General Managerial Skills, Tolerance for Failure, and Stock Price Crash Risk[*]

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Abstract

This study explores whether CEO lifetime work experiences are associated with stock price crash risk. Using an index of CEO general managerial skills, we find evidence that firms featuring CEO with general managerial ability ("generalist" CEOs) experience less stock price crash risk than their counterpart firms featuring specialist CEOs." Our results largely remain the same, after employing firm and CEO fixed effects, alternative crash risk measure, propensity-score matching (PSM) sample, change-on-change model, and instrumental variable approach. The findings are enforced by several explanations. Generalist CEOs have less incentives to hoard the negative information because their broader set of outside employment options create a mechanism of tolerance for failure within the current firm. Generalist CEOs can also manage operational challenges more effectively because their multi-facet skill set equips them with diverse experiences accumulated beyond the current domain of the organization. Moreover, external attention given to generalist CEOs' transfer skills and the market's favorable expectation on their superior performance in complex assignments allow them to promote transparent corporate environments, which supports the conjecture that generalist CEOs reduce negative information hoarding. Consistent with these views, our results are stronger in tight but efficient labor market and industries with greater media coverage, where generalist CEOs' skills are more demanded and easily observed.

JEL Classification: G21, G32
Keywords: Stock price crash risk; CEOs; Information hoarding; Tolerance for Failure

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1. Introduction

Do CEOs matter in Corporate America? Literature finds that the answer to this question is yes. CEO traits and characteristics explain the cross-sectional difference in firm capital structure (Hackbarth, 2008), acquisition decision (Graham et al., 2013), corporate investment (Malmendier and Tate, 2005), earnings management (Ali and Zhang, 2015), corporate innovations (Manso, 2011; Custódio et al., 2017) and firm performance (Kaplan et al, 2012). In this study, we focus on CEOs' lifetime experiences—whether CEOs have accumulated diverse backgrounds from multiple industries or limited to specific industry or firm—and its impact on stock price crash risk (hereafter, crash risk).

A large stock price collapse is one of the primary concerns to market participants, corporate managers, government regulators, and policy makers. Literature examines the *asymmetrical* nature of historical stock performance— a phenomenon that price appreciation is often slowly developed, while price depreciation is sudden (Chen et al, 2001). The determinants of third moment of stock returns or negative skewness from prior studies are many such as accounting practices (Kim et al, 2016), analyst coverages (Xu et al., 2013), production market competition (Ngo et al., 2018), CEO characteristics (Kim et al., 2011a and 2016; Andreou et al., 2017), corporate governance (Andreou et al., 2016a), stock liquidity (Chang et al., 2017), to name a few. A basic argument from these studies states that a CEO has a significant influence on crash risk. More specifically, a CEO hoards bad information, causing it to stockpile until it reaches to a tipping point, and later leading to a large negative drop in stock price. Here, the key point is that the accumulation of bad news is a catalyst for the stock crash (Jin and Myers, 2006). A manager hoards bad news for an extended

period until a tipping point, in order to maximize compensation, protect the current employment, and/or to minimize litigation concerns emanating from bad news disclosure. Then, the question arises: What types of managerial traits or characteristics is related to stock price crash risk? Prior studies find that certain idiosyncratic characteristics of managers who has superior inside formation shape their decision choice to withhold negative news. For example, those attributes of managers, including CEO overconfidence (Kim et al., 2016), cultural background (Fu et al., 2019), CEO age (Andreou et al., 2017,) and others are known to have explanatory power for stock crash risk.

Aligning with extant literature, we attempt to explain the cross-sectional difference in sample firms' crash risk with one particular characteristic of CEOs—their lifetime work experience. We classify our sample CEOs with dichotomous categories, following methodology by Custódio et al. (2013). CEOs with general managerial skills (hereafter, generalist CEOs) have accumulated diverse experiences not specific to any organization and transferable across firms or industries, while CEOs with firm-specific managerial skills (hereafter, specialist CEOs) have been in one industry or one firm, and therefore, are valuable only within an organization.

We conjecture that generalist CEOs are less likely to hoard bad information and rather release bad (or good) information as it occurs. One logic behind the conjecture is that generalist CEOs' diverse business experience allows them to move across industries more easily, as a failure in one place might not necessarily deliver a bad signal of their managerial ability in other industries/firms. Therefore, generalists' mobility across industries/firms promote a labor market mechanism of tolerance for failure (Manso, 2011; and Custódio et al., 2017), which can reduce their incentive to hoard negative information. On the contrary, specialists have less bargaining power in the CEO labor market than generalists, especially in the unfavorable macro-economic

environment. Custódio et al. (2013) argue that gain from a better fit between the hiring firm's objectives and incoming generalist CEO's skill set outweighs cost from losing a firm-specific skill set of outgoing specialist CEOs. Therefore, generalists are paid higher compensation. Recognizing a lack of outside job opportunity and greater career concerns, specialists are more sensitive to termination risk and may choose not to release bad information in a timely manner (Baginski et al., 2018).

The perception of today's labor market about CEOs' diverse business experience provides another support for our conjecture. General managerial skills allow top executives to manage the fast-changing business environment due to industry deregulation (Hubbard and Palia,1995; Cuñat and Guadalupe, 2009a), foreign competition (Cuñat and Guadalupe, 2009b), changes in technology and management practices (Custódio et al., 2017), and to perform better in complex tasks such as restructurings and acquisitions (Custódio et al., 2013). These forces amplify the effect of CEO ability on firm value (Garicano and Rossi-Hansberg, 2006), which leads to the market's favorable treatments and high demand on general managerial skills in today's fast changing business world. We argue that generalist CEOs are less incentivized to hoard bad information than specialist CEOs as such forces and market expectation create greater reputational capital for CEOs with general skills. Relatedly, Haunschild and Rhee (2004) find that generalists respond more to reputation-damaging events among other failures due to their greater visibility.

We investigate whether CEOs being generalist or specialist is directly related to stock price crash risk using the S&P 1500 sample firms from the 1993 to 2007 fiscal year. To measure general managerial skills, we use the General Ability Index (GAI) developed by Custódio et al. (2013). The higher the level of GAI is, the more various industry/firm experiences a CEO has accumulated

over time. Controlling for various firm and CEO characteristics, and industry and year fixed effects, we find robust results that the index of general skills is negatively related to stock crash risk.

Endogeneity can occur in our study due to an omission of important variables and unobservable time-invariant heterogeneity of a firm. To alleviate the omitted variable concerns, we test our baseline model incorporating additional variables of CEO traits and corporate governance, and firm fixed effects. We also perform a change-on-change regression. The primary results stay qualitatively the same under these robustness checks. Another endogeneity source might be the sample selection bias. For example, our estimates will be biased if generalist CEOs self-select or be self-selected into firms with low business risk. We construct the propensity matching (PSM) sample and confirm that the relation between the index of general skills and crash risk is not primarily driven by such endogenous selection of managers or firms.

Lastly, simultaneity (or reverse causality) problem may arise from the fact that unobservable common factors jointly affect both general managerial skills and crash risk. To mitigate the concern of simultaneity, we conduct the two-stage least squares (2SLS) regressions. We use the Garmaise (2009) index on the enforceability of non-compete agreements in the state-year level across positions of the executive who has had in publicly traded firms as an instrumental variable. The labor laws on non-compete agreements prevents executives from moving or forming a competing firm when their contracts are terminated, thus within-industry employee transfers are limited while between-industry transfers are increased (Garmaise, 2009; Marx et al., 2009; Custódio et al., 2017). Thus, we expect the enforcement index to be positively associated with the generalist skills because CEOs have an ex-ante incentive to accumulate more general skills so as to enhance future mobility across different industries when they work in states enforcing stricter non-compete clauses (Custódio et al., 2017). On the contrary, we expect the instrument not to have

an influence on crash risk through the paths other than the indirect path of enhanced motivation to accumulate transferable skills. Our results from the 2SLS regressions using full and PSM samples confirm our predictions and reveal robust results. We also test our models using an alternative dichotomy proxy of stock crash risk and the CEO fixed effects to reduce an influence of time-invariant traits of a CEO. Our results largely remain the same.

For generalist CEOs, the broader set of outside employment options and job mobility across diverse industries act as an executive labor market mechanism of tolerance for failure. This positive mechanism can reduce termination concern in one place, and thereby weaken an incentive to secure a job by delaying bad news when a corporate project fails. This underlying mechanism will become more effective when a CEO's transferable skills are largely demanded and easily observed in labor market. We use the labor market tightness and media coverage intensity of industries to investigate whether the negative relation between generalist CEOs and stock price crash risk is more pronounced. Consistent with this idea, our results become stronger in tight labor markets and industries with intense media coverage.

Our study contributes to the literature of stock price crash risk in several wasys. First, our work complements to the previous finding that CEO style, traits, or characteristics are critical components of firm performance, risk profile, firms' investment policies, and financing decision. This paper is closely related to that of Andreou et al. (2017) in that both studies examine a link between CEO traits and crash risk. Andreou et al. (2017) articulate the importance of CEO age in explaining the cross variation of crash risk. However, our study shed additional insights into literature because CEO age may be mainly proxy for CEO lifetime experiences. CEO age is correlated with her maturity, general work experiences, and other learning effects for CEOs who are going through multi-stages of work experiences. Our study identifies specific types of work

experiences as an important determinant of CEO behavior. In addition, we introduce possible underlying mechanisms that support the finding of the negative relation between the generalist managerial skills and the bad news hording.

The remainder of this paper is organized as follows. In Section 2, we review the related literature and develop hypotheses. Section 3 discusses the sample and empirical design. Main results are presented in Section 4 and Section 5 concludes.

2. Literature Review and Hypotheses Development

2.1 Stock price crash risk

The conventional portfolio theory is developed based upon a mean-variance analysis with an assumption that stock returns are normally distributed (e.g., Markowitz, 1991). If managers disclose randomly arriving information as they occur, one would expect symmetrically distributed stock returns, not negatively skewed returns. However, Graham et al. (2005) report that some CFOs delay bad information now in the hope that a firm's future performance will improve.

In reality, average CEOs are highly obsessed with firm performance because their future personal wealth is directly related to firm performance through pay for-performance compensation scheme. Managers are incentivized to hold negative information. Kothari, Shu, and Wysocki (2009) present the evidence that managers, due to career concern, accumulate and withhold bad news for an extended period of time, but immediately release good news. The implication is that negative news cannot be withheld any longer once information hoarding reaches to a certain level of threshold. Naturally, a sudden release of bad news may result in a large scale decline in stock price (Jin and Myers, 2006).

