THREE ESSAYS ABOUT THE FINANCIAL IMPACT OF TOP MANAGERS ON FIRM

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Dedication

To my beloved wife, Soh Yoon Lee, who has been supporting my study through warming up the countless cold days and nights of Minnesota with so much prayer to God for my success as an academic researcher in global finance.

Abstract

The dissertation investigates how top level managers such as CEO (Chief Executive Officer) or CFO (Chief Financial Officer) affect the value of the firm in the financial market from various perspectives of finance. Prior research in executive turnover and governance has found that past performance is the primary determinant of top manager dismissal. Stock prices, which serve as the base of forward looking performance evaluation, are inevitably noisy. In the first essay, I find that default probability using the structural model of default is more informative than the stock price based performance measures in understanding forced turnover of top managers. Using hand collected data regarding CEO and CFO departures, I find that better governed firms fire a CEO or CFO sensitively to firm performance proxied by default probability. I do not find that the forced turnover became more sensitive to firm performance after Sarbanes Oxley Act of 2002. Instead, I find such increase in turnover-performance sensitivity since 1998, which is consistent with Kaplan et al. (2006). The second essay investigates how the CEO's media play affect the stock price of his or her firm. We find that non-informative media-driven attention affects stock prices transitorily. Based on 6,937 CEO interviews on the financial network, CNBC, during the period from 1997 to 2006, we find that a firm experiences a positive and significant abnormal return of 162 basis points over the [-2, 0] trading day window, and a negative and significant abnormal return of 108 basis points over the next ten trading days. This finding is robust to whether or not the interview was confounded by any major corporate events or by any news articles. Also, this pattern is commonly found across different stock exchanges and at different time periods. We find that this stock price response is not unique to technology stocks. Furthermore, we find that enthusiastic individual investors are the key driving force behind this stock price response pattern. The value of the firm may be affected by the skill of the manager. The third essay investigates this possibility with empirical data. We find that managerial skills are priced in the financial market as well as in the labor market. We find evidence that the financial accounting skills of a Chief Financial Officer is reflected in the firm's stock price. A transition from a CPA CFO to a non-CPA CFO results in a permanent value loss (Average Cumulative Abnormal Return) of 19.3% compared to a transition from a CPA CFO to another CPA CFO position, other things being equal. Ceteris paribus, having a CPA license is associated with having a 42% higher salary as a CFO. Moreover, we find that CPA skills matter in a firm in the sense that a transition from a non-CPA CFO to a CPA CFO position reduces the earnings management as well as the degree of information asymmetry. We find evidence that shareholders with different monitoring capabilities influence the hiring of CFOs with different certification of his or her skills. We also find that institutional investors significantly influence the hiring of CFOs with the specific skills they prefer depending on the business environment of the firm.

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Chapter I . Default Probability and Forward Looking Performance Evaluation in Forced Turnover of CEO and CFO

I.1. Introduction

One of the most important tasks of the board of directors is to hire and fire the top managers to maximize shareholder value. Board members learn about the ability of the top managers by observing the performance of the firm. If the directors perceive that the ability of the current top managers is lower than the average ability of other potential managers in the labor market, they fire the top managers. The threat of dismissal is an implicit incentive to motivate the top managers to exert their best effort. Prior research in CEO or CFO turnover has used stock market performance and accounting performance as the base of performance measurement. Performance measures based on stock prices are better than those based on accounting numbers, because stock prices are forward looking. However, the stock price is noisy as a performance measure, because it reflects all the information about the firm, much of which is not necessarily related to the ability of the manager.

If the purpose of firing the top managers based on performance is intended to minimize the downside risk of the firm, a performance measure that is specifically designed to capture the downside risk of the firm may outperform the existing performance measures in predicting forced turnover of the top managers. For the firms with positive amount of borrowing, the probability of bankruptcy measures the downside risk of the firm. To the extent that the stock market is efficient, the stock price would already reflect the true default probability of the firm. Therefore, the performance measure based solely on the stock price would be sufficient in predicting forced turnover of top managers, if the stock price is not too noisy. Moreover, the true default probability is estimated with some noise, which would lower the power of the estimated default probability in predicting forced turnovers of the top managers. However, is the stock

price so noisy that the estimated default probability is more informative in predicting forced turnover of the top managers?

Using hand-collected data of 497CEO departures, 564 CFO departures, and a matched sample from Execucomp between 1992 and 2006, I compare default probability, stock market performance, and accounting performance as predictors of CEO or CFO dismissals. I find that default probability outperforms other predictors of forced managerial turnover[1].

With the breakthrough of Merton (1974), followed by the successful commercialization by KMV, default probability that utilizes stock market information is widely used among both academicians and practitioners. Its outstanding performance in predicting bankruptcy has been widely studied and tested (Crosbie et al. 2003). It should be noted that default probability estimation by reduced form model outperforms the estimation by the structural model of default by design because the latter is used as a covariate in constructing the former (Bharath et al. 2008). However, using the latter would only create bias against finding the result in the research question, because the noise of the estimated default probability is bigger by using structural model of default instead of reduced form model. Therefore, I use structural model of default.

Researchers have found that the CEOs are forced out less sensitively to the performance if the governance of the firm is poor (Yermack, 1998; Weisbach, 1988; Fich et al., 2006).

[1] The default probability I use in this paper is according to Merton's (1974) structural model. It interprets the equity of the firm as a call option on the market value of assets, whose strike price is the face value of debt. The default probability is the tail probability of the distribution of the expected asset value in a specific horizon future being lower than the face value of debt. The distance to default measures how many standard deviations the face value of debt is away from the expected asset value. In this study, the horizon is set to be one year. I follow the literature in constructing default probability by Vassalou et al. (2004), and Bharath et al. (2008) in that only 100% of current maturity long-term debt and 50% of long-term debt are aggregated to be the face value of debt. Mathematical derivation is discussed in the appendix which largely comes from Bandyopadhyay (2005), Bharath et al. (2008), Crosbie et al. (2003), Saunders (2002), Duffie et al. (2003), Lando (2004). I follow Bharath et al (2008) in constructing the default probability and distance to default.

Consistent with the literature, I find that better governed firms fire the top managers more sensitively to the increase in default probability. More specifically, I find that the sensitivity of forced turnover to default probability disappears if board members are interlocked with the top executives. However, among the firms with interlocking directorships, if the firm has larger number of independent board members, the sensitivity of turnover to default probability recovers. Interlocking directorships occur when board members of firm A are executives of firm B and the executives of firm A serve as directors in firm B, reciprocally. If an interlocked director negatively evaluates the CEO of firm A, the fired CEO can, in turn, retaliate by negatively evaluating the interlocked director who serves as an executive in firm B.

Not only the board characteristics, but the shift in governance regime may have affected the turnover-performance sensitivity. After a series of high profile corporate accounting scandals that stemmed from overall governance failures, the U.S. Congress passed the Sarbanes Oxley Act of 2002 (SOX, hereafter) to enhance corporate governance. Whether such swift passage was truly effective in strengthening the corporate governance of the U.S. firms is questioned by many researchers (Chhaochharia et al., 2007; and Zhang, 2007). In this paper, I do not find that SOX has played a governance role in executive firings. Consistent with Kaplan et al. (2006), I find firms have become sensitive to performance since 1998.

Despite the common finding that the forced turnover of top managers is insensitive to performance when governance is bad, no study has examined the duration of the underperformance prior to an eventual firing depending on the governance strength. By using default probability, a novel feature in this paper is that I compare the duration of underperformance before the eventual removal of the poorly performing CEO or CFO depending on the strength of governance. I find that firms with poor governance, proxied by low institutional ownership and a high degree of managerial entrenchment, fire executives at a higher

default probability level after suffering from high default probability for over two years. In contrast, firms with better governance fire their CEOs or CFOs without experiencing significant deterioration in default probability.

I.2. Hypotheses Development and Literature Review

Methodologically, the literature on turnover-performance sensitivity of a CEO or CFO has been developed using stock market performance as the measure of managerial performance. In a seminal paper on relative performance evaluation (RPE), Gibbons et al. (1990) find that forced CEO turnover is negatively correlated with the firm's own stock return and positively correlated with market return. The key idea of RPE in a turnover setting is that the CEO should not be fired because of an exogenous shock to the industry that is beyond his or her control. Kang et al. (1995) use both industry relative stock performance and accounting performance in Japanese firms and find that forced turnover is negatively associated with the executive's firm performance, but not associated with industry performance. In contrast, recent research fails to find support for RPE in executive turnover (Jenter et al., 2008; Kaplan et al., 2006). Instead of investigating relative performance, some researchers, such as Volpin (2002), use the raw stock return as the financial performance measure and find a negative association between performance and the likelihood of a forced turnover.

To the best of my knowledge, this is the first paper to explicitly use probability of default as a performance measure to predict forced turnover of a CEO or CFO. Following the structural model of default by Merton (1974), the default probability used in this paper is the probability of the market value of a firm's assets being lower than the face value of debt within one year. Default probability is an important component of the market value of equity, and the former is found to carry more information content than the latter in this paper when it comes to executive dismissal. Equity is a call option on firm assets, where the strike price of this option is the face

value of debt (Merton 1974). Putting it in a binomial option pricing framework (Figure I-I), where the two outcomes in one year are (1) bankruptcy with a risk neutral default probability (p^Q), and (2) survival with a survival probability (1- p^Q), the market value of equity today (E_0) is the market value of equity in one year scaled by the survival probability ($E_1*(1- p^Q)$), ignoring the discount factor and dividends. Although the default probability I use in this paper is under the real measure, the distinction between risk neutral default probability and real default probability is irrelevant for the discussion in this paper, because they are a monotone transformation of each other through the change of measure. Rather, risk neutral probability of default is always higher than real default probability. This paper represents the first attempt to single out default probability from the market value of equity and connect information about the default probability with future managerial dismissals.

Naturally, underperformance in the stock market manifests itself as higher default probability, *ceteris paribus*, because after a period of underperformance, the market value of the firm's asset is low in the first place. Usually, forced turnover is known to be negatively associated with stock market performance, so forced turnover would be positively associated with the default probability level.

H1a: Forced turnover is positively associated with the level of default probability.

Realistically, a change in default probability should be more informative than the level of default probability as a performance measure, because such a change is what the manager contributes with his effort and ability. Therefore, lowering the default probability would make it less likely for the top manager to be fired.

H2a: Forced turnover is positively associated with the change of default probability.

However, one of the empirical concerns is that default probability could be driven by several other factors. First, when a firm is under the threat of a merger from an external control market, the manager optimally increases the leverage ratio as a measure of takeover protection to save his position (Jensen, 1986). In such a case, default probability would mechanically increase, but would lower the probability of dismissal. Thus, I control for the change in the leverage ratio prior to a turnover event. Second, default probability would reflect the past performance of the firm to the extent that the market value of the firm is used in constructing the probability measure. Thus, I control for the market value of the firm in running horse races among the default probability, the stock market performance, and accounting performance of the firm. If the estimated default probability is less noisy than the observed stock price as a measure of performance that is relevant to the decision to fire the top managers, the default probability would soak up the explanatory power of the conventional performance measures in predicting forced turnover.

H3a: Default probability is a less noisy performance measure than stock price or accounting performance in predicting forced turnover of top managers.

The positive relationship between governance strength and turnover-performance sensitivity has been extensively studied in many papers. Denis et al. (1997) document that

executive turnover performance sensitivity is (1) stronger if an outside board member is present and (2) weaker if the top executive has high ownership levels. Such finding is upheld by Volpin (2002) who, using the firm's stock return and accounting performance in Italian firms, finds that turnover-performance sensitivity is low if top managers are also controlling shareholders. Kang et al. (1995) document that Japanese firms with a main bank relationship show higher turnover-performance sensitivity if the performance is measured with accounting information. Fich et al. (2006) find that executive turnover is insensitive to firm performance when outside board members are "busy," that is, when more than half of the outside directors have more than two board memberships. Yermack (1995) finds higher turnover performance sensitivity for firms with smaller boards.

The governance problem coming from interlocking directorships, such as mutual back-scratching, has been documented by a number of papers in the context of executive compensation, operating performance, and option backdating (Fich et al., 2006; Hallock, 1997; Fahlenbrach et al., 2008; Bizjak et al., 2008). Fahlenbrach et al. (2008) fail to find a decrease in turnover-performance sensitivity associated with interlocking directorates using stock price based performance measures. In this paper, I bring a new measure of performance based on default probability. As long as interlocking directorship is a characteristic of governance failure, forced turnover would be less sensitive to performance when the board is interlocked.

H4a: Interlocking directorship weakens the turnover-performance sensitivity

Weisbach (1988) document that firms with larger portion of independent directors show more turnover-performance sensitivity, because having independent board is a characteristic of

strong governance. Despite the known governance failure of interlocking directorship, if the firm has more independent directors, forced turnover performance sensitivity would regain its power when the board is interlocked.

H5a: A larger number of independent directors would strengthen the turnover-performance sensitivity when the board has interlocked directors.

Once I find evidence that better governed firms fire their CEOs or CFOs sensitively to the default probability, I test whether the shift in governance regime in 2002 had a real effect in governance in the context of CEO or CFO dismissals. After the breakout of high-profile corporate scandals and bankruptcies due to governance failures, such as Enron and Worldcom in 2001, the U.S. Congress passed the Sarbanes Oxley Act of 2002 (SOX). One of the explicit purposes of SOX was to "improve corporate governance" to restore U.S. investor confidence. However, SOX is criticized by many academic researchers (Chhaochharia et al. 2007 and Zhang 2007) who find that it was a dead-weight cost especially to small firms, if not to the whole market, because of the high compliance cost of tough regulations such as internal control requirements of Section 404 (Holmstrom et al. 2003).

If SOX was effective in strengthening boards, turnover would be more sensitive to performance after SOX. I use SOX as a natural experiment to test the shift in governance regime. In addition, if the strengthening of the board took place due to an exogenous shock in government policy, forced CEO/CFO turnover of the firms with weaker governance characteristics, such as firms with high degree of managerial entrenchment, should have become more sensitive to performance after SOX. The degree of management entrenchment is measured by the G-index in

Gompers et al. (2003). Following Kaplan et al. (2006), I also test whether the increase in turnover-performance sensitivity took place since 1998.

H6a: Forced turnover of the firms with high degree of management entrenchment became more sensitive to performance after SOX.

It has been well documented that poorly governed firms dismiss the top managers insensitively to performance, whereas better governed firms dismiss the top managers sensitively to the performance. However, it is not clearly documented how long it takes to fire poorly performing managers depending on the governance strength of the firm. One of the benefits of using default probability as a performance measure is that it enables me to measure the duration of underperformance prior to the eventual dismissal of the top managers. The measure of governance strength I use is institutional ownership. Researchers have long debated the active governance role of institutional investors. (For a survey paper, please refer to Karpoff, 2001). The key argument is that institutional investors have too great of an ownership to simply sell off the stock when they are not satisfied with management. While atomistic small investors may "free-ride" on corporate decision making by simply buying and selling stock (Grossman et al., 1980), institutional investors have greater incentives to actively monitor and influence management. In a survey of 231fund managers, Felton (1997) documents that the majority (77%) of institutional investors take an active roles in corporate governance. An opposing argument is that the U.S. stock market is liquid enough to accommodate the selling pressure of institutional investors without overly affecting stock prices (Bhide, 1994). However, Parrino et al. (2003) find that a decrease in institutional ownership is correlated with forced CEO turnover based on pre-1992 data. Their findings support the notion that institutional investors only "vote with their feet"

when dissatisfied with management. Yet, their results also support the idea that boards of directors do care about pressure coming from institutional investors in a rather indirect form of selling. Thus, having high institutional ownership gives room for institutional investors to put pressure both directly and indirectly on the board to fire a poorly performing manager in the first place. Another avenue for institutional investors to fire badly performing managers is to put representatives on the board of directors, as a means to strengthen the board relative to the top management. This is a common practice of active institutional investors such as CalPERS.

H7a:Better governed firms would fire the CEOs or CFOs quickly after a short period of high default probability.

I.3. Data

This study is based on two related hand-collected datasets. First, I hand collected 2,061 CEO departures and 2,553 CFO departures from 1979 to 2006 from Factiva[2]. Then, for primary analysis of this paper, I narrowed the data down to 497 CEO departures and 564 CFO departures of the firms in Execucomp from 1992 to 2006. For these event firms, I found a matching sample of Execucomp firms that did not have CEO or CFO turnover in the five-year period centered at the year of departure of the event firm. Following the literature (Parrino, 1997; Parrino et al., 2003), I matched the firms by the following order: industry, size (market capitalization), book to market, and past performance. The matching criteria in collecting the non-event control sample is as follows: I identified the firm year of CEO or CFO departure by determining if there was a disappearance of the executive (execid) with a similar title relative to the previous year. Any of

[2] These numbers exclude the firms in the utility sector and financial sector.

the firm years that had a CEO or CFO departure in the two years before or after the event year were taken out of the non-event candidate pool, because of the need to compare default probabilities over more than two years before and after the executive's departure. For detailed construction of the data, please refer to Appendix 1.

I classify each turnover into forced or voluntary, following Parrino (1997), which is also followed by Jenter et al. (2008), and Kaplan et al. (2006). Departures triggered by takeovers are treated as voluntary departures. (For the distribution of observations by the year and for a detailed description of the classification rule, please see Appendix 1 and 2, respectively.)

In the regression testing the effect of default probability on forced turnover, if the firm went bankrupt before the executive departure or immediately after the departure, the correlation could be spurious. Therefore, I exclude the observation if the firm filed for bankruptcy between on one year before and one month after the departure. I downloaded institutional ownership from Thomson Financial's 13F database. I obtained the G-index as well as board information from Risk Metrics (formerly, IRRC). As is standard in the literature, I attributed the most recent prior year's G-index value if the Risk Metrics did not publish the value in a specific year.

I.4. Results

I.4.A. Summary Statistics

The sample means and t-tests indicating whether the sample of event firms is significantly different from that of the non-event matching firms is presented in Table I-I, Panel A. The event firms and matching firms are similar in terms of stock performance over the past 12 months, size, accounting profitability (OROA: Operating Return on Assets), institutional ownership, and accruals. The default probabilities of the event firms are significantly higher than

those of the matching firms. Voluntary departure event firms have a significantly higher number and portion of independent directors compared to their matching firms.

I.4.B. Default Probability and Forced Turnover

Following the literature, I run multinomial logit regressions throughout the paper using three outcomes: voluntary departure, forced departure, and no departure (i.e. matched sample). I assign a value of 0 to no departure, 1 to voluntary departure, and 2 to forced departure. Consequently, every regression generates two columns where the first column is the result of voluntary departures and the second column is the result of forced departures, both relative to no departures. The result is shown in Table I-II. In models 1 and 3, I use only the conventional explanatory variables that have been tested in the literature as being significant in predicting forced/voluntary turnovers (Parrino, 1997; Parrino et al., 2003; Jenter et al., 2006). These variables are (1) a buy and hold abnormal return relative to the industry median over 2 years or 3 years; (2) the value weighted CRSP market return over the correspondent period; (3) the change in operating return on assets over the fiscal year before the event; (4) the percentage (number) of independent directors on the board; (5) the change in institutional ownership over the last quarter prior to departure[3]; (6) the dummy variable that equals one if the observation is firing of the CEO and its control firm instead of the CFO and its matching firm[4]; (7) the size of the firm measured by the log of market value of equity; and (8) the change in leverage ratio, where the leverage ratio is measured by book value of debt divided by the sum of the book value of debt and market value

[3] I also try the same regressions with a change in institutional ownership over the last one year, and the results are largely the same.

[4] The reason for inserting a CEO dummy variable is to control for the mechanical fact that the portion of forced departures out of the total CEO departures (26%) is significantly larger than the proportion of CFO departures out of the total CFO departures (16%) in the sample. Please see Panel C of Table I-I.

of equity. Operating return on assets is measured as operating income before depreciation (data13 in Compustat) divided by total assets (data6). In models 2, 4, and 5, I add default probability at the end of the second to the last month prior to the executive departure announcement. In the same models in Table I-III, I replace the level of default probability with the change in default probability over the two years prior to executive departure. The change in default probability is the default probability at the end of the last month prior to the departure announcement minus the default probability at the end of the 24^{th} month prior to the departure announcement.

In column 2 of Table I-II, forced turnover is negatively associated with both the industry relative stock market performance and market performance. The top manager is more likely to be fired when his or her firm performs poorly and when the overall market is performing badly, which is actually beyond his or her control. This reaffirms the failure of the relative performance evaluation commonly found in the literature. As I include the level of default probability in model 2, I find that default probability is positively associated with the likelihood of forced turnover, but not with that of voluntary turnover. Moreover, the explanatory power of a stock market performance variable disappears. The same result is obtained when I switch the stock performance period to three years (model 4) and when I use both periods' stock performance variables (model 6). In Table I-III, I find a consistent result when I replace the level of default probability with the change in default probability. If the firm becomes more likely to go bankrupt over time, the CEO or CFO becomes more likely to be fired. Once controlling for the change of default probability, the relative stock market performance of the firm loses its explanatory power. This strongly suggests that default probability is a better performance measure than stock price performance in predicting forced turnover of top managers, because the stock price is too noisy and contains information that is not necessarily related to the ability of the top managers. Also,

this is because default probability specifically captures the information about downside risk, which the board of directors tries to minimize by firing the top managers.

Also of interest is that only when I use default probability, the percentage of independent directors is positively and significantly associated with forced turnover likelihood. In contrast, when default probability is not used, the same variable does not have any statistically significant coefficient. Given that an independent director's function is enhancing governance, this result may suggest that not using default probability suffers from omitted variable bias.

In contrast to Parrino et al. (2003), I do not find a significant "voting with their feet" phenomenon by institutional investors in forced turnovers. They find that prior to a forced CEO turnover, institutional investors are more likely to reduce their shareholdings significantly if they (1) hold prudent securities, (2) are engaged in momentum trading, and (3) are better informed. Such "Wall Street rules" of selling off the stock in response to poor performance of the firm are most drastically observed in the last quarter prior to a departure (Table II of Parrino et al., 2003). However, the coefficients of the change in institutional ownership over the last quarter prior to a departure are positive and significant in the forced departure parts of my regressions. There are several possibilities explaining this finding. It could be that institutional investors were more proactive in replacing poorly performing managers during the period of this study (from 1992 to 2006) than during the period of Parrino et al.'s (2003) study (1982 to 1993).

Throughout the different models, a change in the leverage ratio is negatively associated with the probability of forced turnover. As predicted, when the top managers increase the leverage ratio in response to an external takeover threat, the manager succeeds in protecting his or her control rights. Consequently, the likelihood of being forced out decreases.

Given that the key factors in default probability are the leverage ratio and volatility in addition to returns, one natural question is whether either the leverage ratio or volatility may be

driving the result, instead of the true default probability itself. Therefore, in Table I-IV and Table I-V, I add volatility measures and a leverage ratio to the explanatory variables in the full specification in Table I-II and Table I-III. Model 1 in Table I-IV is exactly the same as model 5 in Table I-II, and model 1 in Table I-V is exactly the same as model 5 in Table I-III. In model 2 of Table I-IV, the level of default probability loses its explanatory power once I include both the volatility measure and leverage ratio. However, a high leverage ratio predicts both voluntary and forced departures. Idiosyncratic risk measured by the root mean squared in the Fama French 4 factor model over the six months prior to a departure is positively correlated with both voluntary and forced departures. Both of the key components fail to discriminate between forced departure and voluntary departure. Twelve-month equity volatility even predicts only voluntary departure. The result is largely the same in Table I-V. When I use a change in default probability over the past two years, the past 12 months' equity volatility has no explanatory power for neither of the turnover outcomes. This strongly supports that the simple component of default probability is not driving the result. At least, the key components of the default probability are incomplete in explaining the forced turnover of a CEO or CFO. Instead, the non-linear structure of default probability in combining the key factors capture the downside risk of the firm, and the structure filters out the noise efficiently. As a result, default probability works as a better performance measure than a stock price based performance measure. From here, I use only the change of default probability for the sake of consistency of presentation in the paper.

If default probability is a better performance measure to inform us about forced turnover, it should outperform other measures in predicting forced turnover when used together with various characteristics of the firm that are known to be associated with the strength of governance. When the board is interlocked, the board member and the top manager have mutual incentives to be lenient in evaluating each other's performance due to potential retaliation. Therefore, if I

relate the performance measure with the interlocking directorship variable by interacting, the sign of its coefficient should be the opposite of the sign of the coefficient of the performance measure in predicting forced turnover. In Table I-VI, I use the percentage of interlocked board members out of the total board members as the measure of an interlocking directorship, following Core et al. (1998). In Table I-VI, I add interaction terms between the interlocking directorship and the respective performance measures, i.e. change in default probability and industry relative stock performance over the specified period. The coefficient of interaction between default probability and interlocking directorship is negative and significant at a 1% level in the last specification, which suggests that firms with interlocking directorships replace the top managers insensitively to the performance. The direction and significance is quite robust throughout the empirical model specification when I use default probability as a performance measure. In contrast, the coefficient of the interaction term between industry relative stock performance and an interlocking directorship is insignificant in the second and third specifications, and even negative and significant in the second specification. All the evidence reaffirms that default probability is a better performance measure when predicting forced turnover of top managers. In addition, the result supports that an interlocking directorship is a characteristic of weak governance. This characteristic adds to the literature on corporate governance that only shows evidence for executive compensation and firm performance. This result is the first indication that an interlocking directorship influences executive turnover. In contrast with Fahlenbrach et al. (2008), I find a decrease in turnover-performance sensitivity associated with interlocking directorates using default probability as a performance measure. The same is not found when I use a stock-based performance measure. This finding strongly suggests that stock price is noisier than default probability as a measure of performance to be used in decision to fire top managers.

Pushing a step further into the governance problem of interlocking directorships and default probability as a performance measure to predict forced turnover, having a larger portion

of independent directors would make the forced turnover more sensitive to the performance. The story is that although the turnover is less sensitive to performance when the board is interlocked, if the board has more independent directors, the decrease in turnover-performance sensitivity would be mitigated thanks to the positive governance effect of the independent directors. Therefore, starting from the last specification in Table I-VI, I add interaction terms of the performance measure, interlocking directorship, and percentage of independent directors in Table I-VII. My prediction is that the coefficient of a three-way interaction term would have the same sign and significance as the coefficient of the performance measure. I also include interlocking directorship to test whether the firms with interlocking directorships are less likely to fire the CEO or CFO in the first place. I also include the interaction term between board independence and interlocking directorship to test whether having more independent directors reinvigorates the firm in the dismissal of the top managers in the presence of board interlocks.

Table I-VII shows that having more independent directors still cures the problem of having interlocking directorships. The coefficient of the three-way interaction term among a change in the default probability, interlocking directorship, and board independence is positive and significant at a 1% level. Although the presence of interlocking directorship makes the board's firing decision less sensitive to performance, having more independent directors makes the decision more sensitive to performance. As predicted, the coefficient of interlocking directorship is negative, and the coefficient of the interaction term between interlocking directorship and board independence is positive and significant. This suggests that the firm with interlocking directorship is less likely to fire the CEO or CFO in the first place, controlling for firm performance, size, change in institutional ownership, and change in leverage ratio. However, having more independent directors reduces the job security of the top managers coming from the presence of the interlocked directorship. In contrast, the coefficients of interaction terms among

industry relative stock performance, interlocking directorship, and board independence are insignificant. This reaffirms that default probability is a better performance measure in predicting forced turnover of top managers.

