	Mean	25th pctile	Median	75th pctile	△(75th-25th)	% change in
FlnCrashInAYear	299	0.006	-0.115	0.004	0.117	0.231	26.03%
FNCSKEW	299	-0.005	-0.291	0.022	0.266	0.557	74.53%
FDUVOL	299	0.008	-0.115	0.017	0.138	0.253	28.82%
FJumpInAYear	299	0.004	-0.098	-0.020	0.093	0.191	21.04%

Panel C Comparison of Actual and Expected Number of Managers with Significant Fixed-Effects

	Number of CFOs	Manager FE significant at p<0.1		Manager FE significant at p<0.05		Manager FE significant at p<0.01	
		Actual	Expected	Actual	Expected	Actual	Expected
FlnCrashInAYear	299	67	29.9	42	15	14	2.99
FNCSKEW	299	58	29.9	35	15	13	2.99
FDUVOL	299	45	29.9	30	15	15	2.99
FJumpInAYear	299	65	29.9	40	15	11	2.99

Panel A of this table presents the results of F-test on the joint significance of the switcher CFO dummies, after controlling for economic determinants, and year- and firm-specific fixed effects. Robustness standard erorrs are used for correct for heterskedasicity. We have also computed the the increase in the adjusted r-square of model (1) (full model) from the restricted model (model (2)) both in the absoluate/raw percentage and the relative percentage. The relative percentage is calculated as the (Adj.R^2 of main model - Adj.R^2 of restricted model)/Adj.R^2 of restricted model.

Panel B shows the distribution of the coefficeints (fixed effects) of our 133 switching CEOs in mean, 25th percentile, median, 75th percentile and the change in coefficients from the lower quartile to the higher quartile.

Panel C presents the comparison of the actual number of CFOs who have fixe effects on the dependent variables at each significance level (p<0.1, p<0.05 and p<0.01). The actual number of CFOs are obatined from Panel B and the expected number of CFOs are calculated as the total switching CFOs (N=299) times the probability area under each significance level. For example, the expected number of CFOs at p<0.1 level is calculated as 133 times 0.1 which equals to 29.9.

Table 5 Robustness Test -- Real Data v.s. Placebo Data

	Panel A CEO Sample		Panel B CFO Sample	
	$Crash/JumpRisk_A$		$Crash/JumpRisk_A$	
	(1)	(2)	(1)	(2)
$Crash/JumpRisk_{j+1}$	Real Data	Placebo data	Real Data	Placebo data
$FlnCrashInAYear_B$	0.194*	-0.0426	0.376***	-0.173
t-stat	-1.74	(-0.23)	(2.80)	(-1.29)
$Adj\ R^2$	0.058	-0.056	0.089	0.015
$FNCSKEW_B$	0.131	-0.0192	0.488***	-0.160
t-stat	-1.24	(-0.17)	(3.04)	(-1.45)
$Adj\ R^2$	0.016	-0.051	0.126	0.031
$FDUVOL_B$	0.254*	-0.0312	0.631***	-0.204
t-stat	-2.02	(-0.22)	(3.35)	(-1.12)
$Adj\ R^2$	0.081	-0.050	0.170	0.008
$FlnJumpInAYear_B$	0.279**	0.103	0.396***	-0.305**
t-stat	-2.13	-0.6	(3.98)	(-2.12)
$Adj\ R^2$	0.076	-0.022	0.188	0.077

This table presents the results of the placebo test for the CEO and CFO samaple. Column(1)s presents the results of the real data regression while column(2)s present the result of the placebo data regression. Each cell is associated with a regression. Assume a manger worked in both firm A and B consecutively. In the Real Data, we regress average residauls of each manager's appointment in firm A on that of firm B. The residuals are estiamted using model (5) where it is arguably the portion of crash/jump risk associated with managers fixed effects after controlling for year and firm fixed-effects and standard control variables. In the Placebo Data, we take the residuals of firm B in the three years immediately preceeding the start of managers' appointment with the firm. Then we regress the average of such resdiauls on the residuals of the same years in firm A. Essentially, we are trying to disentangle the effect of firm style which may be shared by firm A and B from managers' fixed effects on the crash risks.

The significance levels (two-tailed t-test) of the coefficeints estimates are denoted using ***, ** and * for $p<0.1$, $p<0.05$ and $p<0.01$.