The third moment in stock return distributions, such as skewness, are crucially important to investors' portfolio allocation (Harvey and Siddique, 2000; Hong and Stein, 2003).[1] Prior studies have investigated the underlying factors to explain the cross difference of crash risk among sample firms. Several illustrations of those identified factors from Habib et al. (2017) include financial reporting quality, managerial characteristics, capital market transactions, and corporate governance. Similar to studies of managerial characteristics, we provide fresh insights into whether CEO experiences is beneficial or detrimental to investor wealth, which is still an unresolved question under debate in the extant literature.

2.2 CEO traits and styles and their impact on information hoarding

The CEO literature documents several aspects of CEO personal traits as a determining factor for corporate success and risk-taking behavior. For example, CEO overconfidence is a well-researched item to explain corporate investment (Malmendier and Tate, 2005), financial policies (Malmendier et al., 2011), and stock price crash risk (Kim, et al., 2016). Andreou et al. (2017) articulate the importance of CEO age on stock price crash risk and states "Physiological and psychological characteristics of the CEO and heterogeneous abilities change with age, and some of these characteristics might provoke stock price crashes." Equally, an important aspect of CEO abilities is CEO post-education work experience. The question of which one is more important is a question of nature versus nurture. Most CEOs probably agree that both nature- and nurture-based qualities are important in a complex modern corporate environment. In a certain setting, one's nature-based *instinct* can be critical, while in another setting, nurture-based *experience* can be a dominant factor to explain CEO behaviors.

[1] Similarly, Merton (1990) shows that stock returns are unlikely to be normally distributed.

In this study, we want to address whether nurture-based quality (i.e., lifetime work experience) is related to the CEO's risk-taking behavior, which can amplify stock price crash risk. The variable, lifetime work experience, is a challenging one to researchers because of its ambiguity. Andreou et al. (2017), which test the CEO age effect on crash risk, states in page 1289 that "Youthful creativeness and inexperience with corporate communication are more problematic to control directly because it is difficult to measure them precisely…." However, the same study also states that "Nevertheless, we can observe their consequences, and hence, we can design appropriate tests to examine their merit as alternative explanations of the CEO age effect." Those CEO psychological traits change with a CEO's lifetime work experience and therefore, we can model the work experience to explain crash risk difference among sample firms.

Prior studies find that executives' characteristics or psychological traits partially explain stock price crashes across sample firms. Hong and Stein (2003) show that investor heterogeneity is central to negative skewness in stock returns. More specifically, Kothari, Shu, and Wysocki (2009) present the evidence that managers, due to career concern, accumulate and withhold bad news for an extended period of time, but immediately release good news.

However, we argue that CEOs who tend to act less instinctively (i.e., the CEO age effect) than average managers because doing so will accompany negative consequences such as removal from the current position, are more driven by their own prior experience (i.e., the CEO experience effect). For example, specialist CEOs may more actively react to optimistic earnings expectations from analysts than generalist CEOs would. Therefore, specialist CEOs hoard bad news to meet analyst earnings forecasts, which will increase future crash risk.

Kim et al. (2016) find that CEO overconfidence increase stock price crash risk. Overconfident managers tend to overestimate future cash flows from their own risk-taking

activities (Malmendier et al. 2011). Overconfident CEOs are more common among specialists because they have limited industry experience and they think they know enough about the firm's future growth prospects and the surrounding environment, holding other factors constant. This familiarity-bias effect is consistent with the propensity that specialist CEOs is more voluntary hold in-the-money stock options even after the vesting period.

Bleck and Liu (2007) offer a related but slightly different explanation for stock price crashes. They argue that a manager has an incentive to keep a bad project as long as possible to derive private benefits from it for a long period. This phenomenon may be more prevalent among specialist CEOs because of their lack of second chance in the labor market in case of replacement, which is conducive to a greater level of crash risk. Specialist CEOs have more financial incentives to intentionally conceal and accumulate adverse operating outcomes from investors, increasing the probability of a stock price crash in the future.

On the contrary, generalists have more outside options which gives them less incentive to hide information when their project fails to produce positive NPVs. Generalists are less sensitive to the risk of termination, given their more diverse business experience. A labor market mechanism of tolerance for failure reduces incentives to hoard negative news, in addition to internal mechanisms such as executive compensation plans. Generalists are also effective in adapting to an evolving business environment. For example, generalists are more likely to be hired to perform M&As. Product market changes due to industry deregulation, technology change, and foreign competition are related to managerial general skills. The increased awareness of general skills could result in better information transparency, which we test in the later section of the paper.

3. Empirical Design and Sample Description

3.1. Description of CEO information in the sample

We measure CEOs' general managerial skills by using the generalist index constructed by Custódio et al. (2013). Specifically, they identify CEOs from ExcuComp database and match with CEO profiles from BoardEx database. Authors consider five aspects of a CEO's professional career: past number of (1) position, (2) firms, and (3) industries in which a CEO was employed; (4) whether the CEO held a CEO position at a different company; and (5) whether the CEO worked for a conglomerate. To combine these five variables into a one-dimensional index of general managerial skill, principal components analysis is used to extract the five proxies, which is a liner combination of the proxies with more weight given to those that more accurately reflect a CEO's general skills and allows us to classify a CEO as a generalist or specialist. More specifically, the index gives close to equal weights to the past number of positions, firms, and industries and a lower weight to the past CEO and conglomerate experiences. Thus, a higher level of general human capital is reflected in a higher value of the index. The index is standardized to have zero mean and a standard deviation of 1. The final sample consists of a panel of 17,017 firm-year observations in the 1993 – 2007 period, including all non-financial, non-utility firms having common shares listed at NYSE, AMEX, or NSADAQ.

3.2. Description of Stock Price Crash Risk Measures

We follow the standard methodology in stock crash risk literature to construct two main measures of stock crash risk as outlined specifically in the study by Hutton et al. (2009). First, we estimate the following expanded market and industry index model regression for each firm and year:

$$r_{i,t} = \alpha_i + \beta_{1,i} r_{m,t-1} + \beta_{2,i} r_{\varphi,t-1} + \beta_{3,i} r_{m,t} + \beta_{4,i} r_{\varphi,t} + \beta_{5,i} r_{m,t+1} + \beta_{6,i} r_{\varphi,t+1} + \varepsilon_{i,t} \quad (1)$$

where $r_{i,t}$ is the return on stock *i* in week *t*; $r_{m,t}$ is the return on the CRSP value-weighted index in week *t*; $r_{\varphi,t}$ is the return on the return on the value-weighted industry index based on Fama-French 48-sector classification in week *t*. Dimson (1979) suggests the inclusion of the lead and lag return terms to control for nonsynchronous trading. We then calculate firm-specific weekly returns as the natural logarithm of one plus the residual return from equation (1).

Once we obtain the firm-specific weekly returns, we calculate the first measure of stock crash risk, the negative conditional skewness of firm-specific weekly returns *NCSKEW*. *NCSKEW* is the negative of the third moment of firm-specific weekly returns for each year scaled by the standard deviation of firm-specific weekly returns raised to the third power as presented in the following formula.

$$NCSKEW_{i,\tau} = -\frac{n(n-1)^{\frac{3}{2}} \sum W_{i,t}^3}{(n-1)(n-2)\left(\sum W_{i,t}^2\right)^{\frac{3}{2}}} \quad (2)$$

This regression is to separate returns due to market-wide movements, as measured by the fitted value of the regression and firm-specific returns as captured by the residuals of the regression. In this formula (2), $W_{i,t}$ is the firm-specific weekly return for firm *i* in week *t*, where $W_{i,t}$ is equal to the natural logarithm of 1 plus the residual, $\varepsilon_{i,t}$ and n is the number of firm-specific weekly returns in a year τ. The denominator is a normalization factor. By attaching a minus sign in equation (2), *NCKSKEW* captures the size of the left tail and therefore, the higher the value of *NCSKEW*, the higher the imminent crash risk.

The second measure of crash risk is the down-to-up volatility measure of the crash likelihood (*DUVOL*). For each firm i in each year τ, we calculate the standard deviation of firm-

specific weekly returns separately for the "down" weeks when the returns are below the annual average returns and for the "up" weeks when the returns are above the annual average returns. *DUVOL* is then calculated as the natural logarithm of the ratio of the standard deviation in the "down" weeks to the standard deviation in the "up" weeks as presented in the following formula:

$$DUVOL_{i,\tau} = log\left[\frac{(n_{up}-1)\sum W_{down,i,t}^{2}}{(n_{down}-1)\left(\sum W_{up,i,t}^{2}\right)}\right] \quad (3)$$

where n_{up} and n_{down} are the numbers of "up" weeks and "down" weeks for firm i in each year τ. The higher the value of *DUVOL*, the higher the imminent crash risk.

In addition to *NCSKEW* and *DUVOL*, we construct an alternative measure of crash risk for a robustness test. Following Hutton et al. (2009) and Andreou et. al (2016), we calculate the difference between the number of crashes and the number of jumps in the firm-year. In a year, a crash (jump) occurs when the firm-specific weekly return is 3.09 standard deviation below (above) its mean over the year. Hutton et al. (2009) choose the 3.09 to generate 0.1% in the normal distribution. We then create a dummy firm-year variable *CRASH* which is coded as 1 when there is at least one firm-specific weekly return 3.09 standard deviation below its mean over the year and 0 otherwise.

4. Empirical Results

4.1. Summary statistics

Our initial sample consists of a panel of 17,017 firm-year observations in the period of 1993-2007. Table 1 shows summary statistics by firm-level (Panel A), the mean difference between generalists versus specialists (Panel B), industry breakdown (Panel C), and yearly

observations of crash frequencies and corresponding *NCSKEW* and *DUVOL* (Panel D). Two main measures of stock price crash risk along with the alternative measure are presented in Table 1. *NCSKEW* measures the size of the left tail and intuitively; it captures a negative outlier in the distribution of returns. The mean value for *NCSKEW* is slightly positive (0.020), indicating that the sample firm's returns are negatively skewed on average. However, the median value of *NCSKEW* is negative (-0.027), suggesting that some observations experience extremely negative returns. The mean value of *DUVOL* is slightly negative (-0.025). Chen, Hong, and Stein (2001) use the ''down-to-up volatility'' measure (*DUVOL*), which captures asymmetric volatilities between negative and positive firm-specific weekly returns. A higher value of *DUVOL* corresponds to a stock being more "crash prone." Interestingly, the mean value of *CRASH* variable 18.2%, suggesting that the probability of a firm-specific crash during a year is 18.2 percent and crashes are more prevalent than would have been expected under the normal distribution. This non-normality of return distributions is consistent with prior studies showing negative skewness (Harvey and Siddique, 2000; Chen et al., 2002; Theodossiou, 2015; Kim et al., 2011b).