One empirical concern is that sometimes, top managers are fired due to problems unrelated to performance, such as accounting restatements. Burks (2008) find that an accounting restatement increased the likelihood of forced CEO turnover before SOX, but not after SOX. In contrast, an accounting restatement increased CFO terminations after SOX. Therefore, in the second regression in Table I-VII, I exclude the turnover observations if it was preceded by a restatement within 90 days or less. The initial restatement date was collected from the GAO website, and the result is robust. In Table I-VIII, I replace the measure of an interlocking directorship from the percentage figure to the dummy variable as a robustness check. The interlocking dummy takes the value of 1 if any of the board member is interlocked with the top executives of the company and 0 otherwise. The result is largely consistent.

In contrast to Parrino et al. (2003), I do not find a significant "voting with their feet" phenomenon by institutional investors in forced turnovers. They find that prior to a forced CEO turnover, institutional investors are more likely to reduce their shareholdings significantly if they (1) hold prudent securities, (2) are engaged in momentum trading, and (3) are better informed. Such "Wall Street rules" of selling off the stock in response to poor performance of the firm are most drastically observed in the last quarter prior to departure (Table II of Parrino et al. 2003). However, the coefficients of the change in institutional ownership over the last quarter prior to departure are positive and significant in the forced departure parts of my regressions. There are several possibilities explaining this finding. It could be that institutional investors are more proactive in replacing poorly performing managers during the period of this study (from 1992 to 2006) than during the period of Parrino et al.'s (2003) study (1982 to 1993). Alternatively, selling

by institutional investors may have already occurred long before the quarter prior to departure. In an unreported analysis, I find that institutional ownership does not decrease over the period of two years before and two years after a forced turnover.

As pointed out above, SOX was a shift to a new governance regime. After a series of high profile corporate bankruptcies caused by accounting scandals which, in turn, stemmed from poor corporate governance, legislators passed SOX to strengthen the governance of U.S. corporations. Although there was no specific clause in SOX that specified that dismissals of top managers should be sensitive to firm performance, the turnover literature predicts that better governance regimes should be accompanied by increased turnover-performance sensitivity. If such increased sensitivity has to take place, it should be the firms that have weaker governance characteristics. In this subsection, the governance characteristics are proxied by the G-index of Gompers et al. (2003), and institutional ownership.

Gompers et al.'s (2003) G-index is a count of the clauses in corporate charters that restrict shareholder's rights to replace the top managers, such as a staggered board, poison pill, and golden parachute. The original argument for using the G-index is that it is a measure of management entrenchment, because such clauses make it more difficult to fire the top managers when the shareholders are dissatisfied with the poorly performing managers. Although such restricting clauses were installed as an equilibrium outcome in response to a higher likelihood of a takeover threat from an external control market, understanding the index as a degree of entrenchment should not be a problem in the context of forced turnover of top managers. *Ceteris paribus*, forced turnover of top managers would be insensitive to firm performance. Burks (2008) document that the board members have incentive to fire the managers to demonstrate their vigilance as expert monitors to outside shareholders, especially after SOX. If this intensification of the board's monitoring activity should take place, it would be the firms with a higher degree of

managerial entrenchment, because it was commonly understood that the board had been so unable to fire the managers even after underperformance. Therefore, in the turnover regression model, the coefficient of the interaction among the performance measure, "After SOX" dummy variable, and the G-index would have the same sign with the coefficient of the performance measure.

Kaplan et al. (2006) find that CEO turnovers became more sensitive to performance since 1998, instead of after SOX. Therefore, I replace the After SOX dummy variable with After 1997 dummy variable to test the consistency in the literature by using default probability as a performance measure.

As shown in Table I-IX, the usage of time dummy deprives of the statistical significance of the performance measures, regardless of whether it is change in default probability or industry relative stock performance over the past 2 years. It does not support that forced turnover became more sensitive to firm performance after SOX. Degree of management entrenchment is not associated with turnover-performance sensitivity. However, the result when using "After 1997" as time period dummy suggests that the turnover of CEO or CFO became more sensitive to performance after 1997. The coefficient of the interaction term between change of default probability and "after 1997" dummy variable is significant with a p value of 0.101. This is consistent with the finding of Kaplan et al. (2006). Such increase in turnover-performance sensitivity is captured only by the change of default probability when the two performance measures compete.

Thus far, the evidence consistently shows that default probability is more informative than stock price or accounting based performance measures in predicting forced turnover of top managers. For example, if the firm is poorly governed, the board would be unable to dismiss the poorly performing manager in a timely manner. Hence, the prolonged underperformance would increase default probability before the eventual dismissal. If the firm is better governed, the

board would be able to fire the poorly performing manager in a timely manner. Hence, the shorter period of underperformance would not increase default probability before the eventual dismissal. This subsection focuses on testing whether this difference in default probability prior to the firing of the top managers due to the difference in governance strength is significant. Empirically, since the default probability is highly skewed to the positive with many observations close to the value of zero, investigating the distance to default instead is better for testing the difference of group means. Distance to default measures how many standard deviations the face value of debt would be away from the expected market value of assets in a forecasting horizon, and is inversely related to default probability just like the relationship between the Z-score and the p-value in standard statistical inferences[5].

The strength of governance is measured by institutional ownership. Although the positive effect of institutional investors has been well documented in the context of executive compensation (Hartzell et al. 2003) and firm performance subsequent to executive turnover (Huson et al. 2004), evidence for executive turnover has been scarce (Parrino et al. 2003). It is somewhat strange to think that institutional investors should be associated with the characteristics of good governance in every aspect of corporate governance except for executive turnover. Extending the reasoning that institutional investors work as a monitoring mechanism in forced managerial turnover, I predict that a forced turnover would be more sensitive to performance if the firm has higher institutional ownership. In the regression model, I predict that the sign of the coefficient of the interaction between the performance measure and institutional ownership would be the same as the sign of the coefficient of the performance measure.

In Panel A of Figure I-II, I present the mean distances to default of high institutional ownership firms and low institutional ownership firms that fired CEOs or CFOs. At first glance,

[5] Researchers often use distance to default and default probability interchangeably.

it shows that low institutional ownership firms suffer from lower distance to default, i.e., higher default probability, for a long period of time before they eventually fire the top managers. However, one concern about using institutional ownership as the criterion to separate the group of governance is the problem of self-selection by institutional investors. It may be that institutional investors are more likely to invest in firms that are better governed in the first place, where high turnover-performance sensitivity would be mechanically associated with high institutional ownership. Therefore, I utilize the non-event control group firms to control for this self-selection problem. I sort *all* the firms in both the event set and control set by the percentage of institutional ownership one year prior to departure. I then label the top 40% of the observations as high institutional ownership firms and the bottom 40% as low institutional ownership firms. I further divide the respective high and low institutional ownership firms according to dismissal event firms versus matching firms. For the group of high institutional ownership firms, I test whether the mean distance to default of event firms is significantly lower than that of control firms at the end of each month. I do the same for the group of low institutional ownership firms. The observation period is from 36 months prior to the event to the month end right before the announcement of a CEO or CFO firing. I use a simple t-test to compare the two mean distances to default. The results are shown in Panels B and C in Figure I-II.

In Panel B, showing firms with high institutional ownership, I find that the mean distances to default of event firms and of control firms are not significantly different from each other until the month of the forced departure. The distance to default of the event firms begins to decrease from 12 months prior to the forced departure, but the decline is not statistically significant. In Panel C of Figure I-II, which shows low institutional ownership firms, I find that the mean distance to the default of event firms is significantly lower than that of control firms within 27 months before the month immediately prior to the departure. These results strongly suggest that weakly governed firms suffer from a shorter distance to default (higher default

probability) for a longer period of time prior to forced turnover. Considering the fact that credit spreads in the debt market are driven by default probability, one can infer that firms with weak boards suffer a higher cost of debt capital by simply not being able to fire the poorly performing CEOs or CFOs in a timely manner.

I.5. Conclusion

An observed stock price is noisy as the performance measure in determining whether to fire the top manager or not. Some of the information reflected in the stock price is not necessarily informative about the ability of the top manager. Default probability is noisy as well, because it can only be estimated with some margin of error. However, default probability is designed to capture the downside risk of the firm which the board is supposed to minimize by replacing the poorly performing manager. In this respect, default probability serves as a better performance measure than the stock price in the process of deciding whether to fire the top managers. I also find strong empirical evidence that default probability is less noisy than the stock price as a performance measure in predicting forced turnover of top managers. Although the key components of the default probability construction are volatility and leverage ratio, these components are unable to discriminate between the cases of voluntary departure and forced departure. This is because of the non-linear functional form of the default probability that is specifically designed to capture the downside risk of the firm.

Consistent with the literature in corporate governance and executive turnover, I find that forced turnovers of top managers are sensitive to firm performance if the firm is better governed. By using default probability as a performance measure, I find new evidence that interlocked boards are less sensitive to performance in terms of firing poorly performing managers. I find that SOX was not effective in strengthening the turnover-performance sensitivity of the firms.

However, I find that both CEOs and CFOs are fired sensitively to the firm performance after 1997. I find that weak governance causes the firm to undergo a prolonged period of higher default probability by not being able to fire a poorly performing CEO/CFO in a timely manner.

It should be recognized that the study of this paper was confined to the firms with positive amount of debt, because the default probability can exist only when a firm has borrowings. However, the key concept of the argument is that downside risk measure works better than stock price as a base of performance measure related to executive dismissals. Delisting may serve as a proxy for the event of serious underperformance where the board may want to avoid. Therefore, the probability of hitting bankruptcy or delisting, using survival analysis may provide a more comprehensive picture, which I leave it as a subject of future study. Using such downside risk measure may open up an avenue to better predict the forced turnover of top managers in more general setting.

Table I-I. Summary statistics and correlation table

Panel A. Comparison of event sample and control sample with t-test

	Voluntary Turnover			Forced Turnover		
	Event	Match	t-stat	Event	Match	t-stat
After SOX	42%	42%	0	49%	49%	0
	840	840		221	221	
Default Prob. Pior 2m	**15%**	**10%**	**3.23**	**18%**	**11%**	**2.55**
	701	666		193	175	
Past 12 month stock return	5%	11%	-1.64	2%	6%	-0.69
	833	811		221	211	
Equity Volatility	51%	48%	1.89	52%	51%	0.59
	840	840		221	221	
MV Leverage Ratio	**0.2116**	**0.1656**	**4.61**	**0.217**	**0.1665**	**2.5**
	824	812		219	214	
# of Indep. Directors	**5.9599**	**5.5953**	**2.68**	6.4125	6.1216	1.01
	598	551		160	148	
Size:Log(MVE)	7.103	7.0482	0.67	7.3371	7.229	0.62
	827	818		220	215	
Profit Growth Prior 1 yr	8%	10%	-0.06	-283%	-24%	-0.87
	825	820		219	215	
Institutional Ownership	64%	63%	0.59	61%	63%	-1.06
	752	775		202	205	
Ind.Rel. Accrual	-0.129	-0.035	-1.59	-0.018	-0.001	-1.11
	828	821		220	217	

The numbers of non-missing observations are on every second line. Profit Growth 1 yr prior is the growth in operating income before depreciation divided by total assets.

Panel B. Correlation Table

Correlation Table

		Voluntary Turnover											
Forced Turnover		Chg.DP.2y	Ind.Rel.Stk.2y	Mkt. Ret.2y	Chg. OROA 1y	%Indep	%Inter-lock	1q.Chg. Inst.Own	1{CEO}	Size	Chg.Leverage	MVLeverage	Eq.Vol. 1y
	Chg.DP.2y		-0.34	0.02	-0.01	-0.13	0.06	-0.15	-0.01	-0.11	0.01	0.20	0.33
	Ind.Rel.Stk.2y	-0.35		-0.21	0.07	0.08	-0.01	0.04	-0.04	0.23	-0.01	-0.23	-0.18
	Mkt.Ret.2y	0.02	-0.24		-0.04	-0.06	0.04	-0.06	0.02	-0.03	-0.03	-0.07	-0.19
	Chg.OROA1y	0.02	0.05	-0.11		0.07	0.01	-0.04	0.00	0.00	-0.01	0.07	-0.04
	%Indep	-0.03	-0.01	-0.04	0.12		-0.26	0.02	-0.04	0.13	0.01	-0.02	-0.18
	%Interlock	-0.09	-0.08	-0.06	0.01	-0.20		0.01	0.00	0.06	-0.01	0.05	0.06
	1q.Chg.Inst.Own	-0.08	-0.01	-0.04	-0.01	0.02	-0.01		-0.03	-0.01	0.02	-0.01	-0.08
	1{CEO}	-0.02	0.10	0.10	-0.04	-0.06	-0.03	-0.11		0.07	-0.05	-0.01	-0.03
	Size	-0.26	0.14	-0.04	0.06	0.19	-0.01	0.02	0.10		-0.02	-0.35	-0.32
	Chg.Leverage	-0.01	0.09	0.01	0.01	0.07	-0.01	-0.01	0.05	0.08		-0.05	0.06
	MVLeverage	0.34	-0.18	-0.05	0.05	0.05	-0.10	0.02	-0.08	-0.34	-0.06		0.22
	Eq.Vol.1y	0.36	-0.19	-0.23	0.02	-0.19	0.03	-0.06	-0.14	-0.35	-0.05	0.27	

Default probability is measured at the end of the second last month prior to executive departure.MV Leverage is the leverage ratio based on market value of equity. # indepdirs is the number of indepdendent directors. OROA is operating income before depreciation divided by total assets. INSTOWNERSHIP is the aggregate percentage ownership by institutional investors. Ind.Rel.Accrual is the amount of accruals relative to industry median, where industry is defined by Fama French 49 industry grouping.

Panel C. Frequency table of forced/voluntary departure and CEO vs. CFO

	Voluntary	Forced	Subtotal
CFO	471	93	564
	84%	16%	100%
CEO	369	128	497
	74%	26%	100%
Total	840	221	1,061
	79%	21%	100%

p-value of Pearson's chi-squared test < 0.001

CEO has disproportionately more forced departures than CFOs.

Table I-II. Multinomial logit model of forced/voluntary departure of CEO and CFO: Default probability level vs. stock/accounting performance controlling for the percentage of independent directors

Multinomial Logit Model	1		2		3		4		5	
Column	1	2	3	4	5	6	7	8	9	10
Departure Outcome	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced
Default Prob. 2m Prior			0.47	**1.07 *** **			0.445	**1.144 *** **	0.425	**0.975 ** **
			(0.291)	**(0.387)**			(0.286)	**(0.378)**	(0.294)	**(0.394)**
2 yr Ind.Rel. Stk. Perf.	**-0.199 ***	**-0.422 ** **	-0.148	-0.268					0.014	-0.16
	(0.104)	**(0.177)**	(0.107)	(0.173)					(0.157)	(0.281)
2 yr VW Mkt Return	0.056	**-0.925 *** ***	0.135	**-0.698 ***					-0.227	**-1.292 ***
	(0.240)	**(0.354)**	(0.245)	**(0.358)**					(0.422)	**(0.694)**
3 yr Ind.Rel. Stk. Perf.					**-0.16 ** **	**-0.259 ***	**-0.13 ***	-0.157	-0.142	-0.096
					(0.072)	**(0.138)**	**(0.074)**	(0.127)	(0.104)	(0.189)
3 yr VW Mkt Return					0.093	-0.337	0.124	-0.23	0.244	0.458
					(0.154)	(0.240)	(0.155)	(0.238)	(0.269)	(0.441)
Change in OROA	-0.009	-0.04	-0.011	-0.044	-0.01	-0.042	-0.01	-0.046	-0.01	-0.043
	(0.028)	(0.029)	(0.030)	(0.030)	(0.028)	(0.028)	(0.030)	(0.029)	(0.030)	(0.029)
% of Ind. Directors	0.171	0.899	0.2	0.966	0.265	0.902	0.296	0.997	0.306	**1.089 ***
	(0.385)	(0.613)	(0.386)	(0.619)	(0.393)	(0.615)	(0.393)	(0.624)	(0.393)	**(0.631)**
Chg Inst. Ownership	1.095	1.988	1.393	**2.559 ***	1.149	2.149	1.429	**2.731 ***	1.417	**2.61 ***
	(0.932)	(1.656)	(0.967)	**(1.534)**	(0.937)	(1.697)	(0.974)	**(1.541)**	(0.979)	**(1.517)**
1{CEO}	-0.036	**0.718 *** ***	-0.04	**0.706 *** ***	-0.05	**0.691 *** ***	-0.053	**0.679 *** ***	-0.054	**0.676 *** ***
	(0.130)	**(0.208)**	(0.130)	**(0.210)**	(0.131)	**(0.209)**	(0.131)	**(0.210)**	(0.131)	**(0.211)**
Size:Log(MVE)	-0.017	0.072	-0.001	**0.113 ***	-0.014	0.074	0.001	**0.116 ***	0.001	**0.112 ***
	(0.040)	(0.063)	(0.041)	**(0.063)**	(0.040)	(0.064)	(0.042)	**(0.064)**	(0.042)	**(0.063)**
Chg. Leverage Ratio	-0.019	**-0.044 ***	-0.02	**-0.049 ***	-0.021	**-0.039 ***	-0.022	**-0.045 ***	-0.022	**-0.05 ***
	(0.014)	**(0.024)**	(0.015)	**(0.027)**	(0.015)	**(0.022)**	(0.016)	**(0.025)**	(0.016)	**(0.027)**
Constant	-0.145	**-2.802 *** ***	-0.355	**-3.324 *** ***	-0.24	**-2.856 *** ***	-0.435	**-3.414 *** ***	-0.43	**-3.402 *** ***
	(0.379)	**(0.620)**	(0.403)	**(0.633)**	(0.390)	**(0.617)**	(0.411)	**(0.634)**	(0.411)	**(0.634)**
N	1112		1112		1097		1097		1097	
Pseudo R-square	0.0228		0.0263		0.0213		0.0252		0.0271	

For comments about common variables statistical significance, and standard errors, please refer to Appendix 2.

Table I-III. Multinomial logit model of forced/voluntary departure of CEO and CFO: Change in default probability vs. stock/accounting performance controlling for the percentage of independent directors

Multinomial Logit Model	1		2		3		4		5	
Column	1	2	3	4	5	6	7	8	9	10
Departure Outcome	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced
Chg in DP 2 yr			0.273	**0.791 ****			0.32	**0.921 *****	0.293	**0.756 ****
			(0.238)	**(0.348)**			(0.226)	**(0.337)**	(0.244)	**(0.359)**
2 yr Ind.Rel. Stk. Perf.	**-0.199 ***	**-0.422 ****	-0.182	-0.298					0.001	-0.154
	(0.104)	**(0.177)**	(0.117)	(0.186)					(0.170)	(0.309)
2 yr VW Mkt Return	0.056	**-0.925 *****	0.007	**-0.912 ****					-0.349	**-1.42 ****
	(0.240)	**(0.354)**	(0.246)	**(0.356)**					(0.429)	**(0.710)**
3 yr Ind.Rel. Stk. Perf.					**-0.16 ****	**-0.259 ***	**-0.156 ****	-0.196	-0.162	-0.135
					(0.072)	**(0.138)**	**(0.074)**	(0.135)	(0.110)	(0.209)
3 yr VW Mkt Return					0.093	-0.337	0.08	-0.362	0.265	0.416
					(0.154)	(0.240)	(0.157)	(0.241)	(0.275)	(0.459)
Change in OROA	-0.009	-0.04	-0.007	-0.025	-0.01	-0.042	-0.007	-0.026	-0.007	-0.024
	(0.028)	(0.029)	(0.025)	(0.023)	(0.028)	(0.028)	(0.026)	(0.023)	(0.026)	(0.022)
% of Ind. Directors	0.171	0.899	0.367	**1.163 ***	0.265	0.902	0.372	**1.132 ***	0.385	**1.225 ***
	(0.385)	(0.613)	(0.400)	**(0.657)**	(0.393)	(0.615)	(0.402)	**(0.655)**	(0.402)	**(0.660)**
Chg Inst. Ownership	1.095	1.988	1.541	**2.986 ****	1.149	2.149	1.618	**3.19 ****	1.605	**3.061 ****
	(0.932)	(1.656)	(1.015)	**(1.465)**	(0.937)	(1.697)	(1.015)	**(1.480)**	(1.021)	**(1.461)**
1{CEO}	-0.036	**0.718 *****	-0.011	**0.707 *****	-0.05	**0.691 *****	-0.017	**0.687 *****	-0.018	**0.685 *****
	(0.130)	**(0.208)**	(0.133)	**(0.214)**	(0.131)	**(0.209)**	(0.133)	**(0.214)**	(0.133)	**(0.215)**
Size:Log(MVE)	-0.017	0.072	-0.013	0.086	-0.014	0.074	-0.005	0.096	-0.004	0.095
	(0.040)	(0.063)	(0.041)	(0.063)	(0.040)	(0.064)	(0.041)	(0.063)	(0.041)	(0.063)
Chg. Leverage Ratio	-0.019	**-0.044 ***	-0.019	**-0.047 ***	-0.021	**-0.039 ***	-0.019	**-0.043 ***	-0.019	**-0.047 ***
	(0.014)	**(0.024)**	(0.016)	**(0.028)**	(0.015)	**(0.022)**	(0.017)	**(0.026)**	(0.017)	**(0.028)**
Constant	-0.145	**-2.802 *****	-0.319	**-3.111 *****	-0.24	**-2.856 *****	-0.408	**-3.223 *****	-0.41	**-3.246 *****
	(0.379)	**(0.620)**	(0.395)	**(0.642)**	(0.390)	**(0.617)**	(0.403)	**(0.640)**	(0.402)	**(0.641)**
N	1112		1060		1097		1059		1059	
Pseudo R-square	0.0228		0.0255		0.0213		0.0247		0.0269	

For comments about common variables statistical significance, and standard errors, please refer to Appendix 2.

Table I-IV. Multinomial logit model of forced/voluntary departure of CEO and CFO: Level of default probability vs. volatility and leverage ratio

Multinomial Logit Model	1		2		3	
Column	1	2	3	4	5	6
Departure Outcome	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced
Default Prob. 2m Prior	0.425	**0.975 ****	-0.25	0.264	-0.269	0.193
	(0.294)	**(0.394)**	(0.360)	(0.491)	(0.359)	(0.477)
12m Equity Vol.			**11.246 ***	14.352		
			(6.132)	(9.300)		
FF4FSigma					**14.001 ****	**20.137 ****
					(6.824)	**(10.178)**
MV Leverage Ratio			**1.34 *****	**1.274 ****	**1.312 *****	**1.232 ****
			(0.381)	**(0.595)**	**(0.381)**	**(0.595)**
2 yr Ind.Rel. Stk. Perf.	0.014	-0.16	0.02	-0.156	0.026	-0.146
	(0.157)	(0.281)	(0.157)	(0.276)	(0.157)	(0.273)
2 yr VW Mkt Return	-0.227	**-1.292 ***	-0.01	-1.019	0.005	-0.964
	(0.422)	**(0.694)**	(0.440)	(0.715)	(0.438)	(0.716)
3 yr Ind.Rel. Stk. Perf.	-0.142	-0.096	-0.124	-0.074	-0.124	-0.071
	(0.104)	(0.189)	(0.104)	(0.184)	(0.104)	(0.181)
3 yr VW Mkt Return	0.244	0.458	0.162	0.363	0.133	0.305
	(0.269)	(0.441)	(0.273)	(0.446)	(0.274)	(0.451)
Change in OROA	-0.01	-0.043	-0.015	-0.047	-0.015	-0.046
	(0.030)	(0.029)	(0.029)	(0.031)	(0.029)	(0.031)
% of Ind. Directors	0.306	**1.089 ***	0.34	**1.144 ***	0.36	**1.187 ***
	(0.393)	**(0.631)**	(0.399)	**(0.634)**	(0.400)	**(0.636)**
Chg Inst. Ownership	1.417	**2.61 ***	1.362	**2.571 ***	1.398	**2.641 ***
	(0.979)	**(1.517)**	(0.986)	**(1.488)**	(0.987)	**(1.486)**
1{CEO}	-0.054	**0.676 *****	-0.035	**0.702 *****	-0.034	**0.707 *****
	(0.131)	**(0.211)**	(0.132)	**(0.212)**	(0.132)	**(0.212)**
Size:Log(MVE)	0.001	**0.112 ***	0.051	**0.164 ****	0.059	**0.178 *****
	(0.042)	**(0.063)**	(0.044)	**(0.067)**	(0.045)	**(0.068)**
Chg. Leverage Ratio	-0.022	**-0.05 ***	-0.019	**-0.047 ***	-0.019	**-0.047 ***
	(0.016)	**(0.027)**	(0.014)	**(0.028)**	(0.014)	**(0.029)**
Constant	-0.43	**-3.402 *****	**-1.388 *****	**-4.47 *****	**-1.473 *****	**-4.671 *****
	(0.411)	**(0.634)**	**(0.516)**	**(0.797)**	**(0.523)**	**(0.795)**
N	1097		1097		1097	
Pseudo R2	0.0271		0.0347		0.0355	

For comments about common variables statistical significance, and standard errors, please refer to Appendix 2. 12m Equity Vol. is the standard deviation of monthly stock returns over the past 12 months prior to executive departure. FF4F Sigma is the standard deviation of residuals in the estimation of daily Fama French 4 factor model over the six months prior to departure.