Table 6 Managers' fixed-effects on other channels of bad news withholding and stock price crsah(jump) risk

Panel A CEOs' fixed-effects on Residuals estimated from first step regression

	ResFlnCrashInAYear	*ResFlnJumpInAYear*	*ResFNCKSEW*	*ResFDUVOL*
F-test Mgr Fixed-effects	F(92, 1075) = 1.25	F(92, 1075) = 1.28	F(92, 1075) = 1.57	F(92, 1075) = 1.35
	Prob > F = 0.0616	Prob > F = 0.0448	Prob > F = 0.0007	Prob > F = 0.0185
N CEO	92	92	92	92
N	1,168	1,168	1,168	1,168
Adj R^2	1.93%	2.15%	4.33%	2.69%

Panel B CFOs' fixed-effects on Residuals estimated from first step regression, controlling for concurrent CEO

	ResFlnCrashInAYear	*ResFlnJumpInAYear*	*ResFNCKSEW*	*ResFDUVOL*
F-test Mgr Fixed-effects	F(208, 2160) = 2.25	F(208, 2160) = 1.77	F(208, 2160) = 1.96	F(208, 2160) = 1.88
	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000
N CFO	208	208	208	208
N	2,369	2,369	2,369	2,369
Adj R^2	9.86%	6.36%	7.81%	7.15%

This table presents the results of the examination of whether managers exerts their fixed effects from "other channels". Specifically, we first calculate the residuals, u_{it}, from model (7) where main managers' bad news withholding channels documented by existing studies have been included. Therefore, u_{it}, is a measure of the extent of bad news withholding through the "other channels" such as social media, word of mouth , traditional press release and other SEC disclosures such as 8-K. Second, we regress u_{it} from the step one regression on the switcher dummies (model 8a and 8b) and use the F-test for investigate whether switching CEOs and CFOs still have fixed effects on the residuals, i.e."other channels". The F-statistics are displayed for each crash/jump risk measure. The significance-level of the test statistic is denoted as *,** and *** for $p<0.1$, $p<0.05$ and $p<0.01$.

Table 7 Comparison of CEO and CFO fixed-effects

	(1)CEOs' Fixed-effects Coefficients		(2)CFOs' Fixed-effects Coefficients		(3) CEO minus CFO	
	count	Absoluate Mean Coeff.	count	Absoluate Mean Coeff.	Difference In Means, Student t-test	F-test of difference in CEO v.s. CFO coefficients
FlnCrashInAYear	132	0.143	298	0.146	0.00284	0.08
FNCSKEW	132	0.437	298	0.373	-0.0645 *	4.61**
FDUVOL	132	0.183	298	0.156	-0.0268**	4.26**
FlnJumpInAYear	132	0.143	298	0.113	-0.0297***	12.72***

This table presents the results of the comprison of the fixed effects between the switcher CEOs and CFOs. We merge the main fixed effects sample of the CEOs and CFOs and run the OLS regression based on model (9). We take the absoluate value of the fixed effect coefficeints and calculated the mean of the absolute value for CEOs and CFOs respectively. To compare the fixed effects of CEO and CFO's, we conduct the student's t-test on the differences in means. One-tailed t-statistic is presetned. In addition, we carry out F-test to test for the equality betewen the coefficients of CEO and CFO dummies.

The significance levels are denoted using ***, ** and * for $p<0.1$, $p<0.05$ and $p<0.01$.

Table 8 Descriptives of Demographic Manager Characteristics

	CEO Sample		CFO Sample	
Demographic Variable	NumberCEO	mean	NumberCFO	mean
Civic	329	0.500	237	0.354
WWIICohort	329	0.356	237	0.093
PolitDem	329	0.009	237	0.008
PolitRep	329	0.103	237	0.068
MarriedwChildren	329	0.550	237	0.384
CPA	329	0.085	237	0.456
MBA	329	0.365	237	0.544
JD	329	0.155	237	0.042
Gender	329	0.967	237	0.907
Military	329	0.094	237	0.046

This table presents the descriptive statistics of the managers' observable demographic variables, including their age cohort, political orientation, marital status, educational and professional background and gender. Variable definitions are available in the Appendix. Our sample include 329 switching CEOs and 237 switching CFOs after dropping managers without demographic variable observations. Total firm-year observations of the demographic regressions are 1,887 and 1,367 for the CEO and CFO sample (presented in Table 9).