Since our variable of interest, *Generalist Index* (*GI*), is standardized to have zero mean and a standard deviation of one, the slightly positive mean value of *GI* suggests that there are more generalists than specialists in our sample. We check mean differences of a crash variable between generalists and specialist CEOs and the results are shown in Panel B. Generalists CEOs are associated with lower crash risk, regardless of three different crash risk measures. To investigate our hypothesis at univariate setting, we plot in Figure 1 the percentage of stock price crashes across firm-years based on CEO GI by dividing up our sample into three equal groups. Figure 1 shows that there is a negative relationship between the likelihood of generalist CEOs and stock price crash risk.

There are industry differences with respect to what type of CEOs is common (Panel C). For example, the telecommunication and utilities sectors have more generalist CEOs, while money/financial sector has more specialist CEOs. Some stocks may be more prone to crash due to the industry fundamental differences, which we will control in multivariate analyses. Table 2, Panel D shows that crashes are more common during Financial Crisis of 2007 – 2008 period.

4.2. CEO style and stock price crash risk – The OLS approach

We test the hypothesis that firms with generalist CEOs, as opposed to specific skills, are negatively related to future stock price crash risk because generalists tend not to hoard (or to hoard less) negative information. Company-specific information is released in a timely manner under the leadership of generalist CEOs. They are less sensitive to termination risk and have more outside employment option, in case that the current position is not extended. On top of their labor market flexibility, generalist CEOs can manage operational challenges more effectively because their multi-facet skill set equips them with diverse experiences accumulated beyond the current domain of the organization. Overall, crash risk studies document that the main cause of firm-specific crashes is an accumulation of negative information over a long period. Eventually, it will be revealed, once it reaches a certain level of threshold and therefore, triggering stock crashes. However, we argue that the accumulation of negative information over a long period is less likely under the leadership of generalist CEOs. The marginal effect of negative information on stock price is, therefore, minimal. Overall, generalist CEOs have less incentive to hide negative information for a long period.

In Table 2, we show the results of regression analysis of crash risk on the CEO's general ability index developed by Custódio et al. (2013) from fiscal years of 1993 through 2007. The

dependent variables, *NCSKEW* and *DUVOL* measured in year *t*, are our crash risk proxies. The variable of the interest in this study is *Generalist Index* (GI) and *Generalist Index Dummy*. *Generalist Index Dummy* is an indicator variable that is equal to one if the CEO's general ability index is above the yearly median, and zero otherwise. Other control variables are firm characteristics including size, market to book ratio, stock volatility, leverage, and ROA. Hong and Stein (2003) show that investor belief heterogeneity predicts the future crash event. To control for this effect, we include the detrended stock trading volume, *DTURNOVER* in the regression. Accounting transparency is captured with the Modified Jones Model discretionary accrual, *Disc. Accruals*. To alleviate concern for potential cross-sectional and time-series dependence in the sample, we report *t*-values using robust standard errors and clustering by firm.

We find that across all model specifications, the coefficients on our variables of interest, i.e., *Generalist Index* and *Generalist Index Dummy* are all negative and significant. In other words, the results show that our measure of managerial style (generalists versus specialists) is strongly related to future realized crash risk, which is captured by one-year ahead *NCSKEW*. Negative signs on *Generalist Index* coefficients suggest that CEOs with general, diverse experience from multiple industries are negatively related to future stock crash risk, after controlling for a set of control variables, including the earnings management via discretionary accrual choice, stock trading volume, and other firm characteristics. On average, an increase of one standard deviation in *Generalist Index* is associated with an increase in crash risk equal to 10.5% of the sample mean.

Chen et al. (2001) use the ''down-to-up volatility'' measure (*DUVOL*), which captures asymmetric volatilities between negative and positive firm-specific weekly returns. A higher value of *DUVOL* corresponds to a stock being more "crash prone." We re-estimate all the regressions reported in Table 2 (Models 3 and 4), using *DUVOL* as the dependent variable. The results using

this alternate measure are qualitatively similar, although statistical significance is marginally reduced. We also use the third alternative measure of crashes which is defined as an indicator variable that equals one if there are one or more weekly returns falling 3.09 standard deviations below the mean weekly returns over the fiscal year, and zero otherwise (Chang et al., 2017). The results are shown in Table A.2., which is qualitatively similar.

Although the OLS approach shows an affirmative result supporting our main hypothesis, several endogeneity issues may undermine reliable economic interpretation and statistical inference. First, omitted variable concern may exist in our sample. Other unobservable, time-invariant, and heterogeneous CEO characteristics or skills may change along with CEO type and these changes drive the CEO type-crash risk effect. For example, the CEO's general ability level, communication skill, leadership, power, overconfidence, and creativity may change with the *Generalist Index*, but they are not explicitly captured in our estimation model. The omitted variable concern is a challenging task to address because those CEO qualities are difficult to observe and therefore, difficult to measure. It is also possible that the CEO type reflects unobservable CEO characteristics that affect disproportionately CEOs with limited industry experiences. We will attempt to address it through the firm-fixed effect and other robust approach to draw more reliable interpretations.

Second, an alternative explanation is possible for the relation between crash risk and CEO type such as reverse causality from crash risk to CEO type. For example, stock price crash risk induces to CEO turnover and firms may hire a new CEO with more concentrated experience from the single industry (i.e., specialist CEOs) rather than CEOs with diverse experiences (i.e., generalist CEOs), which may increase the future crash risk. However, we find no evidence that firms that newly hired CEOs with a high *Generalist Index* experience more crash risk relative to

firms that do not. To ensure we can provide more robust interpretation, we employ an instrumental variable approach.

Lastly, a sample selection bias and measurement errors are possible and we will employ propensity score matching approach, change-on-change model, and alternative measure for the main variable of interest. In this way, we can focus on drawing meaningful economic interpretation. We continue our discussion over alternative possibilities in the next several sections and attempt to present more rigorous estimations.

4.3 Firm fixed effects

One concern from the previous regression analysis is that our estimated model may omit some unobservable crash determinants that are correlated with both the dependent variable and the other explanatory variables. To control for time-invariant unobserved firm characteristics, we include firm fixed-effects in addition to the same set of explanatory variables as the baseline regressions from Table 2. With the firm-fixed effect, we can reduce alternative explanations for the statistical relation between future crash risk and CEO style because the firm-fixed effect relies solely on within firm variation. The firm-fixed effect estimator allows the results not driven by unobserved variation at a firm level that is also correlated with stock crash risk. In this way, we can identify a true relation between future crash risk and CEO style because the variation in *Generalist Index* is matched with the variation of crash risk during CEOs' tenure in the company.

Table 3 shows the results. The relation between *Generalist Index* and future crash risk remains highly significant with an expected negative sign, suggesting that our results are unlikely to be driven by omitted correlated time-invariant variables. The overall fitness of the model

improves with firm-fixed effect regressions, compared to results from Table 2. The size of coefficients and the statistical significance have both improved with firm fixed effect regressions.

Although the results from time-invariant firm-fixed effect regressions are convincing, they do not resolve the potential estimation bias completely due to another type of endogenous matching between CEO and firm. To further address reverse causality and sample selection bias, we introduce other identification strategies such as propensity score matching, change-on-change model, and instrumental variable estimations in later sections of this study.

4.4 CEO characteristics, monitoring, and corporate governance

Previous results do not include other potential confounding factors that may contribute to explaining cross-sectional variations of future crash risk. For example, literature has identified several CEO characteristics, including CEO age (Andreou et al., 2017) as explanatory variables for future crash risk. In this section, we also show a moderating role of internal and external monitoring forces such as independent directors. If the positive relation between specialist CEO and future crash risk is due to opportunistic managerial behaviors, such as bad news hoarding and resource diversion, one can expect the strength of the relation to be modulated for firms with effective internal, external, or both types of monitoring. Independent directors supposedly play a monitoring role within the firm. Institutional ownership can exert a disciplinary force on CEOs who may otherwise engage in hoarding negative information for the extended periods of time (Callen and Fang, 2013). Externally, stock analyst coverage may play a similar role as corporate governance structure within a firm does. Therefore, we run additional regressions to control for these factors. We lose a significant number of observations in this test due to inclusion of additional variables from various merged database.

Table 4 shows the results of crash risk regressions from our restricted model with CEO characteristics, analyst coverage, independent directors, as well as corporate governance. In addition, we include the G-Index in the regressions. Table 4 also shows the firm-fixed effect results. The results largely remain the same. Generalist CEOs are still negatively related to future stock price crash risk. Statistical significance is not compromised after the introduction of internal and external corporate governance variables. Corporate governance variables do not seem to have strong explanatory power, except for independent director and CEO tenure. A negative coefficient on the independent director variable suggests a disciplinary force for CEO not to hoard negative information, while a positive coefficient on the CEO tenure variable suggests that CEOs tend to hoard negative information as the probability of CEO's employment extension becomes lower over time.

The *Generalist Index* is correlated with some of the firm and CEO profile variables and multicollinearity can be a concern. However, Table 2 (baseline regressions) and Table 3 (firm-fixed effect) show that without CEO characteristics, our variable of interest, *Generalist Index* is statistically significant. In addition, coefficients of most firm characteristics remain the same as before, suggesting that multicollinearity does not drive the results.

4.5 Sample Selection Bias

One important concern with our findings—a general managerial ability to reduce future crash risk—is a sample selection bias due to endogeneity matching between CEOs and firms. To put it differently, the CEO experience effect reflects unobservable CEO characteristics that affect disproportionately specialist CEOs. For example, some firms are removed due to corporate

bankruptcy and disappear from our radar in sample construction. This survivorship bias can be introduced and discriminatorily assign specialist CEOs to risky firms.

If matching is based only on observable firm and CEO characteristics and time-invariant effects, then the firm and CEO fixed effects regressions address the matching problem. In other words, fixed effects control for time-invariant factors that affect managers' choice of firm or firm's choice of manager. However, if managers and firms are matched based on unobserved time- variant firm or manager characteristics, then fixed effects cannot fully address the matching problem. For example, the generalist CEO-crash risk story may be due to the fact that generalist CEO tends to be disproportionately hired by less risky firms.