Table I-V. Multinomial logit model of forced/voluntary departure of CEO and CFO: Change in default probability vs. volatility and leverage ratio

Multinomial Logit Model	1		2		3	
Column	1	2	3	4	5	6
Departure Outcome	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced
Chg in DP 2 yr	0.293	**0.756 ****	0.078	0.489	0.057	0.439
	(0.244)	**(0.359)**	(0.254)	(0.373)	(0.256)	(0.370)
12m Equity Vol.			9.12	12.361		
			(5.672)	(8.844)		
FF4FSigma					**11.896 ***	**17.847 ***
					(6.432)	**(9.957)**
MV Leverage Ratio			**1.252 *****	**1.242 ****	**1.222 *****	**1.181 ****
			(0.369)	**(0.585)**	**(0.370)**	**(0.590)**
2 yr Ind.Rel. Stk. Perf.	0.001	-0.154	0.011	-0.14	0.013	-0.137
	(0.170)	(0.309)	(0.168)	(0.298)	(0.168)	(0.294)
2 yr VW Mkt Return	-0.349	**-1.42 ****	-0.088	-1.089	-0.068	-1.035
	(0.429)	**(0.710)**	(0.449)	(0.731)	(0.448)	(0.731)
3 yr Ind.Rel. Stk. Perf.	-0.162	-0.135	-0.116	-0.082	-0.113	-0.075
	(0.110)	(0.209)	(0.109)	(0.195)	(0.109)	(0.191)
3 yr VW Mkt Return	0.265	0.416	0.21	0.346	0.184	0.298
	(0.275)	(0.459)	(0.278)	(0.463)	(0.280)	(0.466)
Change in OROA	-0.007	-0.024	-0.011	-0.028	-0.011	-0.027
	(0.026)	(0.022)	(0.026)	(0.023)	(0.026)	(0.022)
% of Ind. Directors	0.385	**1.225 ***	0.406	**1.266 ***	0.428	**1.309 ****
	(0.402)	**(0.660)**	(0.407)	**(0.661)**	(0.409)	**(0.662)**
Chg Inst. Ownership	1.605	**3.061 ****	**1.825 ***	**3.263 ****	**1.853 ***	**3.327 ****
	(1.021)	**(1.461)**	**(1.048)**	**(1.449)**	**(1.048)**	**(1.450)**
1{CEO}	-0.018	**0.685 *****	-0.007	**0.7 *****	-0.006	**0.704 *****
	(0.133)	**(0.215)**	(0.134)	**(0.215)**	(0.135)	**(0.215)**
Size:Log(MVE)	-0.004	0.095	0.059	**0.164 ****	0.067	**0.177 ****
	(0.041)	(0.063)	(0.045)	**(0.069)**	(0.045)	**(0.070)**
Chg. Leverage Ratio	-0.019	**-0.047 ***	-0.017	-0.046	-0.017	-0.046
	(0.017)	**(0.028)**	(0.016)	(0.030)	(0.016)	(0.030)
Constant	-0.41	**-3.246 *****	**-1.469 *****	**-4.461 *****	**-1.564 *****	**-4.661 *****
	(0.402)	**(0.641)**	**(0.524)**	**(0.817)**	**(0.531)**	**(0.816)**
N	1059		1059		1059	
Pseudo R2	0.0269		0.035		0.0358	

For comments about common variables statistical significance, and standard errors, please refer to Appendix I-2.

Table I-VI. Multinomial logit model of forced/voluntary departure of CEO and CFO

Multinomial Logit Model	1		2		3		4	
Column	1	2	3	4	5	6	7	8
Departure Outcome	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced	Voluntary	Forced
Chg. In DP 2 yr	0.379	**1.171 *****	0.241	**0.954 *****	0.306	**1.052 *****	0.261	**0.932 ****
	(0.232)	**(0.360)**	(0.248)	**(0.366)**	(0.237)	**(0.353)**	(0.258)	**(0.369)**
% Interlock.Dir.* Chg in DP 2yr	1.103	**-21.971 ****	3.833	**-19.954 ****	2.268	**-21.239 ****	3.846	**-32.612 *****
	(6.455)	**(8.731)**	(6.936)	**(9.432)**	(6.653)	**(9.748)**	(6.806)	**(12.199)**
2yr Ind.Rel.Stk.Perf.			4.44	-0.453			3.413	**-21.7 ****
			(4.437)	(6.251)			(7.074)	**(10.465)**
% Interlock.Dir.*2yr Ind.Rel.Stk.Perf.			**-0.208 ***	-0.288			-0.017	0.001
			(0.122)	(0.190)			(0.177)	(0.310)
2yr VW CRSP Return			-0.008	**-0.888 ****			-0.378	**-1.356 ***
			(0.248)	**(0.354)**			(0.431)	**(0.712)**
3yr Ind.Rel.Stk.Perf.					1.584	**6.991 ****	1.032	**14.745 *****
					(2.280)	**(3.092)**	(4.232)	**(4.330)**
% Interlock.Dir.*3yr Ind.Rel.Stk.Perf.					**-0.171 ****	**-0.254 ***	-0.171	-0.265
					(0.078)	**(0.144)**	(0.116)	(0.227)
3yr VW CRSP Return					0.072	-0.392	0.275	0.363
					(0.157)	(0.243)	(0.276)	(0.462)
Change in OROA			-0.007	-0.027	-0.007	-0.026	-0.007	-0.026
			(0.026)	(0.023)	(0.026)	(0.023)	(0.026)	(0.023)
% of Ind. Directors	0.358	1.037	0.404	1.125	0.456	1.036	0.424	**1.181 ***
	(0.407)	(0.664)	(0.413)	(0.684)	(0.416)	(0.677)	(0.416)	**(0.688)**
Chg. Inst. Ownership	1.598	**3.223 ****	1.549	**2.975 ****	1.624	**3.191 ****	1.624	**3.101 ****
	(1.009)	**(1.537)**	(1.012)	**(1.487)**	(1.016)	**(1.489)**	(1.022)	**(1.474)**
1{CEO}	0.005	**0.721 *****	-0.011	**0.727 *****	-0.014	**0.693 *****	-0.019	**0.693 *****
	(0.133)	**(0.212)**	(0.134)	**(0.214)**	(0.134)	**(0.214)**	(0.134)	**(0.216)**
Size:Log(MVE)	-0.024	0.077	-0.015	0.088	-0.004	0.105	-0.006	**0.106 ***
	(0.040)	(0.062)	(0.041)	(0.064)	(0.042)	(0.064)	(0.042)	**(0.063)**
Chg. Leverage Ratio	-0.019	**-0.04 ***	-0.019	**-0.044 ***	-0.019	**-0.045 ***	-0.02	**-0.044 ***
	(0.017)	**(0.023)**	(0.017)	**(0.026)**	(0.017)	**(0.027)**	(0.018)	**(0.026)**
% Interlocking Directors	0.894	-0.219	1.385	-0.18	0.556	-1.486	1.271	-5.45
	(2.148)	(3.816)	(2.207)	(4.109)	(2.244)	(4.058)	(2.266)	(4.877)
Constant	-0.228	**-3.161 *****	-0.338	**-3.122 *****	-0.483	**-3.226 *****	-0.431	**-3.303 *****
	(0.386)	**(0.624)**	(0.401)	**(0.656)**	(0.409)	**(0.655)**	(0.409)	**(0.652)**
N	1066		1060		1058		1059	
Pseudo R2	0.0201		0.0281		0.0288		0.0334	

For comments about common variables statistical significance, and standard errors, please refer to Appendix I-2. % Interlock is the number of interlocked board members divided by the number of total board members. Interlocking directorship occurs when a board member of firm A works as top managers in firm B where the top managers of firm A serves as a board member reciprocally.

Table I-VII. Multinomial logit model of forced/voluntary departure of CEO and CFO: Default probability vs. stock/accounting performance and interlocking directorship (%) and independent directors

Multinomial Logit Model Sample:	All		No Restatement	
Column	1	2	1	2
Departure Outcome	Voluntary	Forced	Voluntary	Forced
Chg.of Default Prob. 2yr	0.276	**0.918 ****	0.023	**0.885 ****
	(0.259)	**(0.368)**	(0.315)	**(0.438)**
Chg.of Default Prob. 2yr * % Interlock	-1.192	**-188.807 *****	12.576	**-225.406 *****
	(29.805)	**(56.391)**	(39.792)	**(77.895)**
Chg.of Default Prob. 2yr * % Interlock * % of Ind.Directors	10.582	**315.316 *****	-39.413	**404.45 *****
	(63.801)	**(104.645)**	(90.296)	**(153.214)**
2yr Ind.Rel.Stk.Perf	-0.031	-0.007	-0.084	0.144
	(0.177)	(0.310)	(0.211)	(0.329)
2yr Ind.Rel.Stk.Perf * % Interlock	-48.337	**-69.459 ***	-40.009	-55.858
	(31.658)	**(37.450)**	(33.302)	(35.359)
2yr Ind.Rel.Stk.Perf * % Interlock * % of Ind.Directors	**105.38 ***	80.071	76.326	58.005
	(60.232)	(67.334)	(52.296)	(66.835)
2 yr VW CRSP Return	-0.302	**-1.346 ***	-0.518	**-1.816 ****
	(0.433)	**(0.718)**	(0.502)	**(0.844)**
3yr Ind.Rel.Stk.Perf	-0.16	-0.261	-0.129	**-0.499 ****
	(0.115)	(0.227)	(0.133)	**(0.246)**
3yr Ind.Rel.Stk.Perf * % Interlock	24.627	**42.07 ***	3	28.387
	(19.615)	**(22.365)**	(16.097)	(26.116)
3yr Ind.Rel.Stk.Perf * % Interlock * % of Ind.Directors	-51.145	-43.473	2.299	-16.753
	(39.127)	(39.487)	(27.987)	(49.660)
3 yr VW CRSP Return	0.285	0.372	0.43	0.684
	(0.277)	(0.461)	(0.320)	(0.540)
1yr Chg in OROA	-0.006	-0.026	-0.011	-0.034
	(0.026)	(0.022)	(0.031)	(0.024)
% of Ind.Directors	0.543	**1.177 ***	0.714	1.216
	(0.424)	**(0.691)**	(0.498)	(0.840)
% Interlock	4.07	**-25.345 ****	**17.513 ****	**-17.763 ***
	(6.774)	**(10.217)**	**(8.016)**	**(10.733)**
% of Ind.Directors * % Interlock	-0.913	**2.763 ***	**-3.262 ****	2.08
	(1.094)	**(1.437)**	**(1.384)**	(1.587)
Chg Inst. Ownership	**1.692 ***	**3.139 ****	1.904	2.574
	(1.026)	**(1.482)**	(1.297)	(1.947)
1{CEO}	-0.01	**0.694 *****	-0.025	**0.568 ****
	(0.135)	**(0.217)**	(0.157)	**(0.247)**
Size:Log(MVE)	0.001	0.102	-0.018	0.102
	(0.042)	(0.064)	(0.050)	(0.072)
Chg. Leverage Ratio	-0.019	**-0.045 ***	-0.013	-0.055
	(0.017)	**(0.026)**	(0.011)	(0.034)
Constant	-0.587	**-3.271 *****	-0.697	**-3.301 *****
	(0.419)	**(0.663)**	(0.493)	**(0.765)**
N	1059		812	
Pseudo R-square	0.0388		0.0468	

For comments about common variables statistical significance, and standard errors, please refer to Appendix I-2. % Interlock is the number of interlocked board members divided by the number of total board members. Interlocking directorship occurs when a board member of firm A works as top managers in firm B where the top managers of firm A serves as a board member reciprocally. % of Ind Directors is the number of independent directors divided by the number of total board members.

Table I-VIII. Multinomial logit model of forced/voluntary departure of CEO and CFO: Default probability vs. stock/accounting performance and interlocking directorship (dummy variable) and independent directors

Multinomial Logit Model Sample:	All		No Restatement	
Column	1	2	1	2
Departure Outcome	Voluntary	Forced	Voluntary	Forced
Chg.of Default Prob. 2yr	0.256	**0.918 ****	-0.014	**0.886 ****
	(0.259)	**(0.369)**	(0.314)	**(0.441)**
Chg.of Default Prob. 2yr * 1{Interlock}	0.141	**-29.71 *****	0.991	**-30.036 ****
	(2.922)	**(10.218)**	(3.695)	**(12.984)**
Chg.of Default Prob. 2yr * 1{Interlock} * % of Ind.Directors	1.446	**47.545 *****	-0.601	**49.672 ****
	(6.446)	**(17.764)**	(8.889)	**(24.847)**
2yr Ind.Rel.Stk.Perf	-0.042	-0.01	-0.102	0.142
	(0.177)	(0.311)	(0.212)	(0.331)
2yr Ind.Rel.Stk.Perf * 1{Interlock}	-3.942	**-14.448 *****	-2.963	**-14.457 *****
	(3.877)	**(5.474)**	(4.099)	**(5.329)**
2yr Ind.Rel.Stk.Perf * 1{Interlock} * % of Ind.Directors	9.863	**18.595 ****	7.44	**18.196 ****
	(6.745)	**(9.001)**	(6.393)	**(8.549)**
2 yr VW CRSP Return	-0.295	**-1.379 ***	-0.515	**-1.856 ****
	(0.433)	**(0.719)**	(0.504)	**(0.846)**
3yr Ind.Rel.Stk.Perf	-0.153	-0.259	-0.121	**-0.497 ****
	(0.115)	(0.228)	(0.132)	**(0.247)**
3yr Ind.Rel.Stk.Perf * 1{Interlock}	2.655	**7.734 *****	0.503	**7.057 ****
	(2.166)	**(2.657)**	(2.252)	**(2.867)**
3yr Ind.Rel.Stk.Perf * 1{Interlock} * % of Ind.Directors	-5.813	**-9.398 ****	-0.619	-7.638
	(4.114)	**(4.636)**	(4.034)	(5.004)
3 yr VW CRSP Return	0.276	0.399	0.402	0.721
	(0.277)	(0.463)	(0.321)	(0.543)
1yr Chg in OROA	-0.006	-0.026	-0.011	-0.035
	(0.026)	(0.023)	(0.030)	(0.024)
% of Ind.Directors	0.553	**1.198 ***	0.696	1.241
	(0.425)	**(0.691)**	(0.499)	(0.839)
1{Interlock}	5.657	**-20.475 ***	**14.558 ****	-16.118
	(5.829)	**(12.134)**	**(6.756)**	(12.584)
% of Ind.Directors * 1{Interlock}	-1.333	2.308	**-3.251 ****	2.078
	(1.150)	(2.045)	**(1.457)**	(2.205)
Chg Inst. Ownership	**1.718 ***	**3.194 ****	1.907	2.643
	(1.032)	**(1.482)**	(1.300)	(1.937)
1{CEO}	-0.012	**0.705 *****	-0.032	**0.578 ****
	(0.135)	**(0.218)**	(0.157)	**(0.247)**
Size:Log(MVE)	-0.002	0.104	-0.024	0.103
	(0.042)	(0.064)	(0.050)	(0.072)
Chg. Leverage Ratio	-0.019	**-0.044 ***	-0.013	**-0.053 ***
	(0.017)	**(0.026)**	(0.010)	**(0.032)**
Constant	-0.567	**-3.315 *****	-0.627	**-3.347 *****
	(0.415)	**(0.659)**	(0.489)	**(0.760)**
N	1059		812	
Pseudo R-square	0.0384		0.0452	

For comments about common variables statistical significance, and standard errors, please refer to Appendix I-2. 1{Interlock} is a dummy variable that takes the value of one when at least one of the board members of the firm is interlocked with the top managers of the firm. Interlocking directorship occurs when a board member of firm A works as a top managers in firm B where the top managers of firm A serves as a board member reciprocally.

Table I-IX. Multinomial logit model of forced/voluntary departure of CEO and CFO: SOX vs. 1998 and G index

Multinomial Logit Model	1		2	
Time Dummy Used:	After SOX		After 1997	
Column	1	2	3	4
Departure Outcome	Voluntary	Forced	Voluntary	Forced
Chg.of Default Prob. 2yr	0.467	1.918	-0.516	-12.477
	(1.173)	(1.941)	(9.200)	(8.100)
Chg.of Default Prob. 2yr * Time Dummy	0.721	-3.376	1.519	**13.531 +**
	(1.987)	(3.124)	(9.249)	**(8.243)**
Chg.of Default Prob. 2yr * Gindex	-0.047	-0.151	0.391	1.193
	(0.122)	(0.195)	(1.046)	(0.853)
Chg.of Default Prob. 2yr * Time Dummy * Gindex	-0.077	0.429	-0.491	-1.219
	(0.209)	(0.321)	(1.052)	(0.867)
Chg.of Default Prob. 2yr * % Interlock	9.121	**-107.514 ****	14.915	**-105.436 ****
	(31.537)	**(47.168)**	(30.102)	**(43.655)**
Chg.of Default Prob. 2yr * % Interlock * % of Ind.Directors	-7.616	**183.603 ****	-19.33	**174.764 ****
	(68.558)	**(87.088)**	(63.703)	**(79.990)**
2yr Ind.Rel.Stk.Perf	**-0.864 ***	-0.208	0.314	0.019
	(0.500)	(0.520)	(1.636)	(5.192)
2yr Ind.Rel.Stk.Perf * Time Dummy	0.047	1.406	-1.125	0.032
	(1.171)	(1.624)	(1.709)	(5.231)
2yr Ind.Rel.Stk.Perf * Gindex	0.087	-0.017	-0.06	-0.075
	(0.054)	(0.056)	(0.183)	(0.513)
2yr Ind.Rel.Stk.Perf * Time Dummy * Gindex	-0.085	-0.144	0.114	0.034
	(0.119)	(0.178)	(0.190)	(0.518)
2yr Ind.Rel.Stk.Perf * % Interlock	-15.631	-9.858	-9.249	-10.273
	(20.745)	(33.779)	(20.632)	(31.629)
2yr Ind.Rel.Stk.Perf * % Interlock * % of Ind.Directors	36.819	23.271	26.872	26.032
	(35.304)	(55.578)	(34.278)	(51.548)

2 yr VW CRSP Return		-0.332	**-1.02 ** **	-0.321	**-1.002 ** **
		(0.275)	**(0.410)**	(0.282)	**(0.407)**
Time Dummy		**-1.262 ** **	-1.26	-0.464	1.5
		(0.533)	(0.870)	(0.974)	(2.602)
G Index		-0.036	-0.022	-0.023	0.175
		(0.039)	(0.062)	(0.099)	(0.234)
Time Dummy	* G Index	**0.092 * **	0.117	0.028	-0.15
		(0.054)	(0.087)	(0.103)	(0.240)
1yr Chg in OROA		-0.007	-0.03	-0.008	-0.034
		(0.025)	(0.029)	(0.026)	(0.027)
% of Ind.Directors		0.675	1.035	0.467	0.97
		(0.465)	(0.725)	(0.455)	(0.715)
% Interlock		3.529	-1.2	4.052	-1.923
		(5.581)	(10.608)	(5.503)	(10.663)
% of Ind.Directors	* % Interlock	-0.828	-0.125	-0.836	0.019
		(0.968)	(1.481)	(0.957)	(1.470)
Chg Inst. Ownership		1.298	**3.042 ** **	1.533	**3.121 ** **
		(1.036)	**(1.450)**	(1.064)	**(1.441)**
1{CEO}		-0.059	**0.683 *** ***	-0.041	**0.674 *** ***
		(0.140)	**(0.224)**	(0.140)	**(0.221)**
Size:Log(MVE)		0.004	0.096	0.005	0.094
		(0.044)	(0.069)	(0.043)	(0.066)
Chg. Leverage Ratio		-0.022	-0.039	-0.025	-0.044
		(0.026)	(0.028)	(0.026)	(0.032)
Constant		0.018	**-2.726 *** **	-0.032	**-4.702 * **
		(0.535)	**(0.935)**	(1.023)	**(2.673)**
N		1001		1001	
Pseudo R-square		0.0459		0.0349	

For comments about common variables statistical significance, and standard errors, please refer to Appendix 2. SOX is a dummy variable if the departure event took place after Aug 29, 2002. InstOwn is the number of shares owned by institutional investors divided by the total number of shares outstanding.

Figure I-I Default probability and equity value in binomial option pricing framework

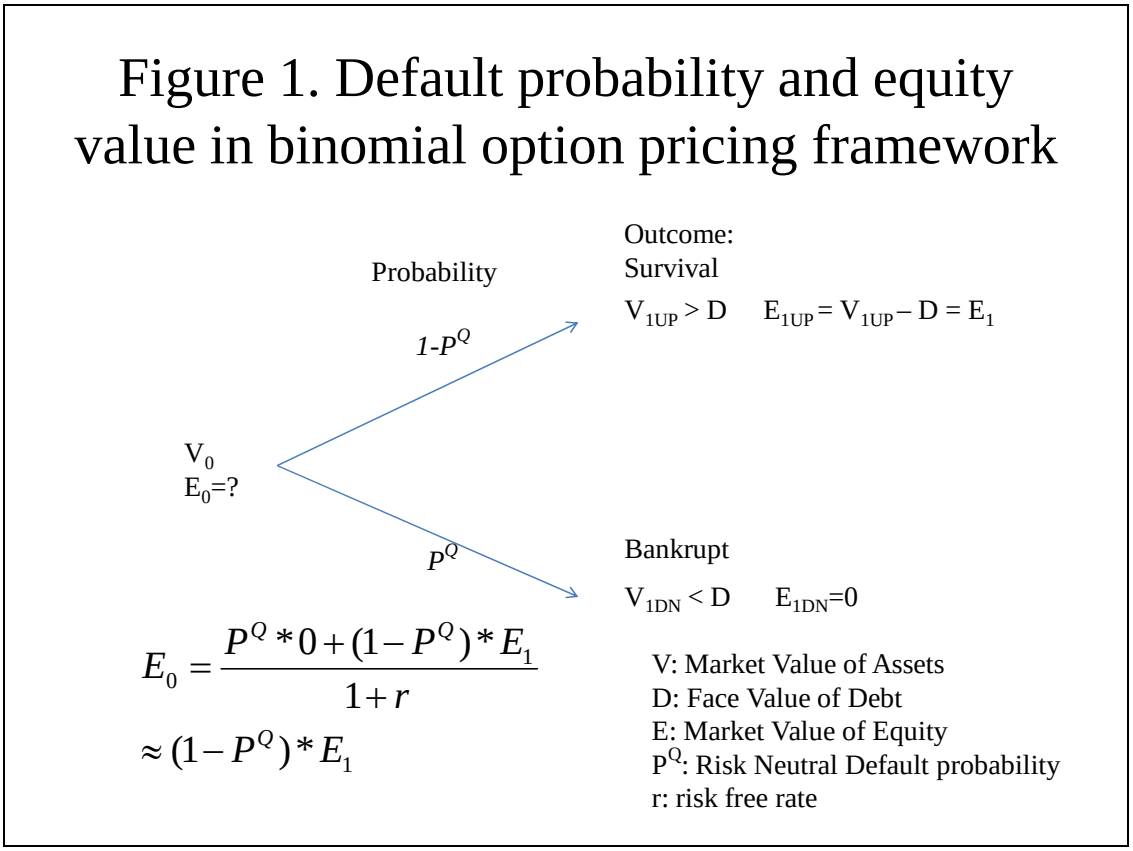
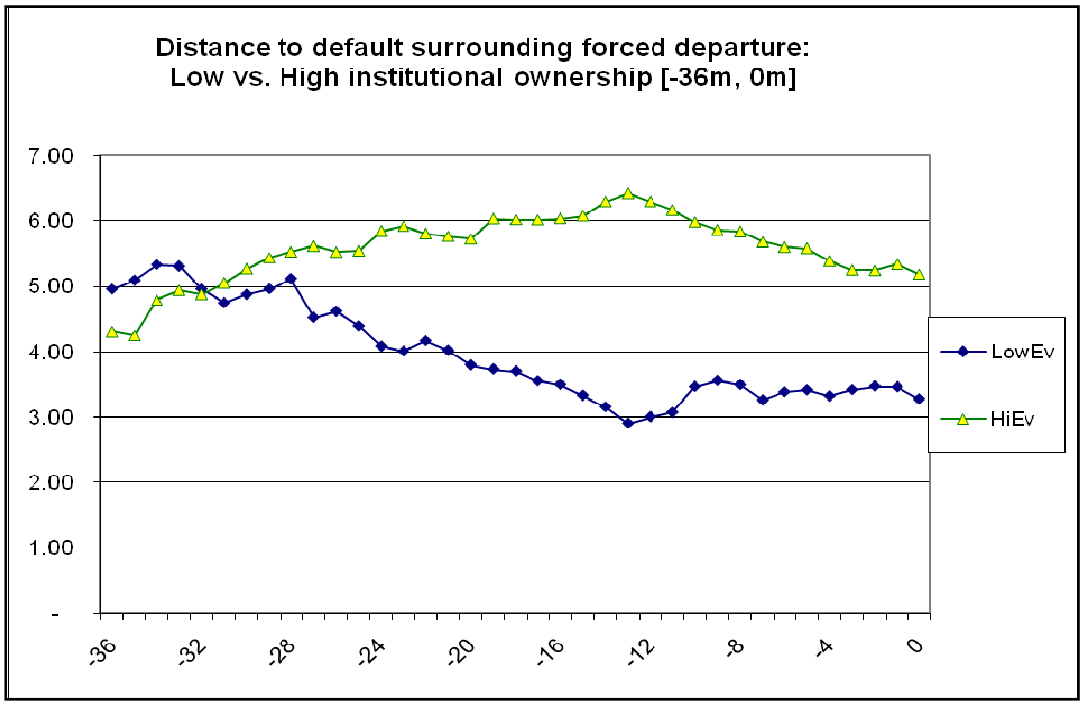


Figure I-II. Comparing mean distance to default of event firms and control firms surrounding forced departure of CEO/CFO

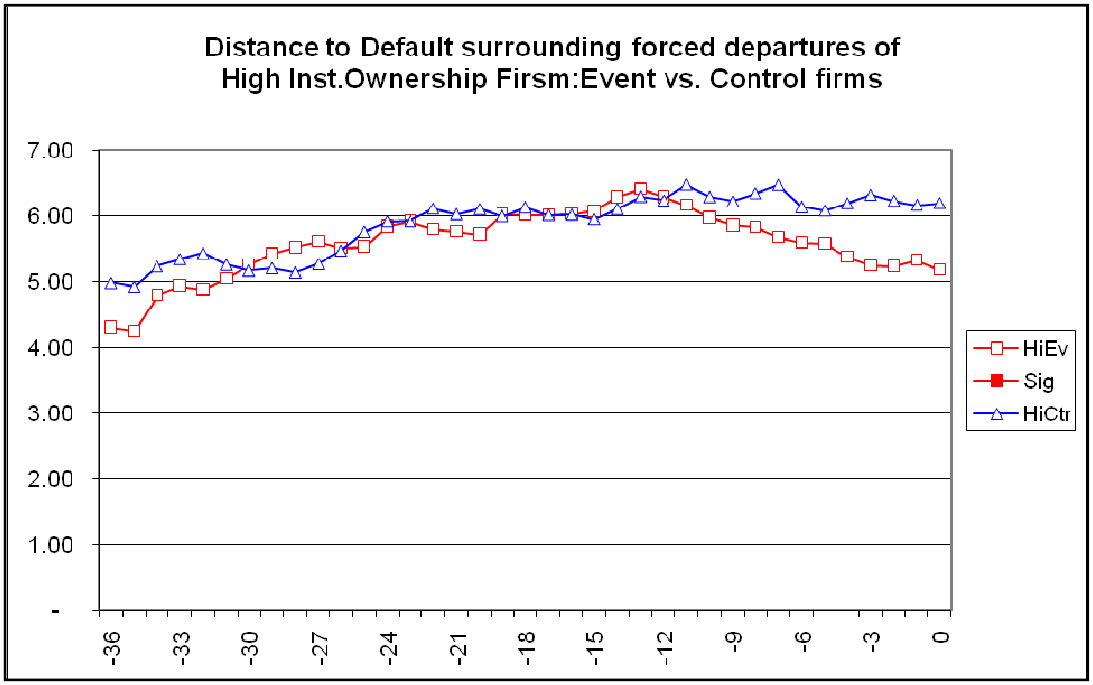
Each dot represents the mean distance to default of the group of firms at the end of each month relative to the event of forced departure. The event firms and control firms are sorted together by the institutional ownership as of one year prior to departure event. The top 40% of the firm is classified as high institutional ownership firms, and bottom 40% of the firms are classified as low institutional ownership firms. Then the high (low) institutional ownership firms are subdivided into high (low) institutional ownership event firms versus high (low) institutional ownership control firms.