Table 9 Demographic Characteristics of CEO and Stock Price Crash and Jump Risk

	(1)	(2)	(3)	(4)
	FlnCrashInAYear	*FNCSKEW*	*FDUVOL*	*FlnJumpInAYear*
Civic	-0.102**	-0.197	-0.034	-0.023
	-2.011	*-1.442*	*-0.542*	*-0.514*
WWIICohort	0.033	0.131	0.043	0.001
	0.571	*0.941*	*0.663*	*0.021*
PolitDem	-0.289	-0.296	-0.103	0.021
	-1.319	*-0.452*	*-0.392*	*0.11*
PolitRep	-0.085	-0.084	-0.013	-0.085
	-0.817	*-0.42*	*-0.124*	*-1.068*
MarriedwChildren	0.062	0.05	0.03	0.024
	0.969	*0.361*	*0.481*	*0.529*
CPA	0.220***	0.656***	0.263**	-0.027
	3.832	*2.651*	*2.403*	*-0.49*
MBA	-0.175***	-0.391**	-0.170**	0.024
	-2.597	*-2.568*	*-2.253*	*0.398*
JD	0.031	0.174	0.082	0.177**
	0.23	*0.669*	*0.716*	*2.067*
Gender	-0.026	-0.023	0.031	0.054
	-0.17	*-0.09*	*0.247*	*0.566*
Military	0.04	0.072	0.032	0.037
	0.276	*0.291*	*0.287*	*0.457*
_cons	0.117	-0.028	-0.256	0.011
	0.451	*-0.036*	*-0.811*	*0.051*
	Results on the other control variables are omitted from display for simplicity. Results are available upon requests.			
Year Fixed Effects	*yes*	*yes*	*yes*	*yes*
Firm Fixed Effects	*yes*	*yes*	*yes*	*yes*
Robust Standard Errors	*yes*	*yes*	*yes*	*yes*
N	*1887*	*1887*	*1887*	*1887*
Adj.R^2	*0.067*	*0.131*	*0.128*	*0.057*

This table reports the regression results (model (10)) of each crash/jump risk variable on CEOs' demographic characteristics. Each column corresponds to a different regression. Control variables are included in the model but omitted from the display. Reported are the esimated coefficients of each demographic variables and the t-stat (below the coefficient). All variables are winsored at 1% top and bottom. Year and firm fixed effects are included and we use robust standard errors. Significance levels are denoted by *,**, *** for p<0.1, p<0.05 and p<0.01.

Table 10 Demographic Characteristics of CFO and Stock Price Crash and Jump Risk

	(1)	(2)	(3)	(4)
	FlnCrashInAYear	*FNCSKEW*	*FDUVOL*	*FlnJumpInAYear*
Civic	0.088	0.191	0.084	-0.046
	0.963	*0.871*	*0.878*	*-0.64*
WWIICohort	-0.155*	-0.293	-0.114	0.062
	-1.96	*-1.608*	*-1.352*	*0.997*
PolitDem	0.151	-0.392	-0.25	0.2
	0.597	*-0.744*	*-1.006*	*1.282*
PolitRep	0.267*	0.487	0.257	-0.124
	1.898	*1.157*	*1.315*	*-0.827*
MarriedwChildren	-0.210**	-0.471**	-0.214**	0.148*
	-2.234	*-2.071*	*-2.074*	*1.856*
CPA	0.012	-0.027	-0.017	0.067
	0.171	*-0.153*	*-0.221*	*1.124*
MBA	-0.087	-0.259	-0.091	-0.042
	-1.044	*-1.31*	*-0.995*	*-0.594*
JD	-0.04	-0.355	-0.124	-0.092
	-0.358	*-1.323*	*-1.018*	*-1.31*
Gender	0.149	0.014	-0.037	0.042
	1.425	*0.057*	*-0.33*	*0.43*
Military	0.420*	0.886**	0.353**	0.143
	1.952	*2.173*	*2.051*	*0.546*
_cons	0.225	0.431	0.137	-0.063
	0.591	*0.501*	*0.358*	*-0.248*
	Results on the other control variables are omitted from display for simplicity. Results are available upon requests.			
Year Fixed Effects	*yes*	*yes*	*yes*	*yes*
Firm Fixed Effects	*yes*	*yes*	*yes*	*yes*
Robust Standard Errors	*yes*	*yes*	*yes*	*yes*
N	*1367*	*1367*	*1367*	*1367*
Adj.R^2	*0.065*	*0.141*	*0.147*	*0.041*

This table reports the regression results (model (10)) of each crash/jump risk variable on CFOs' demographic characteristics. Each column corresponds to a different regression. Control variables are included in the model but omitted from the display. Reported are the esimated coefficients of each demographic variables and the t-stat (below the coefficient). All variables are winsored at 1% top and bottom. Year and firm fixed effects are included and we use robust standard errors. Significance levels are denoted by *,**, *** for $p<0.1$, $p<0.05$ and $p<0.01$.