In order to control for sample selection bias, we introduce propensity score matching. Table 5 reports result from the PSM sample. In this approach, first, we estimate the logit regression of the probability that a firm might hire a generalist CEO. All control variables in Table 3 are used in the determinant model. Then we extract the probability from the logit regression and match each firm with a generalist CEO with a firm with specialist CEO and with closest probability (propensity score) to have a generalist CEO from the first stage logistic regression. Then, we compare the characteristics between the pairs of firms with closest propensity score. This is the result in Panel A. In Panel B, you keep only firms with generalist CEOs and matched firms with specialist CEOs identified through the propensity score matching process.

To explore the validity of our matching sample, we compare means of covariates between the pairs of firms with closest propensity score. Panel A of Table 5 reports no statistically significant differences in characteristics between two groups, thus we confirm that our PSM samples are constructed well for further robustness tests while mitigating the concerns of sample selection bias.

In Panel B, we keep only firms with generalist CEOs and matched firms with specialist CEOs identified through the propensity score matching process. Our main variable of interest, *Generalist Index* is still statistically significant with the expected sign. Therefore, we conclude that our main results are not driven by the selection bias.

4.6 CEO fixed Effects

Omitting unobserved time-invariant managerial characteristics in our regression models might lead to biased estimates. It is possible that CEO origin, sex, or other unique attributes of the CEO might capture some potion of marginal effects found in our previous tests. To isolate unobserved traits of the CEO, we use CEO fixed effects. The estimated coefficients are equivalent. Thus, we confirm that our results are not driven by an unobserved CEO heterogeneity.

4.7 Reverse Causality

Our results might suffer from reverse causality problems. For example, stock price crash measures and *Generalist Index* can be jointly (or simultaneously) determined by some unknown factors. In such case, generalist index can be correlated with an error term in the main equation, which causes biased and inconsistent estimates. Thus, to address reverse causality concerns, we use instrumental variables (IV). Two conditions should be met. IV should be correlated with the endogenous explanatory variables. The instrument cannot be correlated with the error term in the explanatory equation, conditional on the other covariates. It is still the case that the instrumental variable and outcome variable will be correlated, but the only source of such correlation is the indirect path of the instrumental variable being correlated with a key repressor which in turn determines the outcome variable (Cameron and Trivedi, 2005).

We use state-level labor laws on non-compete agreements as a source of exogenous variation in the generality of human capital of the CEO. Non-compete agreements are contracts that prevent employees from joining or creating a competing company after ending an employment contract. Specifically, we use the Garmaise (2011) index on the enforceability of non-compete agreements during the career of a CEO as an instrument for the *Generalist Index*. The enforceability of such contracts varies across states and over time.

In order to ensure our choice of instrumental variable to satisfy two IV conditions as mentioned above, we provide more explanations here. First, we expect the Non-Compete Enforcement Index to be positively related to *Generalist Index*, because the enforcement of non-compete agreements limits within-industry manager transfers and enhances between-industry transfers (Garmaise, 2009; Marx et al., 2009; Ertimur et al., 2018). Executives have an ex-ante incentive to accumulate more general skills if they work in states with stricter enforcement of non-compete clauses, so that they have more outside options and future mobility (Custódio et al., 2017). Second, we also expect the instrumental variable not to have a direct influence on crash risk. If correlation with crash risk exists, it might be obtained only through the indirect path of enforcement of non-compete clauses being correlated with generalist index (Cameron and Trivedi, 2005). Ali et al. (2015) show that the correlation between the adoption of the Inevitable Disclosure Doctrine (IDD) and crash risk is achieved only through the restricted executive outside options. With this validation of the proposed IV, Custódio et al. (2017) use state-level laws on non-compete agreements as the instrument for generalist skills to investigate a CEO's risk-taking behavior. Following prior studies, we alleviate the concern of reverse causality by providing the instrumental variable of the average non-compete agreement enforcement index at the state-year level across all career positions the CEO has had in publicly traded firms (Garmaise, 2011).

We report the results of two-stage least squares (2SLS) with an instrumental variable in Column 3 to 7 of Table 6. The results of the first-stage model reported in Column 3 suggest that our proposed instrument variable is not weak (F-statistics = 13.34). The second-stage results are reported in Column 4 to 7. We confirm that the instrumented Generalist Index is still statistically significant with the expected sign in the PSM sample as well as our original sample, suggesting that reverse causality is not a major concern to derive economic inference.

To confirm the robustness of our results, we also run a change-on-change regression and re-test the models in Column 1 and 3 of Table 4 controlling for CEO fixed effects. The results of a change-on-change model and our analysis using CEO fixed effects are reported in Column 1 and 2 of Table 7, and Table A.2, respectively. Following change-on-change models used by Hutton, et al. (2014) and Lee et al. (2014), we difference both the dependent and explanatory variables used in Models 1 and 3 of Table 2. Our results show a negative and statistically significant correlation between the change in crash risk measures and change in generalist index, which indicates that an unobserved time constant variable at the firm level does not drive our results. Another related concern is whether time invariant CEO fixed effects capture a majority of the variation in corporate events (Graham et al., 2012). The results of Table A. 2 suggest that potential omitted variable bias driven by unobserved time invariant manager attributes is not a major concern in our primary tests.

4.10 Underlying Mechanisms

To explore underlying mechanisms through which CEOs tend to commit more in withholding negative news, we examine our baseline models by providing two moderators. First we consider media coverage of CEOs as one of two moderators. In today's corporate world, top managers are responsible for various complex projects, and their abilities are often reviewed by

press coverage. A manager's visibility on media might reflect her' reputation in the labor market, which also affects her risk-taking behavior and career path (Rajgopal et al., 2006). For example, more reputable CEOs might find their names in the business press more often than those of lower perceived abilities. Thus, an executive's performance in the financial press would be observable by the market and a potentially reliable guide to the aggregate assessment of her ability. Milbourn (2003) shows that the reputational strength of a CEO is measured as an outside perceptions of CEO abilities and is constructed by counting the number of articles containing the CEO's name that appears in the major business newspapers in the year prior to the CEO's appointment. Media coverage is essentially CEO credentials and is a good indicator to test her behavioral decision-making. Dyck and Zingales (2002) argue that the media is the channel where information is aggregated and credibly communicated to the public and across the firm. The media can play a substantial role in reducing the costs of contracting parties for collecting and evaluating information and in shaping the reputation of contracting parties. In addition, media attention may be discriminatory in different industries. For example, the high-tech industry is more media intensive industry, as opposed to the utilities industry.

We expect generalist CEOs to be more sensitive to the loss of their reputational capital because their general managerial skills draw greater attention from the market, along with favorable market expectation given to them. Dyck and Zingales (2002) find that media attention can affect the reputations of firms and their officers and directors and play a role in corporate governance. Negative attention can hurt the reputations of managers and directors and impose social costs on them. Media attention increases the number of people who learn about the behavior of other people thereby increasing the reputation effect. Haunschild and Rhee (2004) find that generalists are more concerned about reputation-damaging events due to their greater visibility.

Today's fast-changing business environment expect generalists to perform better in various complex tasks such as restructuring and acquisitions, and also demand such skills due to industry deregulation, foreign competition, and changes in technology and management practices (Hubbard and Palia,1995; Cuñatand Guadalupe, 2009a; Custódio et al., 2017). We argue that generalists are less likely to withhold information than specialists in industries with greater media coverage, where their skills are more observable and reputational capital is larger.

Model 1 and 2 of Table 7 show how our results change across industries with high and low media coverage. We use the PSM sample to mitigate the sample selection bias, as consistent with the tests in Table 5 and 6. *High Media Industry* is an indicator variable that equals one if the average media coverage in an industry is above the sample median (LexisNexis). Consistent with our expectation, the interaction term coefficients between generalist index and high media industry dummy is negative and statistically significant, implying that generalist CEOs are less likely to hoard bad news to protect their reputational capital when their managerial skills are more visible in the market.

Second moderating factor we explore is tolerance for failure proxied by labor market condition. A corporate manager facing a failure is subject to the risk of dismissal, but CEOs with diverse work experiences and networks through multiple industries are less sensitive to the risk of termination since a failure in one place might not necessarily indicates the poor ability in other industries. In the event of corporate project failure, generalist CEOs can exercise their rich set of external employment options to move easily to other firms across diverse industries, which is understood as the labor market mechanisms of tolerance for failure (Manso, 2011; Tate and Yang, 2015). Custódio et al. (2017) show that generalists, compared to specialists, take shorter waiting periods to find new executive positions when dismissal decisions are made. Thus, the labor market

mechanism of tolerance for failure weakens generalists' incentive to commit in bad information withholding. We expect the tolerance for failure to be stronger in tight labor markets, where general managerial skills are more demanded.

Model 3 and 4 of Table 7 show the moderator effects. Our proxy of the tolerance for failure is *Tight Labor Market* which is an indicator variable that equals one if the unemployment rate for a year in the Metropolitan Statistical Area (MSA) is below the median unemployment rate for the MSA over the full sample period. Consistent with our expectation, the coefficient of the interaction term between generalist index and the tight labor market dummy is negative and statistically significant. Thus, we conclude that a broader set of outside options available to generalists compared to specialists in tight labor markets motivate generalist CEOs to disclose good or bad news with no delay, as their career paths are buffered by a mechanism of tolerance for failure.

4.5. External demand for financial information and information transparency

Although the statistical association between generalist CEOs and the future stock crash is statistically negatively significant in various model specifications with moderating factors, alternative economic channels to understand the findings are warranted to make sure that the association is convincing and consistent. In this section, we present the evidence that generalist CEOs is associated with (1) less dispersion of opinion among stock analysts; (2) more information transparency; and (3) improved quality earnings, which ultimately contributes to lessening future crash risk.