Panel A.



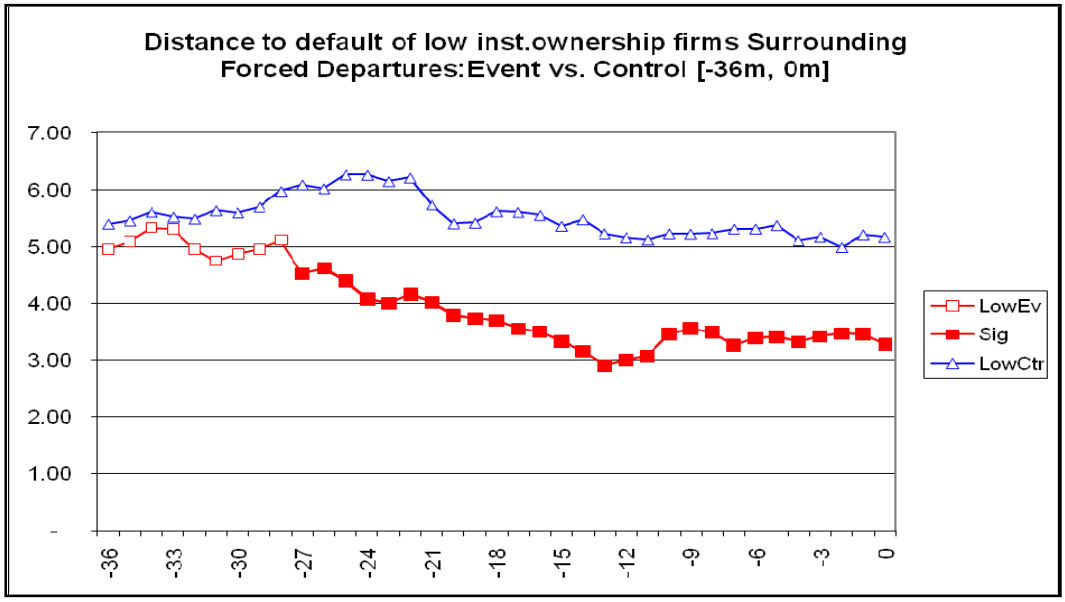
This compares the mean distances to default of high institutional ownership firms and low institutional ownership firms that fired CEOs or CFOs at time zero. Statistical test of difference in mean is not conducted because of the concern about self selection by institutional investors.

Panel B.



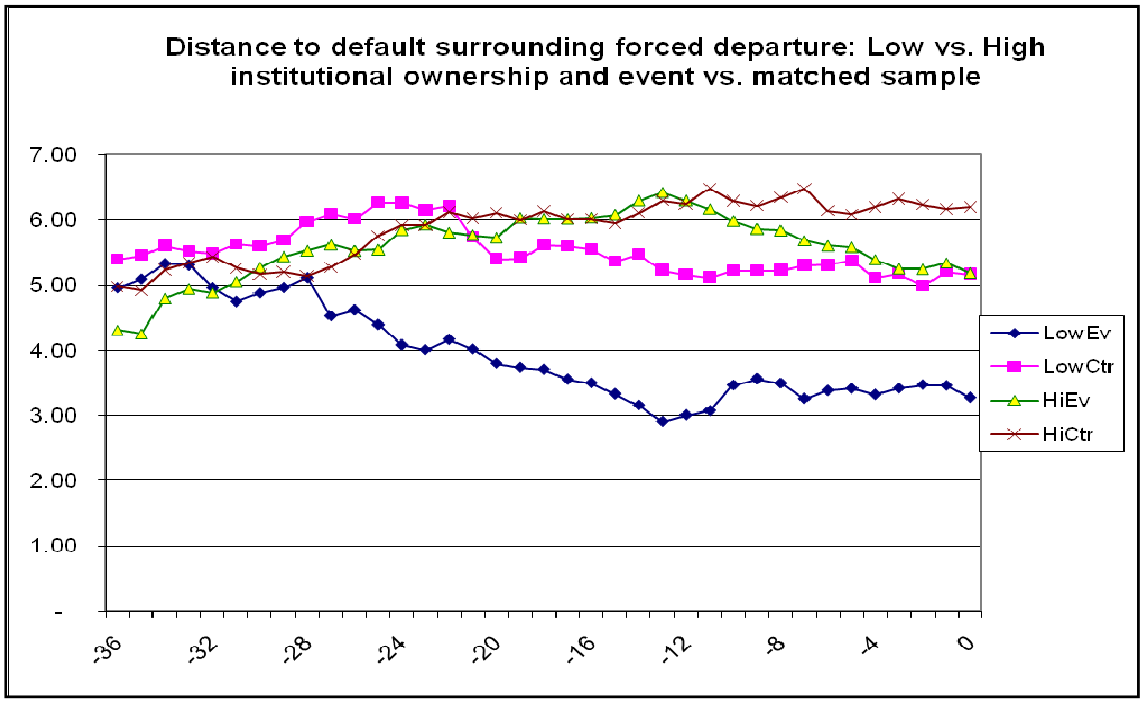
This compares the mean distances to default of high institutional ownership firms that fired CEOs or CFOs (red square dots) versus high institutional ownership control firms that did not fire the CEOs or CFOs (blue triangle dots). If the mean distance to default of event firms at any month is significantly different from the mean distance to default of control firms at 10% level, the red square dot is filled with color. However, none of the pairs of mean distances to default are significantly different from each other.

Panel C.



Red square dots are the mean distances to default of event firms that had forced turnover, and blue triangle dots are those of non-event control firms. The dot of the event firm is filled with color if the difference in mean is significantly lower than the mean of the control firms at 10% level by t-test.

Panel D.



Chapter II . CEO Interviews on CNBC

with Felix Meschke

II.1. Introduction

How does stock price respond to non-informative media coverage of a firm? Through a case study of EntreMed, a biotech firm whose breakthrough in cancer cure research was covered repeatedly and extensively on the front page of the Sunday *New York Times* (Kolata 1998), Huberman and Regev (2001) argue that pure media-driven attention can generate a permanent stock price increase. In comparison, the incomplete information capital market model of Merton (1987) predicts that an increase in the investor base, which could be facilitated by uninformative media coverage would increase a stock price permanently.

Based on 6,937 CEO interviews on CNBC, one of the most influential financial networks in the world, throughout the period from 1997 to 2006, we find that media-driven attention generates only transitory price increases which reverse back in the following ten to thirty trading days. The average cumulative abnormal return from two trading days prior to the interview until the event day of the interview is 189 basis points. However, over the subsequent ten trading days, the stocks lose 108 basis points in terms of average cumulative abnormal returns. The magnitude of run-ups and reversals decreases as the CEO appears on more CNBC interviews, which strongly supports the notion that investor attention is the driving force behind the stock price response. Only

the relatively less-known firms realize a permanent increase in stock price after a CEO interviewed, which partially supports Merton's (1987) perspective.

A CEO interview is a clearly defined pseudo-event or no-news event that draws much attention from investors as well as the general public. Since its creation in 1989, CNBC has become the largest cable business television channel in the world. In the U.S and Canada, seventy seven million households (160 million households world wide) have access to its broadcast. According to Nielsen media research, CNBC viewership during trading days approaches 500,000 households. One may question how influential CNBC viewers are to the stock market, and whether CNBC really the viewers' trading significantly. Busse and Green (2002) find that CNBC's audience, indeed, responds within seconds to an analyst's stock recommendation on CNBC's Morning Call and Midday Call segments. Anecdotal evidence reported by Mark W. Anderson demonstrates that when CNBC reported an analyst upgrade of Applied Micro Circuits (correct ticker symbol: AMCC) with the wrong ticker symbol, MACC, a private equity firm, the latter closed that trading day with a 6% abnormal return and with a 300% higher trading volume. This evidence suggests that CNBC is effective in stimulating the excitement and enthusiasm of investors to significantly affect stock prices; thus, we can expect analogous investor excitement in response to CEO interviews.

Another valid, yet obvious question is why CEOs want to stimulate the enthusiasm of viewers about the company. Assuming the incomplete information capital market, as in Merton (1987), the CEO, an agent who maximizes the value of the existing shareholders, would like to increase the investor base of the firm by stirring up investor

interest through bursts of optimism. Additionally, CEOs have career concerns to make a good impression on TV.

The next legitimate question concerns how much material information CEOs can actually deliver in the media to drum up about their companies. Despite the obvious interest of CEOs to say something positive about their companies in the interview, they should be cautious not to spell out forward looking statements or release material information without disclaimer, especially after the Regulation Fair Disclosure (RegFD) in 2000, and even before the RegFD. Although the Private Securities Litigation Reform Act of 1995 contains a safe harbor provision intended to protect corporate leaders from liability incurred by offering forward-looking statements, an SEC study finds that "the quality and quantity of forward looking disclosure has not significantly improved following enactment of the safe harbor for forward-looking statements" (SEC, 1997, p.3).

On the other hand, the mere fact of the highest-ranking corporate officer appearing on TV, combined with CNBC treating these interviews as if they were major information events by pre-announcing them after market-closing one day prior and by claiming to provide the latest information (Bartiromo and Fredman, 2001; Malkiel, 2004) suggests that CEO interviews constitute a significant source for news. Thus, while CEO interviews on CNBC generate considerable attention from investors for various reasons, the actual information content about the firm in addition to the existing news stories is ignorable. This situation provides us with a novel testing ground for investigating how non-informational pure media-driven attention affect the stock price in a systematic manner.

The major hypothesis of this paper is Merton's (1987) visibility hypothesis, which states that media-driven attention increases the stock price permanently by increasing investor awareness. Both behavioral (Huberman and Regev, 2001) and rational explanations (Merton 1987) are available concerning how media-driven attention may affect stock prices. While both of them commonly predict a permanent price increase, our results support neither of the explanations fully, insofar as we find transitory stock price increase and reversal pattern. We only find a partial support for the visibility hypothesis for firms with a relatively smaller investor base, because the stock price of these firms show a permanent increase with CEO interviews.

We further hypothesize that it is the less sophisticated individual investors that trade on the media-driven attention identified by these CEO interviews. Barber and Odean (2006), and Barber, Odean, and Zhu(2008) find that individual investors buy attention-grabbing stocks due to limitations in their choice set and information gathering capacity. Furthermore, they find return reversal over a one-year period for the stocks traded intensively by the individual traders. Tetlock (2008) find that individual investors over-react to stale information. We also find consistent results in this paper, in that stocks with a larger individual shareholder base or a higher intensity of individual trading show more reversals after the attention-grabbing pseudo-event of a CEO interview.

The paper proceeds as follows. Section II discusses related research. Section III describes the data. Section IV delivers the main results of the paper. We ran various tests to investigate an exhaustive list of competing hypotheses in Section V. Section VI concludes.

II.2. Literature Review

Huberman and Regev (2001) argue that non-informative media coverage of a firm can increase stock prices permanently by drawing investor attention. The technological break-through of a medicine by a bio-tech firm, EntreMed, was already published in *Nature* in November 1997, which must have been no news to the investors in the financial market by 1999. However, when the *New York Times* covered the same facts in their front page of their Sunday issue in May 1999, EntreMed stock soared 330% on the subsequent trading day, and a substantial part of the stock price increase remained over the following two years. Huberman (2001) finds that investors, especially individual investors, put their money into stocks that are familiar to them, thereby making their portfolios less than perfectly diversified. In this respect, as long as the news media familiarizes these stocks to the viewers, it could induce more investment in these stocks, which would result in a permanent increase in these stock prices as long as the media coverage would repeat positive information regarding the firms at hand.

Under the assumption of the incomplete information capital market, Merton (1987) assets that each investor is less than perfectly diversified because they are unaware of the existence of the firms to perfectly diversify their portfolios. The theory reveals that the shadow cost of information is negatively correlated with the investor base, which predicts that any event that increases the investor base would reduce the shadow cost of information, which, in turn, reduces the expected return of the stock. As long as the CEO

interviews increase the awareness of the investors and investor base, Merton (1987) predicts that the stock prices should increase permanently.

Using the unique data of Sweden, where the individual investor base of each stock is available, Bodnaruk and Ostberg (2009) find that firms with a lower investor base have larger expected returns than firms with a larger investor base, which supports Merton's (1987). Fang and Peress (2009) find that low media coverage firms have larger expected returns than high media coverage firms, whereby (non-informative) media attention increases the investor base. These studies are largely focused on cross-sections of expected returns related to media coverage in general, whereas ours is more related to time series return reversals associated with non-informative attention-grabbing media coverage (pseudo-events). Gaa (2008) finds that low-attention stocks earned an abnormal return of 70 basis points per month between 1985 and 2005 by using the ex-ante predicted probability of media coverage with respect to earnings news as the measure of investor attention. Dellavigna and Pollet (2009) find that due to the limited attention of investors on Friday relative to other weekdays, earnings announced on Friday result in a 15% lower market response and a 70% larger post earnings announcement. Grullon, Kanatas, and Weston (2004) measured firm visibility among investors by firm product market advertising. They show that firms with greater advertisement expenditures have a larger number of both individual and institutional investors, as well as better liquidity of their common stock.

Research involving individual investors' trading patterns and their impact on price has recently been prolific. Barber and Odean (2008) find that individual investors, as opposed to institutional investors, buy attention-grabbing stocks, such as stocks in the

news or those with abnormally high trading volume or with extreme one-day returns. While their finding is consistent with ours, we work with a unique dataset clearly identifying a non-informational attention-grabbing pseudo-event, which comprises media interviews of firms' CEOs. Barber, Odean, and Zhu (2008) conclude that individual investors show herding behavior, and the stocks they purchase underperform relative to the stocks they sold over one year by 13.1 percentage points. While their result shows reversal of the stocks the individual investors buy or sell over a one-year period, our result shows a much faster reversal over ten to thirty trading-day periods.

Return reversals over the short-run are also commonly found in various papers. Tetlock (2008) documents return reversals to stale information covered by media news articles, which are largely attributable to individual investors' trading. While our paper also finds that return reversals after CEO interviews are largely attributable to individual investors, two points are different from Tetlock (2008). First, our perspective strictly concerns the attention-grabbing pseudo-event as opposed to stale information. Second, we document that the highest quintile of small trading intensity are more likely to be stocks in which the institutional investors are lowering their positions with trades in smaller quantities, thereby making the stock price pattern persistently declining after a CEO interview. Antweiler and Frank (2005) document short-run over-reactions to news stories in the *Wall Street Journal* from 1973 to 2001 over a period of thirty trading days. However, the media coverage in their paper is more of an informational event, whereas our sample is a non-informational attention-grabbing event. Stickel (1985) documents positive abnormal returns for two days after the publication of the Value Line rankings followed by a reversal on the third day afterwards. Barber and Loeffler (1993) and Liang

(1999) report a similar pattern for stock picks in the *Wall Street Journal*'s "Dartboard" column. Busse and Green (2002) use intraday data to examine the market reaction to analysts' stock recommendations on CNBC's Morning Call and Midday Call segments. They find that prices respond within seconds of the initial mention, and that the one-minute response (41 basis points, or bps from now, during Midday Call and 6.8 bps during Morning Call) is then followed by a small reversal during the next three minutes.

II.3. Data

We hand collect 6,937 CEO interviews on CNBC from Factiva[6]. We then merged each interview observations with the stock price data from CRSP (Center for Research in Securities Research) and accounting data of Compustat by Standard and Poor's. In order to steer clear of the concern that the material information of the firm, instead of media-driven attention, is driving the stock price pattern, we first identified the interviews that are confounded by major corporate events. We utilized standard databases to obtain the announcement date of major corporate events. From SDC Platinum, we obtained the information regarding (1) merger announcement dates or effective dates as an acquirer or a target; (2) stock repurchase announcement dates; (3) joint venture announcement dates. From Execucomp, we obtained (4) CEO appointment dates. From IRRC, we obtained (5) general meeting dates of shareholders. From I/B/E/S, we obtained (6) quarterly or annual earnings announcement dates. We also obtained (7) accounting restatements by the GAO

[6] This is the number of observations that has valid CRSP data as well as the non-missing values of stock price over the estimation window of [-150, -10] trading days and the event window of [-10, +10] trading days relative to the CEO interview date.

(Government Accountability Office), and (8) dates of class action lawsuits from Stanford Lawsuit Clearing House. As we remove all of the interview observations that are confounded by these corporate events within ten calendar days before or after the CEO interviews, we are left with 2,375 unconfounded interviews.

Even the unconfounded interviews were subject to the concern that the qualitative information content of surrounding news articles may drive the results as in Tetlock (2007, 2008), instead of the pure attention generated by the CEO interviews on CNBC. Therefore, we collect the surrounding news articles of each of the unconfounded interview firms over the period of one week before and after the interviews from Factiva. We only confine our searches to the top business sources so as to remain parsimonious. Among these unconfounded interviews, we find that 328 interviews are devoid of any surrounding news articles. These are the cleanest sample interviews – ones that we could safely claim are free of any informational impact of news articles or major events. For the rest of the unconfounded sample, we collected 38,078 news articles, whose linguistic contents were analyzed using General Inquirer, following Tetlock (2007). Table II-I shows the breakdown of the interview observations.

One may still argue that investors could still tease out information from the qualitative linguistic tone of the conversation between the anchor and the CEO in an interview. Therefore, for each of the interview scripts we collected in XML format, we group the words according to the speaker and analyze the content of the conversation of the CEO and that of the conversation of the anchor using General Inquirer, following Tetlock (2007). In contrast with Tetlock (2007) where he finds only "negative" tone of

the contents predict negative stock performance in the future, we add several measures of tones in different dimension: positive, academic, and word count.

The *Harvard IV* dictionary is a base of the word count for the specific category of tones. Interestingly, having more "negative" words in an article does not cancel out (or decrease) the word count of "positive" words. This notion has some advantages in our research. First of all, it stays away from the weighting issue of different words by the strength of positivity or negativity. For example, we do not have to worry about how many negative word counts should be cancelled out for a certain positive word. Second, we can accommodate the situation where an article or conversation is strong in both positive and negative direction. If we make positive words cancel out negative words in a single scale, both cautious scripts that do not have positive or negative words would be understood as controversial scripts saturated with pro and con words. From finance perspective, this enables us to find the scripts that are associated with investor disagreements, which would be associated with high abnormal trading volume (Harris and Raviv, 1993).

In order to capture trades by individual investors, we use trade size-based classifications by (1) Griffin, Harris, and Topaloglu (2003) [7] and that by (2) Barber,

[7] Griffin, Harris, and Topaloglu (2003) classify any trades sized less than or equal to 500 shares as small trades, and trades sized greater than 10,000 shares as large trades. They find that 63% of the small trades are either between an individual and another individual or between an individual to a market maker, whereas that 86% of the large trades are either between an institution and another institution or between an institution and a market maker. Following them, we use small trades as a proxy for individual investor trades.

Odean, and Zhu (2006)[8]. We should be careful in claiming that small trades always capture the trades by individual investors, because institutional investors and hedge funds sometimes trade in smaller order sizes, especially with the advancement of algorithmic trading. However, by comparing the trade sizes and orders from brokerage firm data with those of TAQ data, Barber, Odean, and Zhu (2006) find that their small trades proxies the individual investors' trades well. We also find that smaller-sized trades are negatively correlated with institutional ownership of the firm, while larger-sized trades are positively correlated with institutional ownership.

The data covers CEO interviews over a 9.5 year-period from June of 1997 to December 2006. The interviews are sparse before 1999, but afterwards, the interview observations are quite evenly distributed. The breakdown of the unconfounded sample and the cleanest sample generally follow the entire sample in terms of the yearly distribution. The breakdown by month suggests that the interviews are taken all year around quite evenly, but that June is the month where more unconfounded and cleanest interviews take place. Panel C shows the breakdown of interviews by weekdays, where we find that the absolute majority of interviews are conducted during the weekdays, and Thursday is the peak day, while Monday and Friday are relatively lower. Panel D shows the breakdown by the Fama-French size quintile prior to the interviews. As the interviews become more devoid of surrounding events and news articles, the size

[8] Barber, Odean, and Zhu (2006) classify the trades into five different bins based on 1991 real dollars in the following order: T <= $5,000 (Small trades), $5,000 < T <= $10,000, $10,000 < T <= $20,000, $20,000 < T <= $50,000, and $50,000 < T(Large trades). Following them, we use the small trades as a proxy for individual investor trades.

distribution reverses. The distribution of all interviews is more concentrated in the largest quintile, and the distribution of unconfounded interviews is more evenly distributed throughout the size bins, despite the slight concentration in the largest size quintile. In contrast, the size distribution of the cleanest interviews is more concentrated in the smallest quintile. As the sample switches from all to unconfounded to cleanest, the percentage of observations in the largest quintile decreases from 42.7% to 26.8% to 12.8%, and the percentage of observations in the smallest quintile increases from 10.3% to 19.8% to 32.3%.

This pattern suggests that some of the effects coming from the changing of datasets in the next sections may be attributable to size effects. In the final regressions of testing the robustness, we control for firm size. The breakdown of interviews by book-to-market quintile is shown in Panel E. Regardless of the sample specification, we find that the majority of firms are low book-to-market (growth) firms. Interpreting negative book-to-market as an extreme case of low book-to-market, we find that 44~49% of the interviews are from growth firms. cccPanel E shows the breakdown of interviews by stock exchange and by year. Overall, for the entire samples, NASDAQ firms take up 58.6% of the interview, but for the unconfounded sample, they take up 50%, and for the cleanest sample, they take up 47.2% of the sample.

Panel A of

Table II-II shows the top ten most interviewed industries using the Fama-French 49 industry classification. Software is by far the most frequently interviewed industry, regardless of the sample selection, reflecting the high investor attention to the Internet stocks since the late 1990's. The pharmaceutical industry is the second most popular industry for CEO interviews, also reflecting investor attention to the bio-tech industry. Panel B of

Table II-II shows that the top three most frequently interviewed firms are EBay, Cisco, and Pfizer, all of which are in either high-tech or in the pharmaceutical industry. Fanny Mae is also one of the most intensively interviewed firms, which reflects the housing market bubble since the beginning of the 21st century.

II.4. Main Results

II.4.A. The Pattern

Table II-III shows the event study results. First of all, we find statistically and economically significant stock price run-ups over the period until the date of the CEO interviews and reversals over the period following the interviews. The run-ups and reversals are larger in magnitude for the unconfounded sample (ACAR [-2,-1] of 139 bps, ACAR [0] of 79 bps, and ACAR [1, 10] of -148 bps) than for the whole sample (ACAR [-2,-1] of 84 bps, ACAR [0] of 79 bps, and ACAR [1, 10] of -108 bps). As long as the interview day's abnormal return is concerned, that of the interviews with no news article (ACAR [0] of 83 bps) is larger than that of the unconfounded sample or of the entire samples. , We find that the stock price response to media driven attention is only transitory. In addition, the result strongly suggests that the primary driver of the run-ups and reversals surrounding CEO interviews on CNBC is the media-driven attention. Reversals (ACAR [1, 10] of -128bps) are also commonly found in the sample of no surrounding news articles. Also the pattern of run-ups and reversals is commonly shared across all news article groups.

Whether the pattern is only observed for NASDAQ stocks or over the Internet bubble period is a valid concern because NASDAQ stocks tend to be more volatile as we

observe in Figure II-I. Therefore, we divide the sample into NYSE/AMEX stocks versus NASDAQ stocks, and we also divide the sample into two different time periods: the dot-com bubble period (1997~2001), and the period after the bubble (2002~2006).

First of all, we find that not only NASDAQ firms but also NYSE/AMEX firms show a consistent stock price response pattern, regardless of whether or not the interviews are confounded or not. The only difference is that the magnitude of the average cumulative abnormal return of the NASDAQ stocks is much larger than that of NYSE/AMEX stocks. For the unconfounded interview sample, the ACAR [-2,-1] of non NASDAQ stocks is insignificant 27bps, while that of NASDAQ firms is 251 bps; the ACAR [0] of non-NASDAQ stocks is a significant 41 bps, while that of NASDAQ firms is 117 bps; the ACAR [1, 10] of non-NASDAQ firms is a significant -67 bps, while that of NASDAQ firms is -182 bps.

Figure II-II shows the cumulative abnormal return starting ten trading days prior to the interviews. Here again, we find that NASDAQ firms show a larger magnitude the stock price response, but non-NASDAQ firms also realize significantly positive run-ups and reversals.

In order to examine whether run-ups and reversals were prevalent only during the dot-com bubble period, we divide the sample into two time periods: 1997~2001and 2002~2006. As shown in rows 11~14, the pattern is prevalent, regardless of during or after the bubble period. We also subdivide the sample into NASDAQ vs. non-NASDAQ for each time period group and run the same event study. As shown in lines 15~22, the result is robust across subsamples.

High trading volume is associated with high abnormal returns, and abnormally high trading volume itself attracts the attention of investors (Barber, Odean, and Zhu, 2008). Therefore, we investigate whether the return pattern is absent for cases in which the trading volume was low for the day of, as well as the days prior to the interview. In order to determine whether the stock was under high trading volume, we estimate the mean and standard deviation of turnovers over the estimation window of [-150, -31] trading days for each stock. The *daily turnover* is defined as the number of shares traded on a day divided by the number of total shares outstanding. On the day of an interview we obtain the turnover of the shares and standardize the turnover by subtracting the mean and subsequently dividing by the standard deviation.

We obtain cross-sectional distribution of the standardized turnover of stocks across the total sample. Then we classified the stock as a high event day [0] turnover stock if the standardized turnover is greater than or equal to the median of the distribution,

and a low event day turnover stock, otherwise. We do the same for the turnover throughout the three trading days prior to the interview in order to determine whether or not the stock is high pre-event day turnover stock. Here, we treat the non-overlapping three trading day interval as one time interval. Therefore, over the estimation window of [-150, -31] trading days, we have 40 non-overlapping intervals. For each interval of trading days, we aggregate the number of shares traded by the total number of shares outstanding. Then we estimate the mean and standard deviation of the aggregated three-day volumes. Then for the three trading days prior to each CEO interview, we obtain the aggregated turnover and standardize it using the mean and standard deviation from the estimation window.

Over the cross-sectional distribution of the standardized three-day turnover, we determine whether the stock is high pre-event day turnover or not, using the median. The results are shown in Panel B of Table III. Whenever the trading volume is high, the abnormal return is significantly positive, and the reversal over the post event window is common. What is interesting is that even when the standardized turnovers of the stocks are low in both the pre-event and the event day windows, the stock price run-ups and reversals are consistent and significant. Therefore, it is not just high trading volume that explains the stock price pattern, but also the media attention generated by the CEO interviews via financial media.

One may argue that such a phenomenon is largely driven by tech stocks due to individual investors' attention to tech stocks ever since the technology bubble. Thus, we divide between tech and non-tech stocks in two different ways and test whether the result is robust throughout all the subsamples. The first tech stock classification is more

narrowly defined as those stocks whose SIC code is 737 (computer programming and data processing), and the other is stocks whose Fama-French 49 industry classification numbers are 22, 32, 35, 36, or 37 (Electrical Equipment, Telecommunication, Computer Hardware, Computer Software, and Chips and Electronic Equipment, respectively). As shown in line 10~17 in Panel B of Table III, the run-up and reversal phenomenon is commonly observed, regardless of whether the stock is a tech stock or not, and regardless of whether the interview is confounded by other major corporate event.