Stock analyst coverage: Although all publicly traded firms must meet the strict minimum level of information disclosure standard by the Securities and Exchange Commission (SEC), firms are

generally given a tremendous degree of flexibility and discretion beyond and above SEC requirements. For example, a firm uses discretionary disclosure at its free will through a conference call and press releases. In addition, the amount of information is one thing and quality of disclosure is another. Here, we present the link between generalist CEOs and analyst coverage, dispersion of analyst forecast, the ambiguity of disclosure. Lang and Lundholm (1996) find that firms with more informative disclosure policies have a larger analyst following, more accurate analyst earnings forecasts, less dispersion among individual analyst forecasts and less volatility in forecast revisions. We regress the number of analyst coverage and forecast dispersion on *Generalist Index* and report the results in Table 8. In the column of Analyst Coverage, generalist index is negatively related to demand of stock analyst coverage and forecast dispersion. Generalist CEOs are correlated with a smaller coverage perhaps because those CEO provides a clearer picture of the firm's operating status promptly than specialist CEOs, and therefore, requiring a smaller coverage of external analysts. It can be related to the fact that generalist CEOs are conducive to increasing information releases in a timely manner and analyst forecast tend to converge to consensus.

Information transparency: In addition to conference calls and press releases, analysts have other channels to express their concerns about covered firms through research reports, recommendations, and forecasts. Reporting firms often use an optimistic tone which can be defined as the extent to which managers frame their firms' results and/or outlook in a favorable manner. Disclosure tone is influenced by the choice of which outcomes to emphasize as well as the manner in which management describes those outcomes. Recently, literature focuses on disclosure tone such as ambiguity (or readability) of financial reporting. For example, Ertugrul et al. (2017) find that firms with larger 10-K file sizes are associated with stricter loan contract terms and greater future crash

risk. Authors create the Fog Index which measures the average number of words per sentence and the percentage of complex words in the document. Similarly, Laughran and McDonald (2014) document that the file size of 10-K filings is significantly related to a poor corporate information environment. Overall, complex financial statements negatively affect information clarity. In Table 8, we regress the file size of 10K filing and the Fog index on generalist index with control variables. The coefficient of *Generalist Index* is negative, suggesting that generalist CEOs are negatively related to the ambiguity of financial statement (i.e., a negative coefficient on the *Generalist Index* variable in the *Fog Index* regression) and positively related to the readability of financial statements (i.e., a negative coefficient on the *Generalist Index* variable in the in *File Size* regression)

Quality of earnings: Yu (2008) finds that stock analyst coverage induces fewer earnings management, although some managers feel pressured to manage earnings actively to meet analyst forecast. Hutton et al. (2009) and Chen et al. (2017) document that those firms with more opaque financial reporting are more prone to crash risk (also see Chen et al. (2017) for earning smoothing and Kim et al. (2011b) for tax avoidance). Francis et al. (2016) show that firms with more real earnings management in the post-Sarbanes-Oxley (SOX) are prone to crash risk (See also Khurana et al., 2018). We regress discretionary earnings and financial restatement on *Generalist Index*. Similar to the above results, generalist CEOs are negatively correlated with opaque earnings statements and restatement activities.

5. Conclusion

We test whether a particular type of CEO work experience is related to the cross-firm variation of stock price crash risk. Stock price crash is more prone to occur when a CEO hoards

private but potentially negative information for the extended period. Information hoarding eventually became a catalyst for stock price crash when it reaches to a threshold and the market faces negative information with a surge of panic that eventually triggers to sell stocks in a sudden and large scale.

We focus on CEOs and examine their personal attributes specifically their work experience to explain the CEO-crash relation. CEOs vary in many ways with their talents, skill sets, and work experiences. On the one hand, these attributes are *nature*-based ones in the sense that CEO personality or his or her family environment dictates to shape leadership style. On the other hand, those personal attributes are *nurture*-based in the sense that a CEO's post-education work experiences constitute CEO leadership style. In this study, we focus on the latter and track CEO lifetime work experiences by adopting methodology from Custódio et al. (2013).

We find that generalist CEOs, as opposed to specialist CEO, are negatively related to the future stock price crash risk. CEOs examine risk-return tradeoff with respect to information hoarding. We argue that CEOs with diverse experiences from multiple industries or firms have more mobility (i.e., generalist CEOs), in case that their risk-taking becomes futile. This option to move to another firm (i.e., "second chance") allows them to share private information more openly in a timely manner with the public rather than hoarding for a long period.

An economic channel for the CEO type-crash effect shows that generalist CEOs are more willing to protect their reputation by *disengaging* in information hoarding. Generalist CEOs have less incentives to hoard the negative information because their broader set of outside employment options create a mechanism of tolerance for failure within the current firm. Consistent with these views, our results are stronger in tight but efficient labor market and industries with greater media coverage, where generalist CEOs' skills are more demanded and easily observed. We also show

that generalist CEOs engage in less earnings management, are associated with less dispersion of earnings forecasts by stock analysts, and practice more transparent financial reporting to SEC.

CEO literature is naturally troubled by several endogeneity issues such as time-variant omitted variable concern, reverse causality, and sample selection. We attempt to address these endogenous matching problems with an instrument variable approach, firm-fixed effect, change-on-change model, and propensity score matching. The statistical results largely remain the same, and economic interpretation is consistent with that of the OLS approach.

References

Ali, A., Li, N., & Zhang, W. (2015). Restrictions on Managers' Outside Employment Opportunities and Asymmetric Disclosure of Bad versus Good News. The Accounting Review.

Ali, A. and Zhang, W. (2015) CEO tenure and earnings management, Journal of Accounting and Economics 59, 60–79.

Andreou, P. C., Doukas, J. A., Koursaros, D., and Louca, C. (2016a) CEO overconfidence and corporate diversification value. Unpublished working paper, Cyprus University of Technology.

Andreou, P. C., Antoniou, C., Horton, J., and Louca, C. (2016b) Corporate governance and firm specific stock price crashes, European Financial Management 22, 916 - 956.

Andreou, P. C., Louca, C., and Petrou, A. (2017) CEO age and stock price crash risk, Review of Finance, 1287 – 1325.

Baginski, S. P., Campbell, J. L., Hinson, L. A., & Koo, D. S. (2017). Do career concerns affect the delay of bad news disclosure?. The Accounting Review, 93(2), 61-95.

Bleck, A. and Liu, X. (2007) Market transparency and the accounting regime, Journal of Accounting Research 45, 229–256.

Callen, J. L. and Fang, X. (2013) Institutional investor stability and crash risk: monitoring versus short-termism? Journal of Banking and Finance 37, 3047–3063.

Cameron, A.C. and Trivedi, P.K., 2005. Microeconometrics: methods and applications. Cambridge university press.

Chang, X., Chen, Y., & Zolotoy, L. (2017). Stock liquidity and stock price crash risk. Journal of Financial and Quantitative Analysis, 52 (4), 1605-1637.

Chava, S., Livdan, D. and Purnanandam, A., 2008. Do shareholder rights affect the cost of bank loans?. The Review of Financial Studies, 22(8), pp.2973-3004.

Chen, J., Hong, H., and Stein, J. C. (2001) Forecasting crashes: trading volume, past returns, and conditional skewness in stock prices, Journal of Financial Economics 61, 345–381.

Cuñat, Vicente and Guadalupe, Maria, (2009a), Executive compensation and competition in the banking and financial sectors, Journal of Banking and Finance, 33, (3), 495-504

Cuñat, Vicente and Guadalupe, Maria (2009b) Globalization and the Provision of Incentives inside the Firm: The Effect of Foreign Competition, Journal of Labor Economics, Vol. 27, No. 2, pp. 179-212

Custódio, C., Ferreira, M.A., and Matos, P. (2013) Generalists versus Specialists: Lifetime Work Experience and CEO Pay. Journal of Financial Economics 108(2), 471-492.

Custódio, C., Ferreira, M. A., & Matos, P. (2017). Do general managerial skills spur innovation?. Management Science, 65(2), 459-476.

Dimson, E. (1979) Risk measurement when shares are subject to infrequent trading, Journal of Financial Economics 7, 197–226.

Dyck, Alexander and Zingales, L (2002) The Corporate Governance Role of the Media, in The right to tell: The role of the Media in Development, ed. Roumeen Islam, Washington DC: The World Bank.

Ertimur, Y., Rawson, C., Rogers, J.L. and Zechman, S.L., 2018. Bridging the gap: Evidence from externally hired CEOs. Journal of Accounting Research, 56(2), pp.521-579.

Ertugrul, Mine, Jin Lei, Jiaping Qiu and Chi Wan. (2017) Annual Report Readability, Tone Ambiguity, and the Cost of Borrowing, Journal of Financial and Quantitative Analysis, 2017, vol. 52, issue 02, 811-836.

Fama, E. F. and French, K. R. (1997) Industry costs of equity, Journal of Financial Economics 43, 153–193.

Francis, B., I. Hasan, and L. Li. (2016) Abnormal real operations, real earnings management, and subsequent crashes in stock prices. Review of Quantitative Finance and Accounting 46 (2): 217–60.

Garmaise (2011) Ties that Truly Bind: Noncompetition Agreements, Executive Compensation, and Firm Investment, Journal of Law, Economics, and Organization, Volume 27, Issue 2, 1 August 2011, Pages 376–425

Garicano and Rossi-Hansberg, (2006) Organization and Inequality in a Knowledge Economy Luis Garicano and Esteban Rossi-Hansberg, Quarterly Journal of Economics, 2006, vol. 121, issue 4, 1383-1435

Graham, John and Campbell Harvey (2005) The economic implications of corporate financial reporting, Journal of Financial Economics, vol. 40, issue 1-3, 3-73

Graham, John, Harvey, C. and Puri, M (2013) Managerial attitudes and corporate actions, Journal of Financial Economics 109(1), 103-121

Graham, J. R., Li, S., and Qiu, J. (2012) Managerial attributes and executive compensation, Review of Financial Studies 25, 144–186.

Habib, Hasan, and Jiang (2017) Stock price crash risk: review of the empirical literature, Accounting & Finance 1 – 41.

Hackbarth, D. (2008) Managerial traits and capital structure decisions. Journal of Financial and Quantitative Analysis 43(4), 843–882.

Haunschild, P. R., & Rhee, M. (2004). The role of volition in organizational learning: The case of automotive product recalls. Management Science, 50(11), 1545-1560.

Harvey, C. R. and Siddique, A. (2000) Conditional skewness in asset pricing tests, The Journal of Finance 55, 1263–1295.

Hong, H. and Stein, J. C. (2003) Differences of opinion, short-sales constraints, and market crashes, Review of Financial Studies 16, 487–525.

Hubbard and Palia, Robert Hubbard and Darius Palia (1995) Executive pay and performance Evidence from the U.S. banking industry, Journal of Financial Economics 39(1), 105-130

Hutton, A. P., Marcus, A. J., and Tehranian, H. (2009) Opaque financial reports, r-square, and crash risk, Journal of Financial Economics 94, 67–86.