We run the same event studies using the Fama-French 3 Factor model, the CAPM with Value Weighted CRSP, the CAPM with Equal Weighted CRSP, the Value Weighted Market Model, and the Equal Weighted Market Model. The results are robust as this is short-run event study (Campbell, Lo, and McKinley, 1997), and is available on the technical appendix on the author's website.

Readers may wonder if the attention-driven stock price response varies by year. We run the same event study by each different year, and the results are robust. Although some years show marginal statistical significance, the directions and economic magnitude are consistent as shown in Panel B. We also investigate whether the return pattern is different, depending on the week of the day the interview is aired. It may be that Friday interviews receive much less attention of the investors because it is close to the weekend. We find that the average cumulative abnormal return on the day of the unconfounded Friday interview is only marginally significant at 53 bps, while the interviews during the rest of the weekdays result in an ACAR [0] that is statistically significant and economically larger in magnitude. This is consistent with Dellavigna and Pollet (2009) in that we document evidence regarding limited investor attention on Fridays.

We also investigate whether the stock price response to media-driven attention has some seasonality such as January effect (Keim, 1983). The primary explanation for the January effect is that investors buy a certain stocks in January that were the losers in the prior year, because they had sold those stocks in prior December to reduce their tax burden (tax-loss selling hypothesis) (Reinganum, 1983; Thaler, 1987). Reinganum (1983) find that a majority of the January effect is observed from small loser stocks, and Roll (1983) argues that such predicable seasonality should have been already exploited by rational arbitrageurs as long as the market is efficient.

We split the sample into subsamples based on the month when the interviews took place and run the same event study. The results are in Panel C. Wthe e find that the interview day's cumulative abnormal return of 210 bps for unconfounded sample (100 bps for the entire sample) in January is the largest among all months. Moreover, stocks commonly lose their value significantly after interviews in January: -217 bps for unconfounded sample and -132 bps for the entire sample. The run-up in January is significantly higher than the remaining months (70 bps) for the unconfounded sample (t-stat=2.54), while the reversal is not significantly different. This result suggests that the January effect makes the stock price response to media-driven attention less transitory by making the run up higher, but not making the reversal any deeper.

Using a non-parametric chi-square test, we find that the firm size distributions by the Fama-French size quintile are not significantly different between the January and non-January interviews. Instead, we find that most of the run-ups on the days of interviews in January were significantly higher for small-size quintile firms. We find that the CAR [0] is marginally and significantly higher in January than the remaining months

for firms in the smallest two quintiles (t-stat of 1.86, for the smallest quintile, and 1.63 for the second smallest quintile). The difference in the return is shown in Figure II-III. What is also observed is that the event day abnormal return is negatively correlated with the size of the firm. Given that smaller firms are less-known to individual investors, the attention driven by the media may be disproportionately higher for smaller firms. We will test this hypothesis in the last section of the paper using multiple regressions.

If the stock price response to the CEO interview is attributable to investor attention, and if we assume that the marginal attention drawn by an interview diminishes as the CEO shows up more in CNBC interviews, we should observe a diminishing magnitude of stock price response to the interviews as the count of the cumulative interviews goes up.

Figure II-IV shows this result, consistent with this diminishing attention hypothesis. The stock price response to the first-time interviewing CEO is the largest in magnitude (5% run-up over a [-10, 0] trading-day window, and subsequent reversal). The stock price response is smaller in magnitude for second or third timer. Stock price response to the interviews of the CEO who is appearing 4^{th} to 9^{th} time is significantly positive only on the day of the interview and the next day. For frequently interviewed CEOs, the stock price response is nil.

II.4.B. Individual Investors and Media-driven Attention

Barber, Odean, and Zhu (2008) find that individual investors buy the attention-grabbing stocks due to their limited choice set, compared to the huge universe of stocks available. We also hypothesize that it is the individual investors who buy stocks on the days when CEOs are interviewed on CNBC because media play by the top executives is one of the most attention-grabbing pseudo-events for firms. Moreover, CEOs have every incentive to make their firms look positive in the interviews, which would presumably make their use of language more positive.

Consequently, the more positive selling pitches made by CEOs in the media would grab the attention of individual investors, who tend to be less sophisticated than institutional investors. Grullon, Kanatas, and Weston (2008) find that firms with higher advertisement expenses have larger numbers of both individual and institutional investors. Frieder and Subramanyam (2005) find that brand recognition is highly and positively correlated with ownership by individual investors. Huberman (2001) document that individual investors tend to invest disproportionately more in stocks with which they are

familiar. While brand equity is established through product market competition over time, establishments are also facilitated by investing more in advertisements or public relations. Therefore, proxying brand recognition with advertisement margins (advertisement expenses divided by a lag of total revenues), we assume that firms with higher advertisement margins have larger ownership by individual investors.

At the end of every fiscal year, we sort the firms in the Compustat universe by advertisement margins and obtain the breakpoint of the quintile. We then grouped the sample of our firms using these breakpoints in the advertisement margins as of the fiscal year that ended prior to the interview. Compared to the Compustat universe, our sample firms have higher ad margins. The event study results are shown in Table II-IV and Figure II-V. Individual Investors and Stock Price Response to Media Attention. The post-event reversal is significant for firms with the highest advertisement margin quintile regardless of the asset pricing model we choose.

Although the magnitude of the event day is largest for the lowest ad margin quintile, as we investigate the average cumulative abnormal return chart in Figure II-V, we find that the ACAR[-10, 0] is highest for the highest ad margin quintile firms, and the magnitude of the ACARs are positively related to the ad margin quintile. One interesting finding is that the ACAR of the firms in the highest ad margin quintile shows significant pre-event run-ups beginning two trading days prior to the interview.

Given that the scheduling of an interview is usually conducted one day prior to the event (Cramer 2006), it may be that the anchor schedules a CEO interview with the

firms with high individual ownership that are experiencing abnormally high stock price return to cater the appetite of the individual investor audience. We also investigate the pattern of abnormal return the CEO interviews for the group of firms with the highest average individual trading in the next subsection.

In order to investigate whether the run-ups and reversals are driven by enthusiastic, yet less sophisticated individual investors, we use institutional ownership as a counter-proxy for individual ownership, as in Fang and Perres (2009). The results are shown in Panel B. Whereas return reversal is statistically significant and economically large in magnitude for low institutional ownership quintile firms, it is insignificant for firms in the top two quintiles. This finding is another piece of evidence showing that individual investors are the ones who are most excited and who buy stock as they watch the CEO interviews on CNBC. One may argue that institutional ownership is highly correlated with the size of the firm; therefore, it may be argued as a piece of evidence that smaller firms are those that manifest a wilder pattern of stock price return surrounding CEO interviews.

A more direct method of testing whether buying pressure on the day of the CEO interview comes from individual investors is to work with microstructure data and test whether the abnormal buyer-initiated volume is significantly high for only small-trade size groups especially for the cleaner interviews, without major corporate events or surrounding news articles. We explore this possibility by using the trade size-based classification by Griffin, Harris, and Topaloglu (2003). First, by using TAQ data, we determined whether the order was buyer-initiated or seller-initiated by using the Lee

Ready (1991) algorithm. This algorithm uses the quote test first (buy if the quoted price is higher than the mid-point of the bid and offer), and then uses tick test (buy if the current quoted price is larger than the lagged quoted price) if the quote test is inconclusive.

We then classify each trade as a small (individual) trade if the number of shares traded is less than or equal to 5,000 share; we classify the trade as a large (institutional) trade if the number of shares traded is greater than 50,000 shares. Since TAQ data are noisy for the first and last 30 minutes of the sessions (McInish and Wood, 1992), we work with the TAQ data over the time interval between 10:00 am and 3:30 pm EST. One thing we need to consider is that different stocks may have different levels and fluctuations of trade by order size on a typical trading day. Therefore, we need to determine whether or not the event day trading volume of a certain size class is significantly large or not on a standardized basis, where the means and standard deviations are estimated over a specified window prior to the event. Consequently, we aggregated the number of orders by trade size each day for each stock over an estimation window of 70 trading days ending on the 11^{th} trading day prior to the CEO interview. We also aggregate the number of orders by trade size each day for each stock over the event window of [-10, +10] trading days surrounding the CEO interview. From the data of the estimation window, we estimate the mean and standard deviation of the buy and sell orders by the trade size group for each stock. We then use these to standardize the buy and sell order counts. For each of the 21 trading days surrounding the CEO interview, we investigate whether the average standardized abnormal trading volume of

each trade size group is significantly different from zero. We do the same abnormal trading volume study for the entire sample, unconfounded sample, and the cleanest sample. The results are on Figure II-VI. Abnormal Trading Volume by Trade Size Group for Different Samples As we move from the entire sample to cleanest CEO interview sample, the individual trades keep on being significantly different from zero (the t-stat of small buys is 3.78 on the day of the interview for the cleanest sample). In contrast, institutional trades become insignificantly different from zero as we move from the entire sample to cleanest sample (the t-stat of big buys is only 1.55 on the day of the interview for cleanest sample). This finding clearly shows that it is really the individual investors who are excited and trade on the attention-grabbing pseudo-events generated by the mass media.

Up to now, all evidence supports that media-driven attention generates transitory, and not permanent, stock price movement and that pricing pressure comes largely from individual investors. Although with the reduction of transaction costs for each trade, and with the advent of algorithmic trading technique, more sophisticated institutional investors or hedge funds also trade in smaller size volumes, we must be careful in drawing the conclusion that the evidence directly implies individual investors as the ones primarily trading on media-driven attention. However, all other evidence, such as the ACAR by advertisement margin quintile and the institutional ownership quintile substantially eliminates the possibility that the result is primarily driven by the algorithmic trading of hedge funds.

One may wonder why individual standardized abnormal sell volumes are also significantly positive, given that CEOs have an incentive to present a positive impression and to drum up the stock price during media play. One possibility is that media play by the CEO, intermingled with the anchor's analysis, would generate more disagreement among retail investors, which would increase both small buy and small sell volumes. As Cramer (2006) points out, sometimes the anchor invites the CEO of a controversial firm to an interview to discuss the company's situation with the audience, which may generate more disagreement among investors, with the caveat that those arguments are no news to institutional investors, in any case. If this is the case, do we find some stocks that actually show negative abnormal returns on the day of the interview that bounce back upward? Does the price response pattern always revert back to its original level, regardless of a positive or negative investor response to the CEO interviews?

In order to investigate this issue, we grouped the interviews into eight different bins, depending on whether the stock price returns over three different event window segments are non-negative or negative. The result is shown in Table II-V. We do find that 46% of all CEO interviews actually resulted in negative abnormal returns on the day of the interview. Moreover, regardless of whether the firm had non-negative abnormal returns or negative abnormal returns on the day of the interview, 55% of all CEO interviews are followed by a negative drift after the interview. Moreover, 12% of the interviews (confounded as well as unconfounded) are faced with negative abnormal returns for all of the event window segments.

What can explain the negative drift after the negative abnormal returns upon the CEO interviews? For a firm that has been undergoing a slow reflection of bad information into its stock price, such as a negative earnings surprise, a CEO interview may slow down the negative drift temporarily, if the firm has undergone intensive trading by individual investors. Subsequent to the interviews, as the attention driven (uninformed) buying pressure fades away, the persistent negative drift would be revived. In order to investigate this phenomenon, we classify the observations into quintiles, according to the intensity of the trade by individual investors. We use Barber, Odean, and Zhu (2008) in classifying the dollar value-based trade size into five different bins over the 70 trading days ending on the eleventh trading day prior to the CEO interview. For each trading day and for each stock, we compute the turnover in the smallest trade bin by dividing the 1991 dollar valued trades in the smallest trade size bin by the market value of the firm with 1991 dollar. In comparison with the Griffin, Harris, and Topaloglu (2003) that depends on the share numbers traded, this dollar value based classification enables us to find which stock is more traded by retail traders relative to the market value of the firm.

For each stock, we computed the average turnover in the smallest trade bin over the [-80,-11] trading day window, which measures how much of the firm's equity value is traded among individual investors on a typical day. We use this as a measure of individual investors' trading intensity, and hypothesize that stocks that are more intensely traded by individual investors would experience more run-ups and reversals for the CEO

interviews. We group the stocks into quintiles, based on this average turnover, in the smallest trade bin.

We report the event study results by the small trade intensity quintile in Panel A of Figure II-VII. As the small trade intensity grows from the lowest to the second highest quintile, the event day run-up increases. Moreover, all average cumulative abnormal returns reverse completely back to zero. This finding is consistent with the small investor attention hypothesis, which states that individual investors trade stocks that are covered by non-informative mass media. However, for the highest quintile of small trade intensity, a strange thing happens. It starts with the negative drift in the first place, and although the stock price runs up a little bit on the day of the interview, the stock price plunges back again quickly after the interview, and eventually results in significant negative abnormal returns over 30 trading day horizon.

This finding suggests that the phenomenon (in which over fifty percent of the cases of CEO interviews are followed by a negative drift) is significantly driven by the stocks that are most intensively traded by individual investors relative to its market capitalization. One possibility is that these are stocks that institutional investors have been dumping already, due to some bad information in the first place, which has started the negative drift. Since institutional investors try to minimize a negative price impact, they sell in smaller trade size when unwinding their positions. This result may have artificially put the stock into the highest quintile of smallest size trade bin in the first place. Yet, the media hype by the CEO interview may have excited individual investors

transitorily, but the attention effect died away quickly and could not stop the downward drift.

In Table II-VI, we run regressions to understand how small trade intensity is associated with various characteristics of a firm, such as the level and change in institutional ownership, and the macro impact such as recessions and yearly trends. The dependent variables in the first two regressions are the average turnover in the smallest trade-size bin for each firm over the [-80,-11] trading day window, multiplied by one hundred in order to magnify the coefficients. The dependent variable in the last two regressions is the average turnover in the largest trade-size bin for each firm over the [-80,-11] trading day window, multiplied by one hundred. The first and third regressions are the Ordinary Least Squares method, and the second and the fourth use industry fixed effects to capture the heterogeneity in turnovers in the smallest/largest trade-size bins coming from industry specific characteristics.

As shown by the adjusted R2, fixed effects are marginally important in explaining cross-sectional variation in small (large) trade intensity. The first two regressions would give us an idea of how individual investors' trading is associated with various factors, whereas the last two regressions would give us an idea of how institutional investors' trading is associated with various factors. Most importantly, we find that small trade intensity is negatively correlated with the changes in institutional ownership over the previous year or quarter given that the change is a decrease. As we run spline regressions, depending on whether the change in institutional ownership is positive or negative, we find that a negative association between small trade intensity and the change in

institutional ownership is statistically significant when the change is a decrease. In contrast, while the association is non-existent when the institutional ownership increases. Other things being equal, a one-percentage point decrease in institutional ownership over the past one year is associated with a 1.25 basis points higher turnover by more trading by individual investors per day. Given that the unconditional mean of the smallest size bin turnover is 67 basis points relative to the market value of equity, the impact of decrease in institutional ownership is substantial (1.87% increase in turnover by individual investors relative to its unconditional mean). This result suggests two points: (1) institutional investors try to minimize the price impact when unwinding a position by chopping up the order size, and (2) as institutional ownership decreases, individual ownership and trading increases. In contrast, turnover in the largest trade size bin is positively correlated with an increase in institutional ownership and is negatively correlated with a decrease in institutional ownership over the past one year. A one percentage point increase in institutional ownership is associated with a 0.007 bp increase in institutional investors' turnover and the same magnitude decrease in institutional ownership is associated with a 0.02 bp INCREASE in institutional investors' turnover. Given that the unconditional mean of the largest size bin turnover is 0.7 bp (large trades occur infrequently), the impact of decrease in institutional ownership is also large (a 2.9% increase in largest size turnover relative to its unconditional mean of turnover by institutional investors to market cap). We find evidence that significant parts of position reduction by institutional investors are still done in large trades. Institutional ownership is positively correlated with both small and large sized turnover. Year trends are positively correlated with small turnover, which also suggests that large institutions are

increasingly traded more in chopped-up order sizes. It is difficult to interpret this positive correlation as evidence of an increase in the number of day traders, because our sample period also includes the post dot-com bubble period.

One thing to be careful in making a statistical inference is that the sample in this regression is not a random sample. Instead, the sample is the firms that had CEO interviews, while the study in this subsection investigates what explains small trades. In order to control for the selection bias of the CEO interview sample, we included the inverse Mills' ratio coming from the probit interview selection model in the next section (Table II-IX). The positive and significant coefficient on the inverse Mills' ratio suggests that the CEO interview sample firms are the firms where individual investors are trading more intensively. In contrast, the coefficient of the inverse Mills' ratio is not significant for the regressions of the turnovers in largest trade size bin. The coefficient of the NBER recession is negative and significant for individual turnovers while it is positive and significant for institutional turnovers. This finding suggests that individual investors trade stocks more intensively during economic boom times, whereas institutional investors trade stocks more intensively during recessions. Individuals trade more intensively for NASDAQ stocks even after controlling for industry fixed effects, whereas institutions do not. Small sized trades are intensive when prior performance is either good or bad, but large sized trades are intensive only when prior performance is good. This finding again supports the notion that institutional investors reduce their ownership by selling in small order sizes.

Overall, 40~41% of the cross-sectional variation in small trade intensity is explained with our empirical model. Combined with the results in Figure II-VII, the results in Table II-VI confirm the idea that significant negative drift for firms in the highest quintile of small trade intensity results from downward pricing pressure coming from the reduction of positions by institutional investors with chopped-up order sizes. Therefore, excluding this quintile in Figure II-VII reaffirms the notion that firms with a high intensity of individual trades show large run-ups and reversals in response to CEO interviews on CNBC.

II.5. Robustness Check

One may argue that the results are driven by growth, as opposed to value firms. Therefore, we run the same event study by book-to-market quintiles in Table II-VII. The result shows that growth firms (low book-to-market or negative book-to-market) are indeed the ones that shows larger run-up and more reversals, but at the same time, we can equally argue that CEO interviews with high growth firms draw much more attention of the retail investors than that with low growth value firms.

Is the pattern of stock price returns attributable to the information environment of a firm? One may argue that media exposure of the top manager may reduce the information gap between insiders and outsiders by giving soft qualitative information through interview conversations with the CEO. If this is the case, we should observe a permanent stock price jump with the CEO interview for firms with a high degree of

information asymmetry, thereby implying an insignificant reversal. We proxied the degree of information asymmetry with the research and development (R&D) margin relative to total revenues. We run event study and examined the CAR pattern by the R&D margin quintile. As we can see from Table II-VII, it is the firms in the higher R&D margin quintiles that experience more significant return reversals. This result is at odds with the argument that CEO interviews serve as an informational event for firms with a high degree of information asymmetry. Instead, this finding suggests that investors are more excited to watch CEO interviews if the CEO is from a firm a with a high R&D margin, i.e. a technology firm.

II.5.A. Does the investor base increase after CEO interviews on CNBC?

Media-driven attention represented by CEO interviews on CNBC may increase the awareness of investors, even thought the actual information content is ignorable. As long as investor awareness or the investor base increases, Merton's (1987) theory predicts that the shadow cost of information, which is an important component of expected stock return, decreases under the assumption of incomplete information capital market. If this is the case, the stock price would jump with the CEO interviews on CNBC in a permanent fashion. We investigated this possibility by running the same event study by the quintile of the proxy for the investor awareness. The number of analysts covering a stock is often used as a proxy for the investor base (Bowen, Xia, and Cheng, 2008; Bushan and O'Brien 1999); and Liu, Sherman, and Zhang, 2008).

Following O'Brien and Bushan (1990) and the literature, we consider various controls that are known to be highly correlated with the number of analysts covering the

stock. The number of analysts would be high if a firm size is large, and more analysts will follow if firm-specific uncertainty is high. Since the tech bubble, NASDAQ firms and tech stocks would have more analysts following. Analysts would be less likely to follow firms in regulated industries (O'Brien and Bushan 1990). In addition, analyst coverage would be significantly associated with past performance, which is proxied by the daily alpha of Carhart 4 factor model over the estimation window of [-150, -31] trading days. Also, interpreting analysts as information conduits to outside investors, firms that are covered by larger number of analysts would have low degree of information. Thus, we control for the degree of information asymmetry, which is proxied by both the PIN (probability of informed trading) and effective spread from the TAQ data. We also control for the yearly trend to capture any increasing or decreasing trend over the sample period. The regression results are in Table II-VIII, and the model fit of 0.51 in the Adjusted R-square is good compared to previous research. Here, we obtain the residuals and divide the sample into quintiles. For the unconfounded sample, we run the same event study, and display the result on

Figure II-VIII.

The stock price increase is permanent for the group of firms in the lowest quintile of residual analyst coverage. This result finding suggests that for less-known firm relative to what the economic characteristics of the firm predict, media coverage, such as CEO interviews on CNBC, significantly increases investor awareness. Thus, we find partial support for Merton (1987) where non-informative media coverage reduces the shadow cost of information.

II.5.B. Attention vs. Information

One alternative hypothesis we tackle in this subsection is whether the stock price pattern we document is driven by soft information released in various forms over the event window. One possibility is the content of surrounding news articles. Tetlock (2007) find that the linguistic tone (negative) of news articles contains significant information content that can systematically affect stock prices, which is not captured by hard information. In the same spirit, the linguistic tone of CEO interview conversations by both the interviewer and interviewee may carry significant information content. Therefore, in this subsection, we investigate how the information content of surrounding news articles, as well as that of the interview conversation itself may affect stock price response as a competing hypothesis. Specifically, we run multiple regressions (1) to explain cross-sectional variation in cumulative abnormal returns (CAR), and (2) to examine whether variables from the information hypothesis gain significant explanatory power consistent with the price pattern.

II.5.B.i. Interview Selection Model

Before we jump into CAR regressions, we need to consider the fact that the interviewed firms are not selected randomly from the universe of listed stocks. The journalists would pick only the stocks that are worth the limited time of airing the interview for good or bad. Moreover, the initially selected CEO can always decline an interview if he or she is more likely to say something negative about the firm due to the business situation. All the CEOs have incentive to make a positive impression in the interview for their stock based compensation as well as for their own career concern in the labor market. Without controlling for the selection process, the regression results may be significantly biased. Therefore, we use the selection model by Heckman (1979) to capture the selection bias of CEO interview. In Table II-IX, using the daily CRSP universe, we run probit selection model to choose a certain firm for an interview on that day. Then we obtain the inverse Mills' ratio and use it in the second stage CAR regressions in the next subsections to control for the selection bias. If the coefficient of the IMR on the second stage regression of CAR [0] is significant and positive, then it would imply that the CEO of the firm is chosen to be interviewed for unobservable good reasons. The covariates for interview selections we use are as follows:

1. The previous day's stock return: high return would naturally draw attention of the journalists.

2. Idiosyncratic volatility: if a firm is undergoing a high firm-specific risk period, such as a forced CEO turnover, the journalist may have more questions to ask the firms that have high uncertainty that is unique to the firm. On the other hand, the CEO would

try to avoid interview even if the firm is chosen by the journalist. We investigate which force wins in the interview selection.

3. Alpha and factor exposure to market risk, size, book-to-market, and momentum factor: It may be that certain anchors prefer to interview outperforming firms, which is captured by the alpha of Carhart 4 factor model. Also, it may be that the journalists prefer to interview certain firms with certain risk characteristics, such as market risk, size, book-to-market, and momentum. We run the monthly Carhart 4 factor model and use the betas measured over the period of 36 months, which ended prior to the interview.

4. Event dummies for major corporate events that take the value of one if the event occurred on the same day. The events we include are (1) merger and acquisition announcements; (2) M&A effective dates; (3) beating analyst expectations in earnings announcements; (4) missing analyst expectation in earnings announcements; (5) switching the stock exchange; (6) changing the ticker symbols; (7) lawsuits; (8) having a 52-week high (low) price; (9) having a 52-week high volume; and (10) having the stock included in S&P 500 index over the ten calendar day period that ended at the very trading day. We use industry dummy variables to capture the empirical regularity that certain industries (e.g. software) attract more CEO interviews. We impose clustered standard error by the year. The results are shown in Table II-IX.

The results largely confirm our expectation that firms are more likely to be chosen if (1) the return of the previous day was high; (2) past performance was excellent; (3) the market risk of the firm is high; (4) the firm is large; (5) the firm is a growth firm; (6) the

firm announced that it would acquire another firm; (7) the firm either beat or missed analyst expectations; (8) the firm is switching to a different stock exchange; (9) the firm changed its ticker symbol; (10) the firm hit a 52-week high price or volume; and (11) the firm was included in the S&P 500 within previous ten day horizon. Given that a typical stock price response to a merger announcement for the acquirer is negative, it is quite plausible to argue that the CEO has an incentive to minimize a negative stock price response to an acquisition announcement by having a CEO interview. In order to prevent the situation where investors trade in wrong stocks due to a change in ticker symbol or switching of stock exchange, the CEO has an incentive to draw the attention of investors by having an interview in the media. From this probit model, we obtain the inverse Mills' ratio and use it consistently throughout the regressions in the following subsection.

II.5.B.ii.Capturing Information through linguistic content analysis of the interviews

We investigate whether the linguistic tone of the interview has any information content. Methodologically, with the advancement of technologies, an increasing number of researchers have been studying how linguistic content in various forms, such as news articles or Internet message boards, can affect stock returns or trading volume in a systematic manner. These methodologies can be classified into two groups. The first is based on machine learning/data mining, which is subject to the researcher's subjective judgment to a certain degree when he or she constructs the training set for the computer. The methods are discussed thorough detail in Das and Chen (2001) in which they try to construct small-investor sentiment by using natural-language algorithms, but find no forecasting power of stock returns. Antweiler and Frank (2004) use one of these

techniques, Naïve Bayesian, in classifying the Internet stock messages on Yahoo!Finace and Raging Bull; the find that linguistic content *does* predict trading volume and market volatility.

The second method resorts to existing word categories, or bags of words, established in psychology/computational linguistics. In this methodology, the words of the linguistic content are simply counted, according to each word category. While bags of words are created subjectively in the first method, the bags of words are provided exogenously in the second method which frees the research from the subjectivity of the researchers. Tetlock (2007), and Tetlock, Saar-Tsechansky, and Macskassy (2008) used this method with General Inquirer categories from the Harvard IV psychosocial dictionary and find that the negative tone of news articles carries significant information that helps predict stock returns and fundamentals, which help market efficiency. In order to consider the alternative hypothesis that information, and not attention, may drive the reported pattern of stock prices, we use the same General Inquirer method due to the objectivity of the word categories provided[9]. As far as media-driven attention is concerned, the information captured with computational linguistic tools enables us to steer clear of the argument that information instead of attention is driving the result.

We utilize the General Inquirer in Tetlock (2007, 2008) to capture the information content of the interview dialogue and surrounding news articles. The method is largely a word-counting system based on objectively defined word categories named

[9] We also tried the Naïve Bayesian method (Rainbow software) as in Antweiler and Frank (2004) in classifying the surrounding news articles into positive/neutral/negative categories. However, the context dependent nature of word usage prohibited us from properly training the machine in the first place.

Harvard IV dictionary. It has 187 different word categories such as "Positiv," "Negativ," and "Academ" which stands for positive, negative, and academic, respectively. For each of the unconfounded interviews, we specify a date range of seven calendar days before and after the interview.

For each firm and each day, all of the word counts by all different word categories in various news articles are aggregated. The proportion of negative words, for example, is calculated as the negative word count divided by all word counts on that specific date. Then, for a cross-section of all normalized negative word counts of all news articles, we compute the mean and standard deviation of the negative word measure. Then the negative language measure of the specific date is standardized by the in-sample mean and standard deviation of the negative measure. We do the same for the interview conversations. In particular, we first treat the script of each interview by both the anchor and the CEO as a whole, and we obtain the quantified measure of language as above. Then we split each interview script into CEO script versus host script, judging by comparing the names of the speaker on the script with the list of anchors in our collected data. Then we obtain the quantified measure of language the CEO and for the anchor for each interview. We also standardize all the linguistic measure for by these three separate samples.

Following Tetlock (2007), we ultimately investigate whether a negative tone of an interview has information content of a stock such that the stock price response would be significantly correlated with a negative tone measure. Also, we investigate a handful of other linguistic measures. Before we use the linguistic content of the interview to

analyze the CAR, we first investigate how the linguistic content is affected by the economic characteristics of the firm and the surrounding economic environment. When the CEO tries to elaborate the situation of the firm as a defense to critical questions of the anchor, the CEOs words may become longer. Therefore, investigate the word count as the measure of length of the interview. "Positive" is another category that is useful, given that the CEO has an incentive to appear as positive about the future of his or her own company on television. "Academic" is another word category that we investigate, because research-oriented words may carry information about the high-tech nature of the firm. The category includes such words as "laboratory," "researcher," "science," and "statistics."

We analyze the script of the interview on two levels. First, we analyze the script of the interview as a whole. Second, we analyze the script of the CEO and that of the anchor separately. The reason for analyzing the script of each speaker is two-fold. First, the factors affecting the conversation may affect one of the two parties asymmetrically. Second, the linguistic content of the two parties may affect the stock price asymmetrically. For example, negative tone by CEO may depress the stock price, but negative tone by anchor may have no effect on stock price due to the function of the journalist in the first place.

II.5.B.iii. Linguistic Content of Interviews Affected by Economic Fundamentals

Before we analyze how linguistic tones of the interview conversation affect the stock price, we first investigate how the economic characteristics of the firma and economic surrounding of the firm affect the tone of the speakers in the interview first to

understand how the soft-information provided by the speakers are actually affected by the economic fundamentals.

We hypothesize that the past performance of the firm would affect the content of the dialogue. CEOs of badly performing firms may try to make a strong case by explaining the situation in more detail, and the anchor may ask more systematic series of questions that tend to be longer. We use abnormal performance over the past six-month period measured by the daily Alpha of Carhart 4 factor model as the primary performance measure. We also hypothesize that the CEO interview dialogue would differ, depending on the performance immediately prior to the interview, given that the CEO would always try to boost up the stock price for his or her compensation concerns. The immediate short-run performance is the CAR [-10,-1].

We also use the abnormal trading volume of firm as a measure of investor disagreement, and hypothesize that both the anchor and the CEO would try to explain more when there is severe investor disagreement about the prospect of the firm. We also use idiosyncratic volatility and hypothesize that an anchor would try to ask deeper (presumably longer) questions to help the audience understand what is going on with the firm that has higher firm-specific uncertainty. In contrast, CEOs may try to avoid an interview or shorten it if the firm-specific risk is high, which is difficult for him or her to explain. We use the daily root mean squared error of the Carhart 4 factor model over the estimation window of [-150, -31] trading days prior to the interview as the measure of idiosyncratic volatility. We also hypothesize that firms with different sizes, past growths

in size, and book-to-market would demonstrate different pattern in the linguistic content of the CEO interviews.

We hypothesize that younger firms are more likely to have longer interviews with a less negative tone, due to the optimism of the CEO. The R&D margin is used as a proxy for the degree of information asymmetry, and we hypothesize that the CEO from a high degree of information asymmetry would tend to explain more in order to reduce the information gap between insiders and outsiders.

We also use several measures of investor base characteristics. Higher advertisement margin firm may command a relatively larger retail investor base due to higher familiarity to individual investors (Huberman, 2001). Firms with higher retail investor base would try to play themselves up more during interviews to excite their less sophisticated investors by speaking in less negative and more positive words. Advertisement expense margin is also used as a proxy for the company's investment in public relations. It may be that the firms with higher investment in public relations are also training CEOs to convey more positive messages in a skillful manner before the CEO conduct the actual interview at CNBC. The prediction is the same as before, in that a higher advertisement margin firm's CEO would speak in more positive and less negative tone.

The number of analysts prior to the interview is a proxy for the size of the investor base. We hypothesize that firms with a lower investor base would have longer

CEO interviews to increase the awareness of investors so that the stock price would increase permanently in Merton (1987) sense.

Also, we hypothesize that the CEOs of illiquid stock companies would try to have longer interview to stimulate trading and consequently increase the liquidity of the stock, which would have a positive impact on the stock price by reducing expected stock returns (Amihud, 2002). We also hypothesize that the CEOs of penny stock companies have more incentives to play up the media for obvious reasons. We classify the stock as *penny stock* if the price per share is less than or equal to $5.

Lastly, the interview selection is not random, which makes us control for the selection bias. Therefore, we use the Inverse Mills' Ratio (IMR) from the probit selection model of interview from the CRPS daily universe as a control. We also examine how macroeconomic condition, market wide volatility, and investor sentiment affect the linguistic content of the CEO interview participants. We give NBER recession dummy variable that takes the value of one if the interview took place during a recession period specified by NBER. We use VIX index (implied volatility of S&P500 index option) by Whaley (1990) to proxy the market-wide volatility. We use Baker and Wurgler's (2003) sentiment index to proxy the overall investors' sentiment. We hypothesize that the CEOs words would be more negative tone when recession hits and when the sentiment is low.

The results are shown in **Error! Reference source not found.**. In the first three egressions, we use the standardized word count as the dependent variable. In the second

three regressions, we use the standardized word count of negative words as the dependent variable. In the third three regressions, which are in Panel B, we use the standardized word count of positive words as the dependent variable. In the last three regressions, which are in Panel B, we use the standardized word count of academic words as the dependent variable. In each group of regressions, the first regression is based on the sample using the whole interview discourse, the second regression is based on the sample using only the dialogue of the anchor, and the third regression is based on the sample using only the dialogue of the CEO. We use the Ordinary Least Squares to explain how the linguistic content of the interview is systematically affected by the economic characteristics of the firms. We use an identical set of explanatory variables for the whole set of regressions.

When a firm performs poorly, the interview tends to be longer. The coefficients of prior performance, as well as that of the cumulative abnormal return over the ten trading days prior to the interview are negative and significant in the first regression. As we investigate the coefficients of the same variable on the second and third regressions, we find that not only the anchor tends to say more, but also the CEO tends to say much longer when the performance is poor. This finding is consistent with the intuition that when a poorly performing company's CEO is interviewed, he/she tries to make his/her case by elaborating on what has been going on with the company. Also, when the firm has been performing poorly, the interview tends to be filled with negative words for obvious reason. Panel B shows that when prior performance is good, the interview is more likely to be filled with positive words, again, for obvious reasons.

The coefficients of CAR [-10,-1] tell another interesting story. In Panel A, it suggests that when the stock is underperforming shortly prior to the interview, the CEO as well as the anchor try to say more. It may be that the CEO tries to leverage the interview as a chance to boost up the stock price in response to short-run pricing pressure by discussing his or her firm more. Also, the coefficients of the same variable on columns 4 and 5 suggest that the anchor, and not the CEO, is more likely to use negative words when interviewing a CEO from a poorly performing firm over the prior ten trading day horizon. The result in Panel B suggests that the positive tone of the interview is positively associated with the immediate prior performance.

The relationship between previous abnormal trading volume as a proxy for investors' disagreement and the linguistic characteristics of the interview suggests an interesting story. The coefficient of the standardized abnormal trading volume over the three trading days prior to the interview is positively related to the word count of the anchor, and that of the CEO. Such a finding implies that when the disagreement among investors about a firm's value is high, the anchor tries to ask more elaborate questions to clear up any controversy, and the CEO also tries to offer more explanations to clarify any misconceptions. Furthermore, the coefficient of the same explanatory variable in the positive word regression is negative and significant in Panel B, which suggests that investor disagreement is not received positively.

When firm-specific uncertainty is high, the anchor, as a representative of the investors in general, tries to take more time to ask more questions, while the CEO tries to be shorter in answering. Together with the result in the first stage selection probit model

(negative and significant coefficient of idiosyncratic risk), this finding suggests that the CEOs of high idiosyncratic risk firms try to avoid CEO interviews, while the anchor tries to address more questions to help the audience to better understand the firm. Once the CEO agrees to show up on the media interview, he or she tends to be shorter in answering questions. For such high idiosyncratic risk firms, the questions by the anchor tend to be more negative (critical) and less positively framed. In contrast, the tone of the answers by the CEO tends to be negative. The result is robust when we replace the idiosyncratic risk measure with the conditional idiosyncratic volatility using EGARCH, as in Fu (2009), based on the monthly regression of Carhart 4 factor model over the previous 36 months as of the end of the month prior to the interview.

Other things being equal, the size of the firm (the log of market value of equity) is positively associated with the length of the interview, especially with respect to the wording of the anchors. One legitimate question is why a smaller firm's CEO would not try to have longer interviews (air-time) to increase the investor base as in Merton (1987). However, this is the incentive from the CEOs side, and size is not a good proxy for the investor base as is apparently modeled in Merton (1987). CEOs from larger firms tend to use fewer negative words. This finding suggests that larger firms have stronger public relations departments that coach their CEOs about how to speak appropriately on television. At the same time, it may suggest that only the people who are skillful in speaking appropriate languages in public media are selected to be the CEOs of large corporations. In contrast, both the anchor and CEO are more likely to use positive words

if the CEO is from a small firm. Anchors are also more excited when they interview the CEOs of small firms.

The book-to-market ratio is negatively associated with the length of the CEOs talk, and the positive tone of the anchor. Therefore, low book-to-market firms, presumably growth or glamour firms' CEOs tend to talk longer in interviews. In comparison, the tone of anchors for growth firms tends to be more positive, which suggests that anchors are excited when interviewing CEOs from small growth firms as opposed to large and value firms.

The log of firm's age is negatively associated with the length of the interview, as well as the positive tone of the anchor, while it is positively associated with the negative tone of both the anchor and the CEO. Therefore, this result suggests that anchors are excited when they interview CEO from younger firms. They spend more time discussing these firms, and use fewer negative and more positive words in the interview. At the same time, the CEOs from younger firms also try to explain more about their firms in order to increase the investor base and talk in a significantly less negative tone than their counterparts from older firms.

On the other hand, the CEOs from older firms tend to use more research-oriented words. Do anchors favor NASDAQ firms, as opposed to NYSE/AMEX firms? The result does not support such conjecture, because the tone of the anchor is neither less negative nor more positive for the CEO interviews of NASDAQ firms. Rather, it is the younger, small-growth firms that the anchors favor more. The anchors spend more time

interviewing a CEO from a NASDAQ firm, while the CEO from a NASDAQ firm tend speak in less negative tone and talk more about their R&D.

R&D intensive firms' CEOs tend to talk more in order to reduce the information asymmetry, and use more negative words. The result may come from the fact that the time period coincided with the burst of the technology bubble that directly hit the R&D intensive tech stocks severely in 2001~2002. As is quite natural, the R&D intensive firms' interviews tend to have more R&D (academic)-oriented words, both from the anchor's and the CEO's sides.

How does the investor base of the firm affect the linguistic content of CEO interviews? Advertisement margin is a proxy for the familiarity of retail investors to the firm. Presumably, firms with larger advertisement margins would have a larger portion of retail investors because the firm is more familiar to individual investors. It may be that the CEOs of such firms may try to appear positive, with the hope of exciting retail investors so that they would buy the stock and consequently increase the stock price.

At the same time, in understanding the advertisement margin as a proxy for investment in public relations of the firm, high ad margin firms have better PR divisions which trains CEOs to speak in less negative terms and to frame things more positively during interviews. The coefficient of the advertisement margin in the regression of negative (positive) words of the CEO regression is negative (positive) and significant. This result supports both possibilities, however, we do not have clear evidence to discriminate one possibility against the other.

The number of analysts covering a stock is another proxy for the investor base, and is negatively correlated with the word counts; it is also positively correlated with a negative, and academic tone, respectively. The results suggest that when the investor base of the firm is small, the CEO tends to speak more about his or her firm so as to increase the investor base. The CEOs of the firms with a smaller investor base tend to speak with a less negative tone, and they tend to say more about their research and development. In contrast, the anchor tends to use more positively toned language when they interview a CEO from a firm with a larger investor base.

The interview content also depends on the interview experience of the CEO. The anchor tends to ask more questions to the first time interviewing CEOs and the questions for the first time CEOs are more R&D oriented. .Also, the anchor increasingly use more negative tones to interviewing a CEO the more he or she comes back for subsequent interviews. As a CEO shows up more on TV, he or she tends to speak more succinctly, using stronger toned words in either a positive or negative side. Such a tendency suggests that as first-time interviewed CEOs are very careful in divulging any positive or negative opinions, he or she later becomes more comfortable speaking out his or her strong opinions or understanding of the business environment that is being asked by the anchors.

The illiquidity measure by Amihud (2002) is strongly positively correlated with the word count of the interview and is negatively correlated with a negative tone of the anchor. Also, while the illiquidity measure is positively associated with a positive tone of the anchor, it is negatively associated with the positive tone of the CEOs words. This

finding suggests that a liquidity shock to a firm attracts more media attention. Also, this result suggests that the CEOs of the illiquid stock firms tend to take more time explaining their firms with the hope of stimulating trading of the stock to increase the liquidity, which would, in turn, increase the price of the stock. The anchor tends to speak in less negative but more positive tone, which reflects the selection bias of the firm. In contrast, the CEOs of illiquid stocks tend to speak less positively, which may be attributable to the liquidity shock that the firm is undergoing at the time of the interview. Also, the CEOs of high illiquidity firms tend to speak more R&D oriented words.

When a stock is deeply depressed by being a penny stock, the anchor tends to talk more about the firm. While the CEO of a penny stock firm is more likely to speak in negative tone and in a less R&D oriented tone, the anchor tends to speak in a more positive tone. This finding suggests that some anchors pick deeply depressed stocks and bring their CEOs to television to suggest that the audience buy these stocks because they are undervalued. For example, CEOs showing up for an interview with Jim Cramer are more likely to be penny stock firms than those showing up on other anchors' shows (chi-square p-value of 0.077 in a simple non-parametric test). The anchor is more likely to provide strong recommendations with a positive tone, while the CEO is bound to speak in a negative tone due to the apparent reason for having been a penny stock.

Since the interview is not a random sample, we control for the selection bias in the regressions by using the inverse Mills' ratio (IMR) from the probit model of selection to interview CEOs. It is positively correlated with the anchor's word count and CEOs positive tone. This finding show that the CEO interview sample selected by the anchor

have significant selection bias. The anchor had unobservable reasons to ask more questions to the CEOs of these companies, and the CEOs had unobservable reasons to be more positive about their firm. These are all consistent with the argument that a CEO interview is arranged because there is some good reason for the firm in the first place.

During a recession, the interview tends to be shorter, and the CEO tends to be more negative and less positive, while the anchors tend to use a more R&D oriented words. When the overall market is volatile, the interview tends to be longer, and the anchor tends to be more negative. In contrast, the CEO has the tendency to be more cautious by being less negative AND less positive and provide less R&D oriented answers to the questions. When investor sentiment is high, the CEO tends to speak shorter in interviews, and he or she speaks in a less negative tone. In comparison, the anchor is more cautious in addressing questions during the high sentiment period by asking less negatively AND less positively toned questions.

II.5.B.iv. Tone of the CEO Interview and Governance

Do CEOs under poor monitoring environment tend to drum up the stock by using more positive words in CEO interviews? As long as the stock price jump is transitory, assuming that CEO already knows the pattern of stock price response, if he or she tries to hype up in the media, he or she would create more volatility of the stock at the expense of less sophisticated investors. Therefore, we hypothesize that less monitored CEOs tend to be more positive in CEO interviews, *ceteris paribus*. We analyze the tone of the interviews using governance characteristics for the limited number of firms whose data are available from IRRC and Execucomp. We only focus on the positive tone, negative

tone and word count of the CEOs in the interviews. Therefore, in addition to the list of controls discussed above, we use the following governance-related variables to better understand how governance characteristics affect the language tones of CEOs in the interviews: institutional ownership prior to the interview; pay for performance sensitivity of the most recently granted equity based compensation; the performance sensitivity of total compensation; CEO age; dummy variable for CEO Chairman; and G-Index by Gompers, Ishii, and Metrick (2003). We only present these governance characteristics explanatory variables in Panel C to save space. The results for the controls are consistent with the previous results.

When the firm has better monitoring by institutional investors, the CEO is more likely to use negative words in an interview and is more likely to conduct a shorter interview, *ceteris paribus*. This finding suggests that CEOs are more likely to admit negative factors of a firm when they are monitored by institutional investors. Also, the negative correlation between institutional ownership and the word count of CEOs may suggest that as long as a firm's investor base is mainly institutional investors, CEOs have less incentive to stimulate retail investors to buy stock through more media exposure at all. The flip side of the same coin is that the CEOs of firms with a larger portion of individual investors try to speak more in the media.

When the most recently granted option and stock compensation are more sensitive to performance, the CEO is more likely to be conservative in using a positive tone in his or her language during a media interview. This result is at odds with the common criticism that stock-based compensation makes the CEO more short-term oriented, such

as being more focused on boosting up the stock price in the short-run at the expense of long-run growth. If such criticism holds true, and if the positive language of the CEO excites investors to buy the stock, then we should observe a positive association between the PPS (pay to performance sensitivity) and the positive tone measure. Once concern is that the most recent stock-based compensation package may not be the best representative measure of the effect of stock-based compensation. Therefore, in every second column, we use total PPS of the whole compensation of the CEO. At most, the PPS of the total compensation is uncorrelated with the usage of positively toned language. Therefore, we find that stock-based compensation does not make the CEO artificially boost up the stock price by speaking in a more positive tone. This finding, however, does not necessarily mean that equity-based compensation does not make the CEO boost up the stock price at all times. For a group of CEOs whose options are slightly out of money may have a different incentive with respect to the usage of positively toned words.

Younger CEOs who are interviewed tend to speak with a more positive tone, *ceteris paribus*, which is consistent with common finding that younger people are more optimistic than older people. It may also suggest that inexperienced managers are more optimistic, whereas experienced managers are slightly more pessimistic and conservative. The Chairman CEO dummy is significantly and positively correlated with a positive tone, which suggests that poorly monitored CEOs are more likely to try to increase the stock price temporarily by drumming up the stock in the media. The G index is negatively associated with the word count of CEOs in media interviews. This result may suggest that poorly governed firms' CEOs are less informative about their firms, and "lazy" in

increasing the investor base to maximize their shareholder value. Alternatively, understanding the G-index, the count of the provision to protect the management from hostile takeover as an equilibrium outcome for each firm's heterogeneous control environment, one could argue that the CEOs in firms that depend more on the external control market are more likely to expose their firms in media interviews in order to increase their investor base and boost up their stock prices so as to protect their control rights. On the other hand, the firms that are under more potential takeover threats are less likely to expose their firms in media interviews. Having studied about how the linguistic content of the interviews are systematically affected by the economic characteristics of the firm, we next investigate how the linguistic contents of the surrounding news articles are affected by the economic characteristics of the firm in the next subsection.

II.5.B.v. Linguistic Content of News Articles

We also analyze the linguistic tone of the surrounding news articles of the firms in order to understand how the economic characteristics of the firm affect the tone of the media coverage. In panel A of Table II-XI, we run OLS regression of the linguistic contents of news articles over a period of 7 days prior to the interview on the same firm characteristic variables that we used to analyze the content of the interviews. The news articles over the specified period for each interview observation are aggregated, and the linguistic word count measures are standardized for each interview observation by obtaining the mean and standard deviation of each respective linguistic measure. The media tend to cover underperforming firms more than outperforming firms, which is in line with findings by Gaa (2008), in the sense that bad news is covered more by the

media. In contrast, this finding is at odds with Hong, Lim, and Stein (2000), in that they find bad news to be diffused more slowly.

Prior performance is negatively correlated with the word count of the news prior to the interview. Consistent with intuition, better performing firms are covered with more positive tones and worse performing firms are covered with more negative tones. However, unlike in the analysis of the interview contents, the short-run performance over the ten trading-day window prior to the interview is not correlated with any linguistic measures of the news articles. An abnormal turnover of stock over [-3, -1] trading day window is also not significantly correlated with any of the linguistic measures of the news article, which is at odds with the understanding that more disagreement would be associated with larger media coverage.

When idiosyncratic risk is high, the tone of the media coverage of a firm tends to be more negative, which suggests that most of the firm-specific risk is more about the downside than upside outcomes. Larger firms are covered more by the media with a more negative tone. The media tend to cover growth stocks with a low book-to-market value. The tone of the news articles tend to be more positive, as well as more negative for older firms, which suggests that opinions about firms are stronger in either direction if the firm is older. NASDAQ stocks do not command any different media coverage than NYSE/AMEX stocks. Firms with high R&D margins are covered with a more negative tone and a more R&D oriented (academic) tone. The first result may result from the mechanical coincidence of the burst of the tech bubble in 2001. Firms spending more advertisement expenses do not receive any different media coverage, which is at odds

with the intuition that higher PR spending should result in a more positive tone in the media.

Together with the results in the previous subsection, this finding suggests that the positive correlation between the CEOs language tone and advertisement spending suggests two possibilities. First, advertisement expense is a proxy for the retail investor base, and CEOs with a larger individual investor base tend to speak more positively in media interviews to stimulate the demand of the stock from individual investors who are less sophisticated and less informed than institutional investors. The correlation coefficient between the advertisement margin and the institutional ownership is -0.10, with a p-value of less than one basis point. Second, usually the PR Division is not effective in making the actual media coverage of a firm more positive unconditionally, in general. However, they may be more effective in making the media coverage of the firm more positive under certain conditions. For example, we find a piece of evidence that they are more effective in training their CEOs to be more positive in their television interviews. Third, a CEO who cares about public relations, regardless of its effectiveness, it tends to spend more on advertising and speaks in more positive terms when interviewed by the media.

Firms with high analyst coverage receive less media coverage, other things being equal. This is another surprising finding because this finding suggests that the media tend to cover firms with a smaller investor base, *ceteris paribus*. In the sense that journalists have an incentive to bring something new to their media, it makes sense for these journalists to cover less-known firms, other things being equal. Illiquid stocks are

covered more by the media, which suggests that the firms in a liquidity crisis tend to attract media attention. The tone of the media covering penny stocks tends to be strong in either direction - positive or negative, but whether this implies more investor disagreement is not clear. The reason is because it may be the investors of a penny stock may be strongly in agreement with negative prospect of the firm whereas the investors of another penny stock may be strongly in agreement with positive prospect of the firm. The coefficient of the inverse Mills' ratio (IMR) from the first-round selection probit model is positive and significant for the word count regression. The result is consistent with the previous results, in that the selected firms for the CEO interview have unobserved reasons for attracting more media coverage.

Media coverage of firms does not significantly depend on the business cycle, but the negative tone of the media is more prevalent during a recession at a marginal significance level. When the overall market is more volatile, the media tend to provide less coverage and the tone of this news coverage is less positive. When investor sentiment is high, media coverage is low, but the tone of news articles tends to be less negative. All in all, we find that a significant portion of the cross-sectional variation in the linguistic tones and soft information are explained by the economic characteristics of the firm as well as the macroeconomic business cycle or market-wide conditions, such as volatility or sentiment. Whether all of this linguistic content significantly explains the stock price response to the CEO interviews above and beyond the economic factors is the subject of the next subsection.

II.5.C. CAR Regression Result

In order to understand whether the stock price responses to CEO interviews are driven by investor attention or information, we run regressions of cumulative abnormal returns on various economic characteristics of the firm, macroeconomic measures and linguistic measures of the interview, as well as the surrounding news articles. We hypothesize that more attention would be paid to a CEO interview of a younger firm; thus, we include the log of the firm's age. The age of the firm is measured as the maximum numbers of years since the firm's data is available either in the CRSP or in Compustat. Firm size is also controlled by using the log of the market value of equity, which was measured by the stock price of common stock multiplied by the number of shares outstanding. In order to capture the difference in the stock price response coming from different volume dynamics, we include the mean turnover of stocks measured over the estimation window of [-150, 31] trading days. The turnover is measured as the number of shares traded divided by the total number of shares outstanding. R&D Margin, which is the R&D expense divided by total revenues, is included as a proxy for two things: (1) the degree of information asymmetry; and (2) the degree of technology orientation of the firm, which may be correlated with investor attention to high-tech firms. We also include a PIN measure by Easley and O'Hara (2004) as an alternative proxy for the degree of information asymmetry of the firm.

In order to capture the different price responses to growth firms, as opposed to value firms and to the NASDAQ stocks as opposed to NYSE/AMEX stocks, we include the book-to-market ratio prior to the interview, as well as the NASDAQ stock dummy,

respectively. In order to control for the selection bias to be included in the pool of firms to be interviewed in a non-random fashion, we include the inverse Mills' ratio from the probit selection model. In order to capture the difference in price dynamics, depending on the investor base, we include the log of one plus the number of analysts covering the stock prior to the interview. Also, in order to investigate whether the run-ups and reversals is primarily driven by illiquid stocks or penny stocks, we include the measure of illiquidity and the dummy variable for penny stocks. We include the NBER recession dummy to test whether the stock price return pattern is different during a recession period.

Since abnormal returns would be larger in magnitude during a period of high volatility in the market, we include the VIX index. To investigate whether the pattern of stock price response is driven by investor sentiment, we include the sentiment index. Since the investors watching the CEO interviews on CNBC may capture soft information from the conversation between the CEO and the host, we include the same four linguistic measures from the host and the CEO. These are the standardized word count, positive tone, negative tone, and academic tone. The stock price response may also be driven by the information content of the news articles surrounding the CEO interview, instead of being driven by investor attention about the CEO interview.

In order to capture the information effect coming from the surrounding news articles, we include the linguistic measures of the surrounding news articles. For CAR [-10,-1], the window of news articles included is [-7,-1]. For CAR [0], the window of news articles included is [-7, 0], and for CAR [-1, 10], the window of news articles included is [-7, 7]. For each event window segment, we use three different samples: the entire

sample, the unconfounded sample, and the unconfounded sample with news articles. Our primary focus is the explanatory variables that have significant explanatory power in the regression of the reversal on the post-event window.