Hutton, I., Jiang, D. and Kumar, A., 2014. Corporate policies of Republican managers. Journal of Financial and Quantitative Analysis, 49(5-6), pp.1279-1310.

Jin, L. and Myers, S. C. (2006) R-squared around the world: new theory and new tests, Journal of Financial Economics 79, 257–292.

Kaplan, S.N., Klebanov, M.M., Sorensen, M. (2012) Which CEO characteristics and abilities matter? Journal of Finance 67, 973–1007.

Khurana, Inder K., Raynolde Pereira, and Eliza (Xia) Zhang, (2018) Is Real Earnings Smoothing Harmful? Evidence from Firm-Specific Stock Price Crash Risk (35) Iss 1, pp. 558-587.

Kim, J.-B., Li, Y., and Zhang, L. (2011a) CFOs versus CEOs: equity incentives and crashes, Journal of Financial Economics 101, 713–730.

Kim, J.-B., Li, Y., and Zhang, L. (2011b) Corporate tax avoidance and stock price crash risk: firm level analysis, Journal of Financial Economics 100, 639–662.

Kim, J. B., Wang, Z., & Zhang, L. (2016). CEO overconfidence and stock price crash risk. Contemporary Accounting Research, 33(4), 1720-1749.

Kim, J.-B. and Zhang, L. (2016) Accounting conservatism and stock price crash risk: firm-level evidence, Contemporary Accounting Research 33, 412–441.

Kothari, S.P., Susan Shu, and Petro D.Wysocki (2009) Do Managers Withhold Bad News? Journal of Accounting Research 47(1), 241 – 276.

Lang, Mark H., and Lundholm (1996) Corporate Disclosure Policy and Analyst Behavior, Accounting Review 71(4), pp. 467-492

Laughran, Tim and Bill McDonald (2014) Measuring Readability in Financial Disclosures, Journal of Finance 69(4), 1643 - 1671.

Lee, J., Lee, K.J. and Nagarajan, N.J., 2014. Birds of a feather: Value implications of political alignment between top management and directors. Journal of Financial Economics, 112(2), pp.232-250.

Malmendier, Ulrike and Geoffrey Tate (2005) CEO overconfidence and corporate investment, Journal of Finance 60, 2661–2700.

Malmendier, Ulrike, Geoffrey Tate, and Jon Yan (2011) Overconfidence and Early-Life Experiences: The Effect of Managerial Traits on Corporate Financial Policies, Journal of Finance (66) Iss. 5., pp. 1687 – 1733.

Manso, G. (2011) Motivating Innovation. Journal of Finance 66, 1823 – 1860.

Markowitz, H. (1991) Foundations of Portfolio Theory, Journal of Finance (46), Iss. 2, pp469 – 477.

Marx, Matt, Debora Strumsky, and Lee Fleming (2009) Mobility, Skills, and the Michigan Non-Compete Experiment, Management Science vol. 55, issue 6, 875-889

Merton, R. C. (1990) Continuous-Time Finance. Cambridge, MA: Basil Blackwell.

Milbourn, T. T. (2003). CEO reputation and stock-based compensation. Journal of Financial Economics, 68(2), 233-262.

Ngo, Thanh, Jurica Susnjara, and Ha-Chin Yi. (2018) Product Market Power and Stock Crash Risk, Working Paper, Texas State University.

Rajgopal, Shevlin, and Zamora (2006) CEOs' Outside Employment Opportunities and the Lack of Relative Performance Evaluation in Compensation Contracts, Journal of Finance

Tate, G., & Yang, L. (2015). The bright side of corporate diversification: Evidence from internal labor markets. The review of financial studies, 28(8), 2203-2249.

Theodossiou, Panayiotis (2015) Skewed Generalized Error Distribution of financial assets and option pricing, Multinational Finance Journal, Vol 19, No 4, 223 – 266.

Yu, F. (2008) Analyst Coverage and Earnings Management. Journal of Financial Economics

88, 245–271.

Xu, N., Jiang, X., Chan, K.C. (2013) Analyst Coverage, Optimism, and Stock Price Crash Risk: Evidence from China. Pacific-Basin Finance Journal, 25, 217-239.

Appendix A. Variable definitions

Variable	Definition and Sources of data
Generalist Index	computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos (2013))
Generalist Dummy	Indicator variable that equals one if the CEO's general ability index is above
Crash	Indicator variable that equals one if there are one or more weekly returns falling 3.09 standard deviations below the mean weekly returns over the fiscal year, and zero otherwise (Chang, Chen, Zolotoy (2017))
NCSKEW	Negative of the third moment of firm-specific weekly returns for each year scaled by the standard deviation of firm-specific weekly returns raised to the third power (Hutton et al. (2009))
DUVOL	Natural logarithm of the ratio of the standard deviation of down week to that of up-week firm-specific weekly returns over the fiscal-year period. (Hutton et al. (2009))
Dturnover	Average monthly share turnover over the current fiscal-year period minus that of the previous period, where monthly share turnover is the ratio of monthly trading volume to the total number of shares outstanding during the month.
Market Cap	Natural logarithm of the market value of equity.
Leverage	Book leverage: From Compustat
Stock volatility	Standard deviation of daily stock return for 12 months: From CSRP
ROA	Net Income/Book Assets: from Compustat
Market to Book	(Market value of common stock + total debt + preferred stock – deferred taxes and investment tax credit) / Book Assets: from CSRP
Analyst Coverage	Arithmetic mean of 12 monthly number of earnings forecasts a firm receives over the fiscal year: From I/B/E/S
Forecast Dispersion	Standard deviation of analysts' forecast variance in each fiscal year.
Fog Index	Gunning Fog Readability Index: (Words per sentence + percent of complex words) x 0.4
File Size	Natural logarithm of 10-K document file size in each fiscal year.
Disc. Accruals	Discretionary accruals (signed discretionary accruals), where discretionary accruals are computed using the modified Jones (1991) model

Restatement	Gao Restatement data is released by the Government Accountability Office which provides information on firms that restated their revenues (Hennes, Leone, and Miller (2008)).
High Media Industry	Indicator variable that equals one if the average media coverage in an industry is above the sample median: from LexisNexis
Tight Labor Market	Indicator variable that equals one if the unemployment rate for a year in the Metropolitan Statistical Area (MSA) is below the median unemployment rate for the MSA over the full sample period: from the Bureau of Labor Statistics
Independent Dir.	Percent of independent outside directors: From ISS
Institutional Own.	Percent of board members for whom this directorship is their only directorship: From ISS
CEO Tenure	The number of years as CEO of the firm: From Execucomp
CEO Age	CEO age: From ExecuComp
CEO Duality	Indicator variable that equals one if the CEO is the chairperson, and zero otherwise: From ISS
CEO Insider	Indicator variable that equals one if the CEO was hired within her current firm, and zero if a CEO was hired outside: From ISS
G-Index	Number of anti-take over provision from the Risk Metrics governance database (Gompers et al. (2003))
Non-Compete Enforcement Index	Average non-compete agreement enforcement index at the state-year level across all positions the CEO has had in publicly traded firms (Garmaise (2009)).

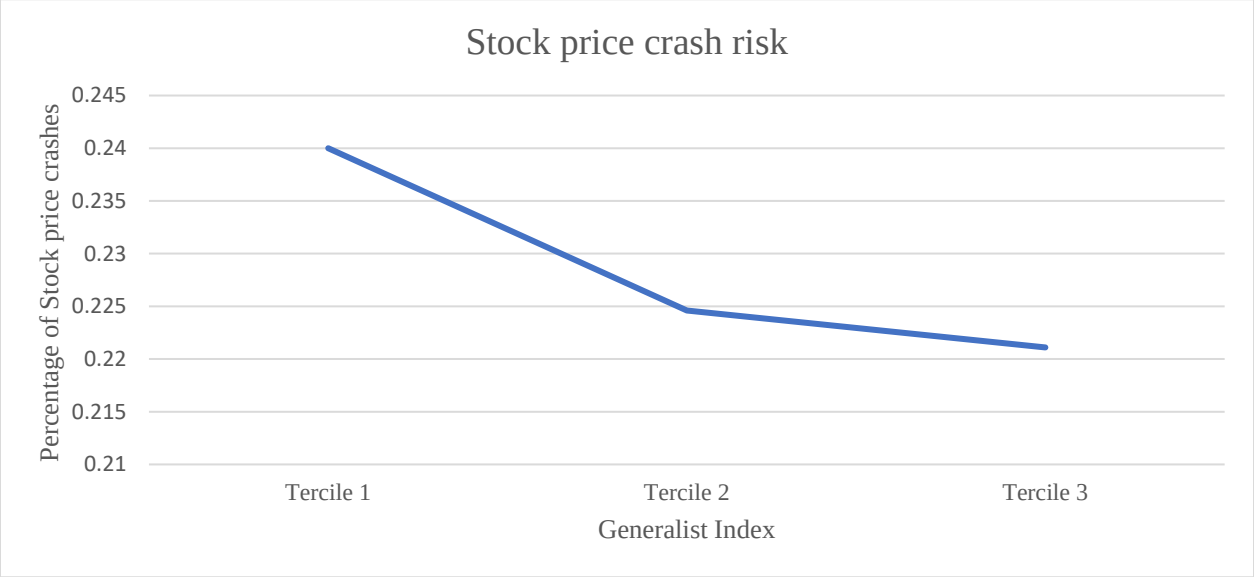

Figure 1. Percentage of stock price crashes across Generalist Index Terciles
This figure shows the percentage of stock price crashes across Generalist Index terciles. For each tercile of Generalist Index, the percentage of stock price crashes is calculated by the number of firm-year crashes divided by the total number of firm-year observations in that tercile.