Table II-XII shows the CAR regression results. High turnover stocks tend to show more reversals. One-percentage point higher turnover (the average of the shares traded divided by the total number of shares outstanding over the estimation window) stocks show a 61 basis point lower CAR [-1, 10]. The R&D margin also has significant explanatory power. Stocks with a one-percentage point higher R&D expense relative to its revenues demonstrate an 8-bps lower CAR [1,10], and the economic magnitude is consistent throughout the sample. This finding suggests that R&D intensive firms tend to attract more investor attention by having CEO interviews. Also, it suggests that firms tend to attract more attention by having CEO interviews when outside investors are more disadvantaged in terms of information access. If the CEO interview works as a material conduit of information, then the coefficient of the R&D margin should be positive and significant, because the release of material information should result in a permanent stock price return, instead of a transitory return followed by a reversal. In Panel B, we also use the PIN measure to more precisely capture the degree of information asymmetry.

One legitimate question is whether the measure of positive tone is highly and negatively correlated with the measure of negative tone. The correlation coefficient of these two variables is -0.03 (p-value = 0.013). In addition, the mean VIF test score of the regression is less than four, which drives down the concern for multicollinearity.

The results consistently support our argument that the CEO interview-related stock price return pattern is attributable to the attention it draws, especially for investors in high information asymmetry (high R&D margin) firms. Growth firms are more likely to have higher run-ups, but are less likely to have reversals. The coefficient of book-to-market is 10 basis points with a t-statistic of 3.29. Therefore, the reversal is not attributable to growth firms.

The illiquidity measure has significant explanatory power regarding the CAR in each event window segment. However, liquidity is not the only significant explanatory variable. Although the empirical test suggests that illiquid stocks are more likely to show post-event window return reversals, it also suggests that illiquid stocks show significantly low-event day abnormal returns, which is not consistent with our story of having significant positive price jumps on the day of the CEO interview. We run an event study by the quintile of illiquidity measure; results can be seen in Figure II-IX. It is true that the stocks in the highest illiquidity quintile show the most drastic run-ups and reversals, but the second and third quintile stocks also show significant run-ups and reversals. Therefore, liquidity is not the only driver.

One may question whether penny stock is driving the abnormal return pattern due to the bid-ask bounce. However, what we find is the opposite. Once the CEO interview takes place, the stock goes up in a permanent manner. Penny stocks tend to have 370 to 590 basis points higher CAR [1, 10] compared with non penny stocks. The result in Panel C suggests that penny stocks tend to have 1150 basis points higher CAR [1, 30]. Positive information appears to be teased out by the anchor who selects the firm to

interview in the first place. Here the information story works against the pattern of the return reversal that we report. The average cumulative abnormal returns of penny stocks are shown in Panel C of Figure II-IX.

When investor sentiment is high, the return reversal is more apparent. The standardized CEO word count is positively correlated with the CAR [1, 10], which suggests that the information carried out by the wording of the CEOs actually works against the pattern of reversal. That is, if the anchor speaks in a more negative tone, and if the firm's media coverage is large, the CAR [1, 10] is significantly more positive. More critical questioning by the anchor appears to bring out good information about the firm during an interview, which makes the stock price jump more permanent; an anchor's negative tone is positively associated with CAR [1, 10].

Over the longer horizon window of [1, 30] trading days after the interview, we find partial support that a positive tone of a CEOs interview dialogue results in more reversals. One standard deviation higher degree of a positive tone in a CEOs words is associated with a 140-bps lower CAR [1, 30]. Together with the evidence that a one-standard deviation higher positive tone by a CEO is associated with a 70 basis points higher CAR[0] in Panel A, an excessively and positively talking by a CEO may be a symptom of a potential governance problem. This is consistent with the results in Panel F of Table XII, which supports the notion that poorly monitored CEOs, proxied by the Chairman CEO dummy, are more likely to talk in a positive tone during a media interview. Although the positive tone of CEOs is consistent with the pattern of higher run-up and subsequent reversal, the result can hardly be an evidence of information story.

Instead, it is more of an evidence of attention story. Higher investor attention is drawn by excessively positive tone of the CEO in search of a short-run stock price jump, who, in turn, controls a firm under poor monitoring.

One may argue that media coverage other than CEO interviews may be responsible for return reversals by providing negative information to investors. However, what we find is the opposite. The standardized word count of the surrounding news articles is positively associated with the CAR [1, 10]. One standard deviation of more media coverage is associated with a 60-bps higher CAR. We find that the information hypothesis does not support the stock price pattern surrounding CEO interviews on CNBC. Moreover, the model fit measured by R squared is very low, even with all of the explanatory variables to capture the economic characteristics and the information environment of the firms. Overall, the evidence in the CAR regression rejects most of the alternative hypotheses, but strongly supports the attention hypothesis.

II.6. Conclusion

Throughout the tests using our novel dataset of CEO interviews on CNBC, we conclude that non-informative media-driven attention can affect the stock price in a transitory manner instead of a permanent manner. The test results are prevalent throughout different time periods and stock exchanges, regardless of whether or not the interviews are confounded by major corporate events. Actually, the unconfounded

interviews, which have no major informational events of the firms, show larger stock price run-ups and reversals.

The qualitative information content of surrounding news articles or that of the interview conversations also fail to explain the stock price run-up and subsequent reversals. Moreover, the cleanest sample of interviews that do not have any surrounding news articles or any events still exhibit the same stock price return pattern, which strongly supports the notion that media-driven attention is the most important driver of the temporary rise and fall of stock prices.

Moreover, we find that the return pattern is driven by enthusiastic individual investors. Over time for the same firm, the magnitude of the rise and fall in stock price decreases as the CEO conducts more interviews. Also, throughout the cross-section of the sample firms, the magnitude of the rise and fall is positively correlated with the advertisement margin and is negatively correlated with institutional ownership. Whereas Barber, Odean, and Zhu (2008) find that the stocks individual investors bought experience a short-run outperformance and long-run underperformance, we find that the stocks connected with CEO interviews predominantly exhibit short-run underperformance by having negative CARs over the post-event windows. This may suggest that CEO interviews take place at the end of the herding buys of the individual investors, whereby the media are catering to the demand of individual investors only in a delayed manner. In this respect, the catch phrase by the CNBC, “profit from it,” should be rephrased as “short these tomorrow,” as long as by “it” they mean a CEO interview.

Consistent with our understanding of liquidity and impediments to arbitrage, the most illiquid stocks show the most drastic run-ups and reversals; however, over 60% of the stocks in the distribution of the illiquidity measure demonstrate consistent significant price jumps and reversals. As we document that CEOs of poorly governed firms tend to talk more in interviews using positive language, which generates larger price jump on the day of the interview and deeper reversals over the thirty trading-day post event window, it would be interesting to investigate whether showing up on the financial media as a CEO is a symptom of bad governance of a firm or overconfidence of the manager in future research. Also, whether the interview of Chief Financial Officer is more informative than attention drawing due to the fact that the function of the CFO is narrowly focused on the financial aspect of the firm would be another interesting avenue of future research.

Table II-I. Breakdown of Interviews

Panel A. Breakdown by Year

	All Sample		Unconfounded		Cleanest Sample	
Year	N	%	N	%	N	%
1997	236	3.4	159	6.69	36	10.98
1998	240	3.46	146	6.15	42	12.8
1999	715	10.31	232	9.77	38	11.59
2000	721	10.39	202	8.51	23	7.01
2001	942	13.58	271	11.41	29	8.84
2002	1006	14.5	307	12.93	57	17.38
2003	803	11.58	264	11.12	35	10.67
2004	700	10.09	235	9.89	20	6.1
2005	938	13.52	334	14.06	28	8.54
2006	636	9.17	225	9.47	20	6.1
Total	6937	100	2375	100	328	100

Panel B. Breakdown by Month

	All Sample		Unconfounded		Cleanest Sample	
Month	N	%	N	%	N	%
1	621	8.95	182	7.66	13	3.96
2	624	9.00	197	8.29	33	10.06
3	480	6.92	205	8.63	23	7.01
4	717	10.34	150	6.32	23	7.01
5	561	8.09	177	7.45	21	6.40
6	618	8.91	310	13.05	52	15.85
7	674	9.72	140	5.89	17	5.18
8	539	7.77	181	7.62	25	7.62
9	472	6.80	239	10.06	36	10.98
10	676	9.74	186	7.83	27	8.23
11	513	7.40	200	8.42	30	9.15
12	442	6.37	208	8.76	28	8.54
Total	6937	100.00	2375	100.00	328	100.00

Panel C. Breakdown of by weekday

Weekday	All Sample		Unconfounded		Cleanest	
	N	%	N	%	N	%
Monday	1160	16.72	467	19.66	64	19.51
Tuesda	1468	21.16	498	20.97	63	19.21
Wednes	1519	21.90	476	20.04	57	17.38
Thursd	1611	23.22	498	20.97	70	21.34
Friday	1171	16.88	430	18.11	73	22.26
Saturd	1	0.01	1	0.04	0	-
Sunday	7	0.10	5	0.21	1	0.30
Total	6937	100.00	2375	100.00	328	100.00

Panel D. Breakdown by Size Quintile

		Size Quintile					Total
		1	2	3	4	5	
All Sample	N	713	798	1068	1399	2959	6937
	%	10.28	11.5	15.4	20.17	42.66	100
Unconfounded	N	471	393	419	456	636	2375
	%	19.83	16.55	17.64	19.2	26.78	100
Cleanest	N	106	70	55	55	42	328
	%	32.32	21.34	16.77	16.77	12.8	100

Panel E. Breakdown by Book-to-Market Quintile

		BEME Quintile						Total
		Negative	Low	2	3	4	High	
All Sample	N	226	3187	1322	962	650	560	6907
	%	3.27	46.14	19.14	13.93	9.41	8.11	100
Unconfounded	N	112	1038	437	337	234	208	2366
	%	4.73	43.87	18.47	14.24	9.89	8.79	100
Cleanest	N	9	136	70	36	42	35	328
	%	2.74	41.46	21.34	10.98	12.8	10.67	100

Panel F. Breakdown by Stock Exchange and Year

	All Sample		Unconfounded		Cleanest	
YEAR	Nasdaq	NYSE/ AMEX	Nasdaq	NYSE/ AMEX	Nasdaq	NYSE/ AMEX
1997	81	155	46	113	10	26
1998	80	160	44	102	13	29
1999	361	354	99	133	20	18
2000	354	367	78	124	10	13
2001	516	426	125	146	13	16
2002	653	353	183	124	34	23
2003	518	285	152	112	16	19
2004	434	266	124	111	12	8
2005	641	297	203	131	19	9
2006	426	210	127	98	8	12
Total	4064	2873	1181	1194	155	173
%	58.58	41.42	49.73	50.27	47.26	52.74

Table II-II. Most Frequently Interviewed

Panel A. Most Frequently Interviewed Industry

Sample:	All Sample		Unconfounded		Cleanest	
Rank	Industry	%	Industry	%	Industry	%
1	Software	12.31	Software	11.07	Software	10.67
2	Pharmaceu	7.1	Pharmaceutical	8.59	Business Svc	6.1
3	Chips	6.52	Retail	6.19	Retail	6.1
4	Retail	5.7	Business Svc	6.02	Financial	6.1
5	Business S	5.31	Financial	5.98	Machinery	4.57
6	Financial	5.01	Chips	5.01	Oil	4.57
7	Hardware	4.84	Transportation	4.88	Hardware	4.57
8	Telecomm	4.31	Hardware	4.08	Pharmaceutical	3.96
9	Transporta	3.44	Telcm	3.7	Wholesale	3.96
10	Oil	3.33	Oil	3.07	Medical Equipment	3.66

We follow Fama-French 49 industry grouping based on the SIC code of the stock.

Panel B. Most Frequently Interviewed Firm

Rank	CEO Name	Firm Name	Frequency
1	Margaret C. Whitman	EBAY INC	45
2	John T. Chambers	CISCO SYSTEMS INC	42
3	William C. Steere, Jr.	PFIZER INC	39
4	Philip M. Condit	BOEING CO	37
5	Michael R. Splinter	APPLIED MATERIALS INC	36
5	James A. Johnson	FEDERAL NATIONAL MORTGAGE ASSN	36
7	John F. Welch, Jr.	GENERAL ELECTRIC CO	32
7	John F. Smith, Jr	GENERAL MOTORS CORP	32
7	Vance D. Coffman	LOCKHEED MARTIN CORP	32
10	Robert L. Nardelli	HOME DEPOT INC	30
10	William W. George	MEDTRONIC INC	30
12	Richard H. Brown	ELECTRONIC DATA SYS CORP NEW	28
12	Joseph L. Dionne	MCGRAW HILL COS INC	28
12	Timothy Koogle	YAHOO INC	28
15	Jeffrey P. Bezos	AMAZON COM INC	27
15	James M. Whitehurst	RED HAT INC	27
15	Scott G. McNealy	SUN MICROSYSTEMS INC	27
18	Michael C. Ruettgers	E M C CORP MA	26
19	Steven P. Jobs	APPLE COMPUTER INC	24
19	Robert P. Wayman	HEWLETT PACKARD CO	24
19	Paul E. Jacobs	QUALCOMM INC	24

Table II-III. Event Study by Event Window Segment and Subsamples

Panel A. Event Study Primary Result

Sample		Group	FF4F [-2,-1]	t(BMP)	[0]	t(BMP)	[1,10]	t(BMP)	N
All			**83.6**	**7.41**	**78.6**	**9.84**	**-107.6**	**(6.66)**	6937
Unconfounded			**139.3**	**4.64**	**79.1**	**6.25**	**-148.2**	**(5.62)**	2375
Unconfounded	News Article	0	**68.2**	**2.16**	**82.7**	**3.30**	**-127.8**	**(2.36)**	328
Unconfounded	News Article	1~4	**50.4**	**2.41**	**80.8**	**5.83**	**-126.9**	**(3.58)**	840
Unconfounded	News Article	5~10	**161.8**	**3.23**	**58.0**	**2.09**	**-203.5**	**(3.20)**	553
Unconfounded	News Article	11~	**270.2**	**2.52**	**92.9**	**3.22**	**-139.0**	**(2.11)**	654
All	Stock Exchange	NYSEAMEX	**26.0**	**3.97**	**54.9**	**7.55**	**-54.8**	**(3.95)**	4067
All	Exchangegroup	NASDAQ	**165.2**	**6.31**	**112.0**	**6.34**	**-181.9**	**(5.74)**	2870
Unconfounded	Exchangegroup	NYSEAMEX	27.3	1.75	**41.0**	**4.27**	**-67.1**	**(2.91)**	1183
Unconfounded	Exchangegroup	NASDAQ	**250.6**	**4.31**	**116.8**	**4.76**	**-227.3**	**(5.08)**	1192
All	Year Group	Until 2001	**147.3**	**5.00**	**89.5**	**6.33**	**-173.9**	**(4.58)**	2854
All	Year Group	After 2002	**39.1**	**5.50**	**70.9**	**7.64**	**-61.3**	**(4.85)**	4083
Unconfounded	Year Group	Until 2001	**270.6**	**3.99**	**58.3**	**3.12**	**-227.2**	**(3.68)**	1010
Unconfounded	Year Group	After 2002	**42.2**	**2.39**	**94.5**	**5.42**	**-89.7**	**(4.25)**	1365
All	NYSEAMEX	Until 2001	30.7	1.36	**74.0**	**4.78**	-76.3	(1.73)	1393
All	NASDAQ	Until 2001	**258.5**	**4.94**	**104.3**	**4.20**	**-265.9**	**(4.81)**	1461
All	NYSEAMEX	After 2002	**23.5**	**3.85**	**45.0**	**5.96**	**-43.6**	**(3.65)**	2674
All	NASDAQ	After 2002	**68.7**	**3.96**	**120.0**	**4.81**	**-94.9**	**(3.26)**	1409
Unconfounded	NYSEAMEX	Until 2001	**64.0**	**2.34**	**68.4**	**3.21**	-105.8	(1.86)	393
Unconfounded	NASDAQ	Until 2001	**402.8**	**3.45**	51.6	1.72	**-302.1**	**(3.19)**	617
Unconfounded	NYSEAMEX	After 2002	9.1	0.44	**27.4**	**3.01**	**-47.9**	**(2.24)**	790
Unconfounded	NASDAQ	After 2002	**87.8**	**2.67**	**186.7**	**4.55**	**-147.2**	**(4.10)**	575

The Carhart 4 factor model (Rm-Rf, SMB, HML, UMD) was used as the asset pricing model. The estimation window was [-150, -31] trading days prior to the CEO interviews. Average cumulative abnormal returns are displayed in basis point units. T-statistics by Boehmer, Musumeci, and Poulsen (1991) were employed to control for event-induced volatility. Unconfounded interviews are further grouped into four different subgroups according to the number of surrounding news articles: 0 news article, 1~4 news articles, 5~10 news articles, and more than 10 articles.

Panel B. Event study for Various Subsamples

Sample	Abn.turnover [-3,-1]	[0]	FF4F [-2,-1]	t(BMP)	[0]	t(BMP)	[1,10]	t(BMP)	N
All	High	High	**198.9**	**5.81**	**129.8**	**6.89**	**-167.0**	**(4.99)**	2309
All	High	High	8.6	0.75	**158.5**	**5.81**	-89.6	(1.65)	1159
All	High	Low	**57.9**	**4.78**	-8.3	(0.69)	**-87.5**	**(3.09)**	1158
All	Low	Low	**18.7**	**2.14**	**30.8**	**5.77**	**-67.4**	**(3.00)**	2311
Unconfounded	High	High	**476.4**	**4.12**	**177.8**	**4.36**	**-204.7**	**(3.31)**	614
Unconfounded	Low	High	-6.7	(0.23)	**205.4**	**3.83**	-203.4	(1.10)	243
Unconfounded	High	Low	**42.3**	**2.32**	0.7	0.39	**-163.1**	**(2.87)**	472
Unconfounded	Low	Low	18.9	1.14	**27.2**	**3.24**	**-95.5**	**(3.44)**	1046
		Tech definition							
All	Tech Stock	SIC737	**120.3**	**2.92**	**139.1**	**4.14**	**-255.0**	**(4.51)**	897
All	Non Tech	SIC737	**78.1**	**6.84**	**69.6**	**8.95**	**-85.8**	**(5.48)**	6040
Unconfounded	Tech Stock	SIC737	**214.4**	**2.42**	**129.2**	**2.88**	**-372.3**	**(3.32)**	274
Unconfounded	Non Tech	SIC737	**129.5**	**4.17**	**72.6**	**5.76**	**-119.0**	**(4.80)**	2101
All	Tech Stock	FF49	**90.3**	**3.66**	**119.7**	**6.03**	**-167.4**	**(4.94)**	2110
All	Non Tech	FF49	**80.6**	**6.44**	**60.6**	**7.82**	**-81.5**	**(4.81)**	4827
Unconfounded	Tech Stock	FF49	**148.6**	**2.46**	**145.0**	**5.24**	**-242.2**	**(3.62)**	630
Unconfounded	Non Tech	FF49	**135.9**	**4.00**	**55.3**	**4.48**	**-114.3**	**(4.42)**	1745
All	year	1997	3.0	0.58	**72.6**	**2.46**	-62.5	0.33	236
All	year	1998	474.2	1.49	16.8	0.45	70.2	0.94	240
All	year	1999	**247.4**	**4.94**	**84.7**	**3.21**	**-289.0**	**(4.82)**	715
All	year	2000	**125.2**	**2.99**	**141.0**	**4.54**	**-243.7**	**(2.55)**	721
All	year	2001	41.0	1.04	**76.6**	**2.69**	**-123.3**	**(2.40)**	942
All	year	2002	**37.1**	**2.14**	**57.7**	**2.21**	-24.1	(0.45)	1006
All	year	2003	**29.1**	**2.27**	**54.8**	**2.01**	**-74.1**	**(2.99)**	803
All	year	2004	**42.1**	**2.16**	**70.7**	**3.00**	**-85.9**	**(3.27)**	700
All	year	2005	**52.4**	**3.57**	**71.4**	**4.62**	**-57.8**	**(2.13)**	938
All	year	2006	**31.9**	**2.11**	**111.4**	**5.24**	**-82.1**	**(2.64)**	636
Unconfounded	year	1997	30.6	1.27	**57.5**	**1.96**	-114.2	(0.19)	159
Unconfounded	year	1998	723.2	1.48	14.6	0.09	129.8	1.12	146
Unconfounded	year	1999	**453.9**	**3.65**	27.9	1.13	**-357.7**	**(3.36)**	232
Unconfounded	year	2000	**148.4**	**1.97**	**142.3**	**3.47**	**-471.6**	**(2.85)**	202
Unconfounded	year	2001	**101.0**	**1.98**	45.8	0.73	**-192.0**	**(2.31)**	271
Unconfounded	year	2002	48.9	1.27	**85.1**	**2.27**	-37.0	(0.75)	307
Unconfounded	year	2003	35.0	0.85	76.3	1.84	-69.5	(1.93)	264
Unconfounded	year	2004	93.2	1.63	**156.1**	**2.27**	**-184.2**	**(3.46)**	235
Unconfounded	year	2005	**47.8**	**1.98**	34.2	1.87	-90.2	(1.88)	334
Unconfounded	year	2006	-19.9	(0.86)	**153.8**	**4.61**	-86.1	(1.76)	225

Abnormal turnover [-3, -1] is based on the three day turnover (shares traded over the three day period divided by total shares outstanding). Over the [150, -31] trading day period, we estimate the mean and standard deviation of three-three day turnover, using the 40 non-overlapping 3-day-turnover figures. Then we standardize the three day turnover of [-3, -1] using the mean and standard deviation. From the distribution of standardized 3-day turnover of the interview sample, we label the turnover as "high" if the standardized 3-day turnover is higher than the sample median, and "low" otherwise. Abnormal turnover [0] is based on the one-day turnover over the [150,-31] trading day period. We estimate the mean and standard deviation of one day turnover, using the 120 one day turnover figures. Then we standardize the one day turnover of [0] using the mean and standard deviation. From the distribution of standardized one day turnover of the interview sample, we label the turnover as high if the standardized one day turnover is higher than the median, and "low" otherwise.

Panel C. Event study: Friday Effect and January Effect

Sample		FF4F group	[-2,-1]	t(BMP)	[0]	t(BMP)	[1,10]	t(BMP)	N
All	Weekday	Monday	**59.8**	**3.53**	**64.5**	**2.51**	**-125.3**	**(2.40)**	1160
All	Weekday	Tuesday	**70.5**	**4.30**	**64.2**	**4.13**	**-72.7**	**(2.14)**	1468
All	Weekday	Wednesday	**139.5**	**3.57**	**97.7**	**5.72**	**-131.2**	**(3.39)**	1519
All	Weekday	Thursday	**64.1**	**2.59**	**81.1**	**5.40**	**-77.7**	**(2.71)**	1611
All	Weekday	Friday	**78.0**	**2.85**	**84.2**	**4.31**	**-147.6**	**(4.54)**	1171
Unconfounded	Weekday	Monday	**58.4**	**2.70**	**86.9**	**2.19**	**-187.9**	**(2.92)**	467
Unconfounded	Weekday	Tuesday	**112.0**	**3.03**	**102.9**	**4.12**	**-92.7**	**(1.98)**	498
Unconfounded	Weekday	Wednesday	271.9	1.89	**85.1**	**3.84**	**-184.5**	**(2.44)**	476
Unconfounded	Weekday	Thursday	121.4	1.47	**69.0**	**2.52**	**-149.4**	**(2.16)**	498
Unconfounded	Weekday	Friday	**134.4**	**2.59**	52.9	1.89	**-130.9**	**(3.31)**	430
All	Month	January	**114.4**	**3.49**	**100.0**	**3.64**	**-132.3**	**(2.69)**	621
All	Month	February	56.8	1.79	**59.5**	**2.41**	**-167.3**	**(3.39)**	624
All	Month	March	102.5	1.64	**81.6**	**2.83**	-185.1	(1.85)	480
All	Month	April	**89.6**	**3.03**	**90.2**	**2.89**	-64.5	(0.56)	717
All	Month	May	**80.8**	**3.91**	**73.9**	**3.04**	**-163.5**	**(3.98)**	561
All	Month	June	36.4	1.53	**68.7**	**2.85**	**-150.2**	**(3.14)**	618
All	Month	July	13.5	0.88	**45.0**	**2.46**	-48.3	(1.85)	674
All	Month	August	**76.7**	**3.00**	**68.5**	**2.47**	-28.4	(0.34)	539
All	Month	September	71.4	1.49	**97.1**	**3.43**	-26.8	(0.69)	472
All	Month	October	44.6	1.86	**68.0**	**2.77**	-90.8	(0.39)	676
All	Month	November	**75.3**	**2.95**	**116.8**	**3.68**	**-99.7**	**(2.78)**	513
All	Month	December	314.9	1.74	**88.4**	**2.37**	**-152.8**	**(2.13)**	442
Unconfounded	Month	January	**149.4**	**2.58**	**209.5**	**3.35**	**-216.6**	**(2.10)**	182
Unconfounded	Month	February	44.5	0.76	-4.5	0.62	-91.6	(1.38)	197
Unconfounded	Month	March	24.8	(1.00)	39.9	1.27	-209.5	(1.04)	205
Unconfounded	Month	April	**297.1**	**2.95**	170.6	1.60	**-259.7**	**(2.19)**	150
Unconfounded	Month	May	**151.6**	**3.41**	62.5	1.56	**-299.2**	**(3.76)**	177
Unconfounded	Month	June	**77.6**	**2.10**	**55.4**	**2.76**	**-162.0**	**(2.15)**	310
Unconfounded	Month	July	9.5	0.35	7.9	0.91	-137.2	(1.93)	140
Unconfounded	Month	August	**156.1**	**2.54**	**93.9**	**2.45**	-22.1	(0.03)	181
Unconfounded	Month	September	94.9	1.55	50.8	1.72	-77.1	(1.00)	239
Unconfounded	Month	October	42.8	1.25	71.5	1.22	-133.8	(0.60)	186
Unconfounded	Month	November	69.9	1.84	**121.2**	**2.86**	-21.6	(1.14)	200
Unconfounded	Month	December	577.2	1.26	**100.1**	**2.39**	**-185.5**	**(2.70)**	208

Table II-IV. Individual Investors and Stock Price Response to CEO Interviews on CNBC

Panel A. Advertisement Margin and Institutional Ownership

Asset pricing model: FF4F

	Sample	Group	[-2,-1]	t(BMP)	[0]	t(BMP)	[1,10]	t(BMP)	N
Ad Margin	All	Low	10.4	1.08	**120.5**	**2.71**	8.0	0.14	190
Ad Margin	All	2	0.7	(0.36)	**121.0**	**4.06**	**-158.9**	**(2.58)**	380
Ad Margin	All	3	25.2	0.11	**55.1**	**2.67**	**-88.4**	**(2.09)**	499
Ad Margin	All	4	**44.4**	**2.21**	**73.6**	**3.39**	-91.8	(1.58)	762
Ad Margin	All	High	**197.1**	**3.13**	28.7	1.43	**-146.6**	**(2.73)**	898
Ad Margin	Unconfounded	Low	15.3	0.56	**191.7**	**2.91**	76.9	0.72	80
Ad Margin	Unconfounded	2	75.8	1.14	**63.6**	**2.34**	-150.0	(1.56)	128
Ad Margin	Unconfounded	3	9.7	(0.01)	11.3	0.48	-71.9	(1.27)	155
Ad Margin	Unconfounded	4	110.3	1.87	66.9	1.71	**-152.3**	**(2.11)**	210
Ad Margin	Unconfounded	High	451.3	1.89	**68.5**	**2.68**	**-149.2**	**(2.47)**	289
Inst. Ownerhip	All	Low	217.3	1.82	1.3	0.88	**-192.2**	**(2.40)**	725
Inst. Ownerhip	All	2	**433.8**	**4.78**	**152.5**	**2.71**	**-370.9**	**(2.60)**	305
Inst. Ownerhip	All	3	**102.8**	**3.88**	**140.0**	**4.67**	-133.8	(1.29)	843
Inst. Ownerhip	All	4	**55.0**	**5.22**	**63.8**	**5.26**	**-57.1**	**(3.92)**	2606
Inst. Ownerhip	All	High	**24.5**	**2.62**	**86.8**	**6.83**	**-94.7**	**(4.17)**	2458
Inst. Ownerhip	Unconfounded	Low	281.7	1.26	-1.7	1.34	**-247.9**	**(2.46)**	422
Inst. Ownerhip	Unconfounded	2	**506.6**	**3.62**	**253.4**	**2.81**	**-353.2**	**(1.75)**	156
Inst. Ownerhip	Unconfounded	3	**168.2**	**3.50**	**215.8**	**4.27**	**-228.0**	**(2.24)**	310
Inst. Ownerhip	Unconfounded	4	**81.9**	**3.47**	**43.8**	**2.93**	**-67.7**	**(2.94)**	760
Inst. Ownerhip	Unconfounded	High	25.6	1.12	**67.2**	**3.12**	**-96.5**	**(2.97)**	727

The advertisement margin is the advertisement expense divided by total revenues of the fiscal year that ended prior to the interview. The breakpoint of the quintile is computed using the Compustat universe as of the end of each fiscal year end. The breakpoint of the institutional ownership quintile is obtained from the Thomson 13F dataset at the end of the quarter prior to the interview.