Table 1. Descriptive Statistics

This table presents summary statistics for various firm-year-level variables. Panel A presents summary statistics of observations for each variable. Panel B presents the mean of the percentage of stock price crashes for the sample of generalist CEOs (those with General Ability Index in the top tercile) and specialist CEOs (those with General Ability Index in the bottom tercile), and the mean difference in the percentage of stock price crashes across the first and third tercile of general ability index. Panel C presents the distribution of generalist index across the Fama-French 12 industry Groups (Fama and French 1997). Panel D presents summary statistics of the whole sample by year. Definitions of all other variables are in the Appendix. The *t*-test is used to test the difference in the mean of the two groups. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Panel A Summary Statistics

Variables	N	Mean	Stdev	p5	p25	Median	p75	p95
NCSKEW	17,017	0.020	0.791	-1.108	-0.417	-0.027	0.379	1.372
DUVOL	17,017	-0.025	0.458	-0.760	-0.319	-0.027	0.257	0.740
CRASH	17,017	0.182	0.386	0	0	0	0	1
Generalist Index	17,017	0.004	0.982	-1.336	-0.712	-0.171	0.544	1.829
Dturnover	17,017	0.008	0.008	0.001	0.003	0.005	0.010	0.023
Log Market Cap.	17,017	7.341	1.577	4.970	6.259	7.191	8.328	10.20
Market to Book	17,017	3.394	4.449	0.734	1.613	2.476	3.958	9.547
Volatility	17,017	0.049	0.025	0.021	0.031	0.043	0.060	0.100
Leverage	17,017	0.218	0.178	0	0.058	0.205	0.330	0.534
ROA	17,017	0.036	0.171	-0.140	0.018	0.054	0.092	0.170
Disc. Accruals	17,017	0.184	0.393	0.004	0.026	0.067	0.165	0.740
Analyst Coverage	9,325	11.11	7.656	1.833	5.250	9.286	15.50	26.17
Independent Dir.	9,325	68.24	16.63	37.50	57.14	71.43	81.82	90
Institutional Own.	9,325	0.561	0.338	0	0.380	0.661	0.806	0.974
CEO Tenure	9,325	6.875	7.117	0	2	4	9	21
CEO Age	9,325	52.55	8.296	40	47	53	58	65
CEO Chairman	9,325	0.620	0.485	0	0	1	1	1
CEO Insider	9,325	0.838	0.368	0	1	1	1	1
G-Index	9,325	9.333	2.639	5	7	9	11	14
Fog-Index	10,238	19.79	1.374	18.08	19.04	19.69	20.38	21.77
Log File Size	10,238	13.58	0.955	12.06	12.76	13.70	14.28	15.06
Restatement	10,238	0.045	0.209	0	0	0	0	0
Noncompete Agree.	10,238	3.908	2.263	0	3	4	5	7

Panel B Univariate Tests	Specialist CEOs (< Median)	Generalist CEOs (> Median)	Diff (*t-test*)
NSKEW	0.038	0.011	-0.028 (-2.56**)
DUVOL	-0.006	-0.032	-0.026 (-4.05***)
CRASH	0.199	0.178	-0.022 (-3.89***)

Panel C. Generalist Index by Fama-French 12 Industry			
	Mean	Median	Std. Dev.
Business equipment	0.036	-0.098	1.038
Chemicals and allied products	0.238	0.154	0.882
Consumer durables	0.008	-0.182	0.946
Energy	-0.018	-0.182	0.892
Health	0.022	-0.063	0.963
Manufacturing	0.092	-0.079	0.911
Money/financial	-0.227	-0.434	0.990
Consumer nondurables	-0.044	-0.274	0.954
Shops	-0.168	-0.358	0.953
Telecommunication	0.447	0.317	1.257
Utilities	0.363	0.302	1.037
Other	-0.040	-0.247	1.045

Panel D. Sample by Year

Year	Count	# of crashes	% of crashes	ROA during crashes	SD of ROA	NCSKEW	DUVOL
1993	1,357	322	0.223	0.037	0.082	0.046	-0.028
1994	1,355	300	0.226	0.026	0.169	-0.021	-0.042
1995	1,444	286	0.227	0.032	0.089	-0.098	-0.147
1996	1,568	314	0.226	0.048	0.092	-0.108	-0.159
1997	1,634	323	0.226	0.027	0.133	-0.070	-0.099
1998	1,647	379	0.226	0.042	0.111	-0.009	-0.027
1999	1,565	354	0.227	0.032	0.188	-0.047	-0.132
2000	1,455	357	0.227	-0.002	0.422	0.042	-0.044
2001	1,476	459	0.227	-0.001	0.275	0.150	0.066
2002	1,477	517	0.227	-0.023	0.276	0.202	0.069
2003	1,439	427	0.227	0.024	0.204	-0.01	-0.028
2004	1,405	435	0.228	0.028	0.160	0.051	-0.010
2005	1,341	439	0.228	0.038	0.133	0.012	-0.017
2006	1,405	457	0.227	0.047	0.106	0.001	-0.011
2007	1,569	422	0.227	0.040	0.112	-0.030	0.051

Table 2. General Managerial Ability and Stock Price Crashes

This table reports results from regression analysis of stock price crash on the CEO's general ability index from fiscal years 1993 through 2007. *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos (2013)). *Generalist Index Dummy* is an indicator variable that equals one if the CEO's general ability index is above the yearly median, and zero otherwise. In all models, year and two sic industry fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	NCSKEW (t+1)	NCSKEW (t+1)	DUVOL (t+1)	DUVOL (t+1)
	OLS	OLS	OLS	OLS
VARIABLES	(1)	(2)	(3)	(4)
Generalist Index	-0.017***		-0.009**	
	(-2.89)		(-2.42)	
Generalist Index Dummy		-0.023**		-0.013*
		(-2.03)		(-1.90)
NCSKEW	0.009	0.009		
	(1.26)	(1.26)		
DUVOL			-0.008	-0.008
			(-1.03)	(-1.03)
Dturnover	0.028***	0.028***	0.015***	0.015***
	(3.12)	(3.14)	(2.76)	(2.78)
Market Cap	0.018***	0.017***	0.012***	0.012***
	(4.11)	(3.88)	(4.41)	(4.30)
Market to Book	0.005***	0.005***	0.002***	0.002***
	(3.53)	(3.60)	(2.84)	(2.88)
Stock Volatility	-0.340	-0.342	-0.787***	-0.788***
	(-1.01)	(-1.02)	(-3.80)	(-3.81)
Leverage	0.033	0.028	0.001	-0.001
	(0.92)	(0.80)	(0.04)	(-0.04)
ROA	0.232***	0.236***	0.129***	0.131***
	(6.27)	(6.33)	(5.54)	(5.58)
Disc. Accruals	0.011	0.010	0.007	0.007
	(0.68)	(0.67)	(0.76)	(0.74)
Constant	-0.311***	-0.287***	-0.210***	-0.197***
	(-3.17)	(-3.01)	(-3.08)	(-2.93)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	16,193	16,193	16,188	16,188
R-squared	0.0251	0.0248	0.0424	0.0423

Table 3. Time-Invariant firm characteristics

This table reports results from firm fixed effects panel regression analysis of stock price crashes on the CEO's general ability index from fiscal years 1993 through 2007. *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos (2013)). *Generalist Index Dummy* is an indicator variable that equals one if the CEO's general ability index is above the yearly median, and zero otherwise. In all models, year and firm fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	NCSKEW (t+1) OLS	NCSKEW (t+1) OLS	DUVOL (t+1) OLS	DUVOL (t+1) OLS
VARIABLES	(1)	(2)	(3)	(4)
Generalist Index	-0.033***		-0.021***	
	(-2.64)		(-2.75)	
Generalist Index Dummy		-0.062***		-0.037***
		(-2.66)		(-2.77)
NCSKEW	-0.099***	-0.099***		
	(-10.72)	(-10.74)		
DUVOL			-0.117***	-0.117***
			(-13.22)	(-13.24)
Dturnover	0.000	0.001	-0.000	0.000
	(0.02)	(0.07)	(-0.02)	(0.03)
Market Cap	0.204***	0.204***	0.121***	0.121***
	(13.26)	(13.28)	(13.22)	(13.21)
Market to Book	0.004**	0.004**	0.003***	0.003***
	(2.00)	(2.03)	(2.77)	(2.80)
Stock Volatility	-0.832	-0.838	-0.859***	-0.862***
	(-1.60)	(-1.61)	(-2.81)	(-2.81)
Leverage	0.063	0.063	0.004	0.004
	(0.77)	(0.77)	(0.10)	(0.10)
ROA	0.174***	0.176***	0.082***	0.083***
	(3.94)	(4.00)	(2.92)	(2.98)
Disc. Accruals	0.012	0.012	0.008	0.008
	(0.54)	(0.54)	(0.64)	(0.64)
Constant	-1.503***	-1.473***	-0.782***	-0.764***
	(-11.85)	(-11.58)	(-10.44)	(-10.10)
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	16,193	16,193	16,188	16,188
R-squared	0.0427	0.0427	0.0599	0.0599

Table 4. CEO characteristics and Corporate Governance

This table reports results from firm fixed effects panel regression analysis of stock price crashes on the CEO's general ability index controlling for various CEO characteristics and governance variables. *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos (2013)). *Generalist Index Dummy* is an indicator variable that equals one if the CEO's general ability index is above the yearly median, and zero otherwise. In all models, control variables in Table 2, and year and firm fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	NCSKEW (t+1) OLS	NCSKEW (t+1) OLS	DUVOL (t+1) OLS	DUVOL (t+1) OLS
VARIABLES	(1)	(2)	(3)	(4)
Generalist Index	-0.054***		-0.027***	
	(-3.04)		(-2.65)	
Generalist Index Dummy		-0.108***		-0.060***
		(-3.02)		(-3.06)
Analyst Coverage	0.002	0.002	-0.002	-0.002
	(0.61)	(0.71)	(-1.05)	(-0.96)
Independent Dir.	-0.003**	-0.002**	-0.001	-0.001
	(-2.33)	(-2.29)	(-1.55)	(-1.50)
Institutional Own.	0.004	0.005	-0.028	-0.027
	(0.05)	(0.08)	(-0.67)	(-0.65)
CEO Tenure	0.041***	0.043***	0.025***	0.026***
	(2.78)	(2.88)	(3.09)	(3.20)
CEO Age	0.070	0.069	-0.019	-0.018
	(0.97)	(0.96)	(-0.47)	(-0.46)
CEO Duality	-0.013	-0.015	-0.016	-0.017
	(-0.42)	(-0.50)	(-0.92)	(-0.97)
CEO Insider	0.055	0.061	0.043*	0.045*
	(1.32)	(1.50)	(1.79)	(1.92)
G-Index	-0.011	-0.011	0.003	0.003
	(-0.73)	(-0.71)	(0.33)	(0.36)
Constant	-2.109***	-2.068***	-1.077***	-1.056***
	(-5.56)	(-5.43)	(-5.02)	(-4.90)
Controls (Table 2)	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,228	8,228	8,226	8,226
R-squared	0.0520	0.0523	0.0647	0.0652

Table 5. Propensity Score Matching

This table reports results from propensity score matching (PSM) sample. This matching technique is employed to address the endogeneity of firm selection while reducing the concern that the firm hires a generalist CEO due to the nonrandom event of hiring decisions given to firms. We first estimate a logit model where the dependent variable is *Generalist Index Dummy*. The independent variables in Table 3 are used in the logit model. We then calculate a propensity score for the likelihood of each firm having a generalist CEO from the regression and rank each firm by their propensity score to find one nearest-neighbor control group of the non-generalist CEO firms. Panel A report mean differences in covariates between treated (Generalist Index > median) and control (Generalist Index < median) group. Panel B report regression results from regression analysis of stock price crash on the CEO's general ability index using the PSM sample. *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos (2013)). In all models, year and firm fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Panel A: Balancing Test

	Treated	Control	Difference	T-Stat
Market Cap	8.4275	8.4261	0.0014	0.04
Market to Book	3.8570	3.7549	0.1021	0.98
Stock Volatility	0.0386	0.0385	0.0001	0.11
Leverage	0.2109	0.2093	0.0016	0.10
ROA	0.0609	0.0610	-0.0001	-0.18
Disc. Accruals	0.1824	0.1868	-0.0044	-0.45

Panel B: PSM Sample	NCSKEW (t+1)	DUVOL (t+1)
	OLS	OLS
VARIABLES	(1)	(2)
Generalist Index	-0.042**	-0.023**
	(-2.39)	(-2.31)
Controls	Yes	Yes
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Observations	7,501	7,500
R-squared	0.0498	0.0645

Table 6. Causal regressions

The table shows the robustness of the results in Table 2 to the endogeneity issue of simultaneity. The first and second columns of this table show the results of the change-on-change regression where we regress the annual changes in stock crash risk variables on changes in generalist index. Following Hutton, Jiang, Kumar (2014), Chava, Livdan, and Purnanandam (2008), and Lee, Lee, and Nagarajan (2014), we difference generalist index and other control variables used in Table 2. Column 3 through 7 show results of instrumental variable estimation using two-state least squares (2SLS) panel regressions. Column 4 and 5 show the second stage results for the full sample while column 6 and 7 show the results for the PSM sample. *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos (2013)). *Generalist Index Dummy* is an indicator variable that equals one if the CEO's general ability index is above the yearly median, and zero otherwise. In all models, year and firm fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix A. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	Change-on-change		2SLS				
			First Stage	Second Stage			
				Full Sample		PSM Sample	
	Δ NCSKEW (t to t+1)	Δ DUVOL (t to t+1)	Generalist Index	NCSKEW (t+1)	DUVOL (t+1)	NCSKEW (t+1)	DUVOL (t+1)
	OLS	OLS	OLS	OLS	OLS	OLS	OLS
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Δ Generalist Index (t-1 to t)	-0.032*	-0.021**					
	(-1.83)	(-1.98)					
Non-Compete Agreement Index			0.014***				
			(3.65)				
Generalist Index (Instrumented)				-0.195***	-0.149***	-0.180**	-0.166***
				(-3.37)	(-4.10)	(-1.99)	(-2.93)
F-statistics			13.34				
Controls / Δ Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,027	14,025	14,591	13,977	13,973	6,617	6,616
R-squared	0.2877	0.3167	0.1458	0.0442	0.0616	0.0524	0.0656

Table 7. Underlying Mechanisms

This table reports results from firm fixed effects panel regression analysis of stock price crashes on the CEO's general ability index across industries with high and low media coverage using the PSM sample constructed in Table 5. *High Media Industry* is an indicator variable that equals one if the average media coverage in an industry is above the sample median (LexisNexis). *Tight Labor Market* is an indicator variable that equals one if the unemployment rate for a year in the Metropolitan Statistical Area (MSA) is below the median unemployment rate for the MSA over the full sample period. *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past number of positions, number of firms, number of industries, CEO experience dummy, and conglomerate experience dummy (Custódio, Ferreira, Matos, 2013). *Generalist Index Dummy* is an indicator variable that equals one if the CEO's general ability index is above the yearly median, and zero otherwise. In all models, year and firm fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	NCSKEW (t+1) OLS	DUVOL (t+1) OLS	NCSKEW (t+1) OLS	DUVOL (t+1) OLS
VARIABLES	(1)	(2)	(3)	(4)
Generalist Index	0.016	0.003	0.013	0.006
	(0.74)	(0.17)	(0.75)	(0.51)
Generalist Index X High Media Industry	-0.068***	-0.035**		
	(-2.75)	(-2.09)		
Tight Labor Market			-0.040*	-0.004
			(-1.91)	(-0.31)
Generalist Index X Tight Labor Market			-0.030*	-0.022**
			(-1.92)	(-2.17)
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	7,528	7,528	6,227	6,227
R-squared	0.0462	0.0567	0.0243	0.0202

Table 8. Information Asymmetry

This table reports results from firm fixed effects panel regression analysis of various measures of firm transparency on the CEO's general ability index in the regime of the post Reg FD. *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos (2013)). *Generalist Index Dummy* is an indicator variable that equals one if the CEO's general ability index is above the yearly median, and zero otherwise. In all models, year and firm fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	Analyst Coverage		Disclosure Tone		Quality of Earnings	
	Analyst Coverage (t+1)	Forecast Dispersion (t+1)	Fog Index (t+1)	File Size (t+1)	Disc. Accruals (t+1)	Restatement (t+1)
	OLS	OLS	OLS	OLS	OLS	LPM
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Generalist Index	-0.032***	-0.093**	-0.062**	-0.037**	-0.040**	-0.026**
	(-2.67)	(-2.08)	(-2.13)	(-2.05)	(-2.21)	(-2.04)
Market Cap	0.174***	-0.312***	0.108**	0.028	-0.081*	-0.031
	(6.60)	(-3.75)	(2.13)	(0.68)	(-1.68)	(-1.10)
Market to Book	0.004***	-0.001	0.003	-0.001	-0.001	-0.001
	(3.11)	(-0.28)	(1.30)	(-0.54)	(-0.55)	(-1.11)
Stock Volatility	-0.438	14.013***	-2.791**	0.178	-0.904	-1.167**
	(-0.77)	(8.34)	(-2.55)	(0.25)	(-1.38)	(-2.12)
Leverage	-0.096	0.334	0.022	0.028	-0.102	0.147**
	(-1.42)	(1.48)	(0.17)	(0.24)	(-0.90)	(2.47)
ROA	0.166*	-1.624***	-0.081	-0.200*	-0.218**	0.148**
	(1.76)	(-7.20)	(-0.76)	(-1.88)	(-2.29)	(2.12)
Institutional Own.	0.270***	0.719***	-0.077	-0.125	0.020	0.023
	(5.56)	(4.01)	(-0.64)	(-1.62)	(0.28)	(0.41)
Analyst Coverage		0.080	0.050	-0.017	0.005	0.004
		(1.03)	(0.95)	(-0.48)	(0.16)	(0.16)
Constant	0.925***	2.103***	19.278***	14.424***	0.658**	-0.037
	(4.52)	(3.27)	(50.14)	(45.92)	(2.55)	(-0.17)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,493	4,210	4,390	4,390	4,364	4,374
R-squared	0.0898	0.1662	0.0143	0.1456	0.1033	0.0277

Table A. 1. Alternative Measure

This table reports results from a regression analysis of an alternative measure of stock price crash on the CEO's general ability index. *Crash* is an indicator variable that equals one if there are one or more weekly returns falling 3.09 standard deviations below the mean weekly returns over the fiscal year, and zero otherwise (Chang, Chen, Zolotoy, 2017). *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos, 2013). *Generalist Index Dummy* is an indicator variable that equals one if the CEO's general ability index is above the yearly median, and zero otherwise. In all models, year and firm fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	Crash (t+1)	Crash (t+1)	Crash (t+1)	Crash (t+1)	Crash (t+1)	Crash (t+1)
	Logit	Logit	LPM	LPM	LPM	LPM
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Generalist Index	-0.054**		-0.011*		-0.018**	
	(-2.25)		(-1.82)		(-2.06)	
Generalist Index Dummy		-0.144***		-0.036***		-0.040**
		(-3.26)		(-3.26)		(-2.55)
Controls (Table 3)	Yes	Yes	Yes	Yes	Yes	Yes
Controls (Table 4)	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	No	No	No	No
Firm Fixed Effects	No	No	Yes	Yes	Yes	Yes
Observations	16,185	16,185	16,185	16,185	8,228	8,228
R-squared	0.0389	0.0392	0.0221	0.0227	0.0292	0.0294

Table A. 2. CEO Fixed Effects

This table reports results from CEO fixed effects panel regression analysis of stock price crashes on the CEO's general ability index from fiscal years 1993 through 2007. *Generalist Index* is computed by the first factor of applying principal components analysis to five proxies of general managerial ability: past Number of Positions, Number of Firms, Number of Industries, CEO Experience Dummy, and Conglomerate Experience Dummy (Custódio, Ferreira, Matos (2013)). *Generalist Index Dummy* is an indicator variable that equals one if the CEO's general ability index is above the yearly median, and zero otherwise. In all models, year, industry, and CEO fixed effects are included. Standard errors are robust and clustered by firm and t-statistics are in parentheses beneath the coefficients. Definitions of all other variables are in the Appendix. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	NCSKEW (t+1)	DUVOL (t+1)
	OLS	OLS
VARIABLES	(1)	(2)
Generalist Index	-0.033**	-0.021***
	(-2.47)	(-2.58)
NCSKEW	-0.099***	
	(-10.05)	
DUVOL		-0.117***
		(-12.40)
Dturnover	0.000	-0.000
	(0.02)	(-0.02)
Market Cap	0.204***	0.121***
	(12.44)	(12.40)
Market to Book	0.004*	0.003***
	(1.88)	(2.60)
Stock Volatility	-0.832	-0.859***
	(-1.50)	(-2.63)
Leverage	0.063	0.004
	(0.73)	(0.09)
ROA	0.174***	0.082***
	(3.70)	(2.74)
Disc. Accruals	0.012	0.008
	(0.50)	(0.60)
Constant	-1.503***	-0.782***
	(-11.12)	(-9.79)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
CEO Fixed Effects	Yes	Yes
Observations	16,193	16,188
R-squared	0.1753	0.1919