Table II-V. Breakdown by CAR Pattern in Each Event Window Segment

All Sample							Unconfounded Sample						
Pre-event	Event	Post-Event	N	[-2,-1]	[0]	[1,10]	Pre-event	Event	Post-Event	N	[-2,-1]	[0]	[1,10]
	Positive	Positive	879	3.33	4.12	6.48		Positive	Positive	293	3.91	3.58	7.29
Positive	1888	Negative	1009	4.53	4.84	-7.46	Positive	642	Negative	349	5.64	5.05	-8.61
3592	Negative	Positive	747	4.13	-3.18	6.95	1229	Negative	Positive	244	4.51	-2.68	8.26
	1704	Negative	957	5.77	-3.51	-7.04		587	Negative	343	8.89	-2.90	-7.71
Negative	Positive	Positive	807	-2.99	4.31	6.18	Negative	Positive	Positive	253	-3.10	3.55	5.95
3345	1857	Negative	1050	-3.11	4.55	-6.95	1146	630	Negative	377	-2.99	3.89	-7.21
	Negative	Positive	662	-3.13	-3.31	7.17		Negative	Positive	223	-3.44	-3.44	8.44
	1488	Negative	826	-3.20	-3.61	-6.92		516	Negative	293	-3.62	-2.82	-8.12

NYSE/AMEX			N	[-2,-1]	[0]	[1,10]	NYSE/AMEX			N	[-2,-1]	[0]	[1,10]
	Positive	Positive	565	2.39	2.98	4.79		Positive	Positive	156	2.42	2.24	4.83
Positive	1127	Negative	562	2.90	3.14	-5.92	Positive	316	Negative	160	3.10	2.50	-6.80
2083	Negative	Positive	422	2.61	-2.09	5.20	601	Negative	Positive	120	2.60	-1.71	5.96
	956	Negative	534	2.53	-2.48	-5.02		285	Negative	165	2.75	-1.70	-5.25
Negative	Positive	Positive	489	-2.14	3.19	5.00	Negative	Positive	Positive	133	-2.11	2.10	4.94
1985	1104	Negative	615	-2.28	3.05	-4.98	583	316	Negative	183	-2.03	2.20	-4.80
	Negative	Positive	397	-2.41	-2.44	5.58		Negative	Positive	119	-2.21	-2.14	5.93
	881	Negative	484	-2.24	-2.88	-5.02		267	Negative	148	-2.39	-1.68	-5.05

NASDAQ			N	[-2,-1]	[0]	[1,10]	NASDAQ			N	[-2,-1]	[0]	[1,10]
	Positive	Positive	314	5.02	6.17	9.54		Positive	Positive	137	5.60	5.10	10.09
Positive	761	Negative	447	6.57	6.97	-9.40	Positive	326	Negative	189	7.78	7.20	-10.14
1509	Negative	Positive	325	6.11	-4.60	9.23	628	Negative	Positive	124	6.37	-3.61	10.48
	748	Negative	423	9.86	-4.81	-9.58		302	Negative	178	14.58	-4.01	-9.98
Negative	Positive	Positive	318	-4.29	6.03	8.00	Negative	Positive	Positive	120	-4.19	5.16	7.06
1360	753	Negative	435	-4.28	6.67	-9.74	563	314	Negative	194	-3.90	5.49	-9.48
	Negative	Positive	265	-4.21	-4.62	9.54		Negative	Positive	104	-4.85	-4.93	11.31
	607	Negative	342	-4.55	-4.65	-9.60		249	Negative	145	-4.87	-3.98	-11.26

All average cumulative abnormal returns are percentage figures.

Table II-VI. Explaining Small vs. Large Trades

Dependent Variable:	Smallest Turnover*100		Largest Turnover * 100	
Institutional Ownership	**0.0054 *** **	**0.0053 *** **	**0.0001 *** **	**0.0001 *** **
	(8.446)	**(5.098)**	**(8.269)**	**(5.190)**
Year Trend	**0.0691 *** **	**0.0592 *** **	**-0.0002 *** *	-0.0004
	(11.002)	**(5.330)**	**(-1.7168)**	(-1.6370)
Chg.Ins.Own.1YPrior*1{CIO1Y>=0}	0.1479	0.1651	**0.0074 *** **	**0.0068 *** **
	(1.270)	(0.771)	**(2.864)**	**(2.062)**
Chg.Ins.Own.1YPrior*1{CIO1Y<0}	**-1.2527 *** **	**-1.1998 *** **	**-0.022 *** **	**-0.0205 *** **
	(-6.2529)	**(-3.7361)**	**(-4.9725)**	**(-3.9977)**
IMR CEO Interview	**0.1014 *** **	**0.1313 *** **	-0.00003	0.0008
	(2.856)	**(3.532)**	(-0.0380)	(1.062)
1{NBER Recession}	**-0.2144 *** **	**-0.2134 *** **	**0.0043 *** **	**0.0043 *** **
	(-5.1632)	**(-4.3009)**	**(4.671)**	**(2.116)**
OIMargin*1{OIMargin >= 0}	0.0204	-0.0487	**-0.0101 *** **	**-0.0091 *** **
	(0.161)	(-0.2402)	**(-3.5974)**	**(-2.1574)**
OIMargin*1{OIMargin < 0}	**0.3448 *** **	0.2295	0.0012	-0.0001
	(3.033)	(0.931)	(0.472)	(-0.0536)
Size: Log(MVE)	**0.055 *** **	**0.0594 *** **	**0.0018 *** **	**0.0018 *** **
	(5.050)	**(3.208)**	**(7.387)**	**(3.362)**
1{Nasdaq}	**0.4209 *** **	**0.465 *** **	**-0.0012 *** *	-0.0011
	(14.496)	**(9.175)**	**(-1.8556)**	(-0.8944)
FF4FAlpha*1{Alpha>=0}	**45.3967 *** **	**42.7194 *** **	**0.3792 *** **	**0.3736 *** *
	(5.983)	**(3.580)**	**(2.265)**	**(1.662)**
FF4FAlpha*1{Alpha<0}	**-35.0129 *** **	**-32.1523 *** **	**-0.6606 *** **	-0.5687
	(-3.1945)	**(-2.5768)**	**(-2.7315)**	(-1.3663)
Idiosyncratic Vol	**27.9023 *** **	**23.9053 *** **	**0.374 *** **	**0.329 *** **
	(9.404)	**(2.778)**	**(5.713)**	**(2.933)**
(Idiosyncratic Vol)^2	13.0596	38.4319	**-3.2706 *** **	**-2.9595 *** **
	(0.385)	(0.314)	**(-4.3746)**	**(-3.0533)**
Shares Outstanding/10^6	**-0.1186 *** **	**-0.1479 *** **	0.0002	0.0001
	(-3.9189)	**(-2.9527)**	(0.309)	(0.123)
(Shares Outstanding/10^6)^2	**0.011 *** **	**0.0142 *** **	-0.0001	-0.0001
	(3.297)	**(2.910)**	(-0.8467)	(-0.6295)
constant	**-1.8003 *** **	**-1.82 *** **	**-0.0209 *** **	**-0.0245 *** **
	(-9.5971)	**(-7.0824)**	**(-5.0598)**	**(-4.4166)**
N	3216	3216	3216	3216
Adj.R2	0.397	0.4117	0.0855	0.1023
Industry Fixed Effects	No	Yes	No	Yes

Dependent variable for the first (last) two columns are the average dollar volume traded in smallest (largest) trade size group by Barber, Odean, and Zhu (2008) divided by the market value of the firm over the window of [-80, -11] trading days. All the dollar values are 1991 US dollar values to adjust for the inflation. 1{CIO1Y>=0} is a dummy variable that is one if the change in institutional owernship over the period of one year prior to the interview was an increase. IMR CEO interview is the inverse Mills' ratio from the probit selection model of CEO interview on CNBC in Table II-IX. 1{OIMargin>=0} is a dummy variable that is one if the operating income margin (operating income before depreciation divided by total assets) is non-negative. FF4F alpha is the daily alpha of Carhart (Fama-French) 4 factor model over the estimation window of [-150, -31] trading days. 1{Alpha <=0} is a dummy variable if the FF4F Alpha is non-negative. Idiosyncratic Vol is the root mean squared error of daily Carhart 4 factor model over the the window of [-150, -31].

Table II-VII. Stock Price Response to CEO: Interviews BEME and Information Asymmetry

Asset pricing model: FF4F

	Sample	Group	[-2,-1]	t(BMP)	[0]	t(BMP)	[1,10]	t(BMP)	N
BEME	All	Low	**82.6**	**5.99**	**89.9**	**7.04**	**-136.5**	**(5.98)**	3413
BEME	All	2	**50.5**	**3.16**	**68.0**	**4.20**	**-91.3**	**(2.42)**	1322
BEME	All	3	**81.3**	**3.19**	**54.9**	**2.02**	**-90.0**	**(2.17)**	962
BEME	All	4	168.2	1.46	**82.0**	**4.66**	-14.6	(0.64)	650
BEME	All	High	48.9	1.58	**70.3**	**3.17**	-105.0	(1.55)	560
BEME	Unconfounded	Low	**134.1**	**4.68**	**85.9**	**3.99**	**-215.5**	**(5.38)**	1150
BEME	Unconfounded	2	42.8	1.56	**63.2**	**2.71**	**-140.5**	**(2.28)**	437
BEME	Unconfounded	3	**137.1**	**2.18**	49.1	1.53	-73.5	(1.20)	337
BEME	Unconfounded	4	408.5	1.06	**65.2**	**2.94**	-10.3	(0.52)	234
BEME	Unconfounded	High	38.5	0.32	**138.7**	**3.81**	-134.4	(1.28)	208
R&D Margin	All	Low	27.0	0.78	**56.3**	**2.80**	**-128.1**	**(2.13)**	592
R&D Margin	All	3	**36.7**	**1.96**	**68.3**	**2.88**	**-84.2**	**(2.99)**	1206
R&D Margin	All	4	**92.9**	**5.50**	**107.5**	**5.37**	**-99.5**	**(2.46)**	1416
R&D Margin	All	High	**298.8**	**3.77**	**274.8**	**3.89**	**-410.6**	**(3.77)**	443
R&D Margin	Unconfounded	Low	39.7	0.40	**131.0**	**2.57**	**-326.1**	**(3.19)**	156
R&D Margin	Unconfounded	3	**87.2**	**2.81**	**69.3**	**2.27**	**-130.3**	**(2.51)**	340
R&D Margin	Unconfounded	4	**123.2**	**3.53**	**122.5**	**3.96**	**-123.7**	**(2.23)**	427
R&D Margin	Unconfounded	High	**371.8**	**3.35**	**243.2**	**2.43**	**-495.6**	**(3.31)**	254

The R&D margin is the R&D expense divided by total revenues of the fiscal year that ended prior to the interview. The breakpoint of the quintile is computed using the Compustat universe. We do not have firms that belong to the lowest quintile of the R&D margin in Compustat.

Table II-VIII. Predicting Analyst Coverage as a Proxy for Investor Awareness

Dependent Variable:	# Analysts Prior to Interview	
Model		
Size: Log(MVE)	**3.52614**	***
	49.06	
Idiosyncratic volatility	**48.22096**	***
	4.71	
1{Nasdaq}	**2.38148**	***
	8.76	
1{Tech Stock}	**1.25975**	***
	4.94	
1{Regulated Industry}	**-2.85886**	***
	-6.02	
FF4F ALPHA	**-294.81643**	***
	-6.7	
PIN	**-7.0527**	***
	-3.53	
Effective Spread	**-9.7047**	***
	-5.85	
Year Trend	0.00345	
	0.06	
Intercept	**-17.1202**	***
	-18.01	
Adj R-Sq	0.5071	
N	3,707	

OLS regression. Dependent variable is the number of analysts covering the firm prior to the CEO interview. Idiosyncratic volatility is the root mean squared error of daily Carhart 4 factor model over the estimation window of [-150, -31]. 1{Nasdaq} is a dummy variable if the firm is listed in Nasdaq. 1{Tech Stock} is a dummy variable that is one if the firm is in high tech industry: i.e. the Fama French 49 industry group number is 22, 32, 35, 36, or 37. PIN is the probability of informed trading by Easley and O'Hara (2002) estimated over the window of [-80, -11] trading days before the interview. Effective spread is the bid as spread divided by the mid-point of the bid and ask for each trade over the estimation window of [-80, -11]. T-statistic is shown under each coefficient. We divided the residual analyst coverage into quintiles and ran an event study by different quintiles. The results are shown in

Figure II-VIII.

Table II-IX. Predicting CEO Interviews from the Daily CRPS Population

Probit model

Dependent Variable: 1{CEO Interview on CNBC}

	Coefficient	z-stat	Marginal Effect
Return on d-1	**0.203**	**5.26**	1.776
Sigma(RMSE) on m-1	**-0.596**	**-2.5**	-5.222
FF4FAlphaon m-1	**0.076**	**4.77**	0.662
FF4F BetaRmf on m-1	**0.005**	**4.38**	0.0397
Mkt Value of Equity on d-1	**0.000**	**12.16**	3.98E-08
FF4F BetaHML on m-1	**-0.012**	**-2.84**	-0.105
FF4F BetaUMD on m-1	0.006	1.3	0.0527
1{M&A Announcement: Acquirer	**0.643**	**11.72**	18.994
1{M&A Effective: Acquirer}	**-0.450**	**-5.17**	-1.946
1{M&A Announcement: Target}	-0.037	-0.54	-0.307
1{Beat Analyst Expectation}	**1.043**	**20.65**	67.664
1{Missed Analyst Expectation}	**0.702**	**12.74**	23.396
1{Switching Stock Exchange}	**0.730**	**3.62**	25.796
1{Ticker symbol Change}	**0.513**	**2.11**	11.789
1{Lawsuit}	0.044	1.38	0.385
1{Price hit 52 week high}	**0.240**	**7.06**	3.177
1{Price hit 52 week low}	-0.010	-0.25	-0.0854
1{Volume hit 52 week high}	**0.745**	**19.73**	26.853
1{+/- 5 days of S&P500 inclusion	**0.491**	**1.88**	10.827
Constant	**-3.676**	**-28.63**	
FF49 Industry Dummy	Yes		
Year Cluster	Yes		
N	20,508,242		
Pseudo R2	0.0709		
Probability:	2.3354 bps		

Probit regression with the universe of CRSP daily dataset. Dependent variable is one if the firm had a CEO interview on the same trading day and zero otherwise. Return on d-1 is the stock return on the previous trading day. Sigma(RMSE) on m-1 is the root mean squared error of the monthly Carhart 4 factor model over the 36 month period that ended before the CEO interview. FF4F Alpha (FF4F BetaRmf, FF4FBetaHML, and FF4FBetaUMD) on m-1 is the alpha (factor loading on market risk, book to market, and momentum) of the monthly Carhart 4 factor model over the 36 month period that ended before the CEO interview. 1{M&A Announcement: Acquirer} is a dummy variable that is one if the firm announced to acquire any other firm on that trading day. 1{M&A Effective: Acquirer} is a dummy variable that is one if the firm's merger take effective on that trading day. 1{Beat Analyst Expectation} (1{Missed Analyst Expectation}) is a dummy variable that is one if the firm's quarterly EPS announcement on that trading day was greater (less) than the median of analysts' expectations. 1{Switching stock exchange} is a dummy variable that is one if the firm's exchange code changed on that trading day. 1{Ticker symbol Change} is a dummy variable that is one if the firm's ticker symbol changed on that trading day. 1{Lawsuit} is a dummy variable that is one if the firm was filed a class action law suit 's according to Stanford Lawsuit Clearing House database on that trading day. 1{+/- 5 days of S&P500 inclusion} is a dummy variable that is one if the date difference between the effective date of the inclusion into the S&P500 index and the trading date is less than or equal to 5 trading days.

Table II-X. Linguistic Content of CEO Interviews with Economic Characteristics of the Firm

Panel A. Length of Interview and Negative Tone of Interview

Dependent Variable:	Word Count of Both	Word Count of Anchorman	Word Count of CEO	Negative Words of Both	Negative Words of Anchorman	Negative Words of CEO
Prior Performance	**-35.217 *** **	**-23.467 *** **	**-33.559 *** **	**-19.019 *** **	**-11.313 ** **	**-10.376 *** **
	(-7.753)	**(-5.799)**	**(-7.763)**	**(-4.153)**	**(-2.439)**	**(-2.938)**
CAR[-10,-1]	**-0.496 *** **	**-0.332 *** **	**-0.441 *** **	**-0.223 *** **	**-0.211 ** **	-0.107
	(-5.878)	**(-4.442)**	**(-5.500)**	**(-2.622)**	**(-2.448)**	(-1.639)
Std.Turnover[-3,-1]	**0.002 *** **	**0.002 *** **	**0.002 *** **	0.001	0.001	0
	(3.11)	**(2.87)**	**(2.74)**	(1.47)	(1.55)	(0.91)
Idiosyncratic Risk	-1.189	**2.459 ** **	**-2.404 ** **	**5.169 *** **	**3.64 *** **	**2.64 *** **
	(-1.095)	**(2.55)**	**(-2.327)**	**(4.73)**	**(3.28)**	**(3.13)**
Log (MVE)	**0.076 *** **	**0.095 *** **	**0.047 *** **	-0.015	0.001	**-0.021 ** **
	(6.90)	**(9.62)**	**(4.52)**	(-1.361)	(0.08)	**(-2.427)**
Ind.Rel.Sales Growth	**0.01 * **	0.001	**0.008 * **	0.008	0.005	**0.007 * **
	(1.88)	(0.27)	**(1.65)**	(1.53)	(0.91)	**(1.67)**
BEME	**-0.002 ** **	0	**-0.002 ** **	-0.001	0	-0.001
	(-2.071)	(-0.461)	**(-2.540)**	(-0.653)	(0.00)	(-1.440)
Log(Firm's Age)	**-0.141 *** **	**-0.071 *** **	**-0.138 *** **	**0.149 *** **	**0.085 *** **	**0.095 *** **
	(-5.208)	**(-2.965)**	**(-5.381)**	**(5.48)**	**(3.09)**	**(4.54)**
1{NASDAQ}	**0.06 * **	**0.054 * **	0.049	**-0.081 ** **	-0.039	**-0.077 *** **
	(1.80)	**(1.85)**	(1.54)	**(-2.420)**	(-1.150)	**(-2.994)**
R&D Margin	0.217	-0.074	**0.355 *** **	**0.685 *** **	0.105	**0.657 *** **
	(1.63)	(-0.630)	**(2.80)**	**(5.10)**	(0.77)	**(6.34)**
Adv. Margin	0.123	0.314	-0.108	**-1.282 *** **	-0.194	**-1.138 *** **
	(0.47)	(1.35)	(-0.434)	**(-4.858)**	(-0.726)	**(-5.591)**
log(1+#AnalystB/F)	**-0.067 *** **	**-0.044 *** **	**-0.052 *** **	**0.032 ** **	0.015	**0.033 *** **
	(-4.530)	**(-3.352)**	**(-3.678)**	**(2.14)**	(0.97)	**(2.88)**

Log(1+#Interviews)	**-0.149 *****	**-0.146 *****	**-0.11 *****	**0.057 *****	**0.055 ****	**0.047 *****
	(-6.869)	**(-7.582)**	**(-5.323)**	**(2.62)**	**(2.47)**	**(2.79)**
Illiquidity	**41.364 *****	**28.912 *****	**37.21 *****	-3.788	**-5.225 ***	-1
	(15.45)	**(12.12)**	**(14.60)**	(-1.402)	**(-1.911)**	(-0.480)
1{Penny Stock}	**0.164 ****	**0.284 *****	0.082	0.096	0.035	**0.099 ***
	(2.18)	**(4.25)**	(1.14)	(1.27)	(0.46)	**(1.69)**
IMR Selection	0.749	**1.124 ****	0.801	-0.939	-0.247	-0.679
	(1.27)	**(2.14)**	(1.43)	(-1.578)	(-0.410)	(-1.478)
1{Recession}	**-0.265 *****	**-0.185 *****	**-0.243 *****	**0.109 *****	0.055	**0.073 ****
	(-6.414)	**(-5.023)**	**(-6.177)**	**(2.62)**	(1.30)	**(2.27)**
VIX	**0.012 *****	**0.015 *****	**0.008 *****	**0.005 ****	**0.019 *****	**-0.004 ****
	(5.79)	**(8.14)**	**(3.89)**	**(2.52)**	**(9.09)**	**(-2.516)**
Sentiment	**-0.195 *****	-0.023	**-0.229 *****	**-0.214 *****	**-0.094 *****	**-0.186 *****
	(-8.441)	(-1.116)	**(-10.455)**	**(-9.208)**	**(-3.995)**	**(-10.383)**
Constant	0.016	**-0.679 *****	**0.281 ****	**-0.649 *****	**-0.882 *****	**-0.187 ***
	(0.12)	**(-6.008)**	**(2.32)**	**(-5.064)**	**(-6.793)**	**(-1.895)**
N	5918	5796	5919	5915	5919	5919
Adj.R2	0.106	0.079	0.108	0.045	0.024	0.059

OLS regressions are used. Dependent variable of the first regression is the standardized word count of the interview of both CEO and anchor. Dependent variable for the second (third) regression is the standardized word count of the interview spelled out by anchor (CEO). Dependent variable of the fourth regression is the standardized relative word count of the negative words out of the total word count of the interview spelled out by both anchor and CEO. Dependent variable of the fifth (sixth) regression is the standardized relative word count of the negative words out of the total word count of the interview spelled out by anchor (CEO). All the standardizations are done across the interview sample. Prior Performance is the daily Alpha of the Carhart 4 Factor Model over the estimation window of [-150, -31]. CAR[-10,-1] is the cumulative abnormal return of the stock over the ten trading days prior to interview. Std.Turnover [-3,-1] is the standardized aggregated turnover of the stock (shares traded over the three trading days divided by total shares outstanding) over the three trading days prior to interview, whose mean and standard deviation is estimated over the trading day window of [-150, -31]. Idiosyncratic risk is the root mean squared error of the monthly Carhart 4 factor

model over the 36 months prior to the interview. Log (MVE) is the log of market value of equity as a measure of the size of the firm. Ind.Rel.Sales Growth is the sales growth over the past one year prior to interview minus the industry median sales growth over the same period. The industry is grouped by Fama French 49 industry grouping. BEME is the book to market ratio of the firm. Log (Firm's Age) is the log of the maximum of the number of years counted since the first year of appearing either on CRPS or Compustat. R&D Margin (Adv. Margin) is the R&D expense (advertisement expense) divided by the total revues of the firm over the fiscal year that ended prior to the interview. Log(1+AnalystB/F) is the log of one plus the number of analysts covering the firm according to the I/B/E/S, prior to the interview. Log (1+# interviews) is the log of one plus the number of CEO interviews the firm's CEOs had prior to the interview. Illiquidity is the illiquidity measure by Amihud (2001), which is the average daily absolute return to the dollar trading volume over one year prior to the interview.

$ILLIQ_i = \frac{1}{D_i}\sum_{t=1}^{D_i} \frac{|R_{id}|}{VOLD_{id}}$,

where D_i is the number of days for which data are available for stock i over the one year prior to interview. $VOLD_{id}$ is the daily volume in dollars. R_{id} is the return on stock i on day d. 1{Penny Stock} is a dummy variable that is one if the firm's stock price prior to interview was less than or equal to $5 per share. IMR Selection is the inverse Mills' ratio from the probit selection model of CEO interviews in Table II-IX. 1{Recession} is a dummy variable that is one if the interview took place during a period of NBER recession. VIX is the implied volatility of S&P500 index option by Whaley (1990). Sentiment is the sentiment index of the year by equation (3) of Baker and Wurgler (2006), and is downloaded from Jeffrey Wurgler's website.

Panel B. Positive Tone of Interview and Academic Words of Interview

Dependent Variable:	Positive Words of Both	Positive Words of Anchorman	Positive Words of CEO	Academic Words of Both	Academic Words of Anchorman	Academic Words of CEO
Prior Performance	**8.844 ***	4.937	6.069	-4.711	2.051	-3.966
	(1.94)	(1.14)	(1.47)	(-0.987)	(0.45)	(-0.836)
CAR[-10,-1]	**0.149 ***	0.101	0.089	-0.039	-0.006	**-0.154 ***
	(1.77)	(1.25)	(1.16)	(-0.439)	(-0.066)	**(-1.753)**
Std.Turnover[-3,-1]	**-0.001 ***	-0.001	-0.001	0	0	0.001
	(-1.874)	(-1.005)	(-1.348)	(0.16)	(0.28)	(0.83)
Idiosyncratic Risk	**-3.658 *****	**-3.799 *****	-1.183	-0.773	1.193	-0.293
	(-3.365)	**(-3.672)**	(-1.199)	(-0.678)	(1.09)	(-0.258)
Log (MVE)	**-0.053 *****	**-0.025 ****	**-0.032 *****	-0.001	0.007	-0.007
	(-4.803)	**(-2.393)**	**(-3.159)**	(-0.124)	(0.67)	(-0.640)
Ind.Rel.Sales Growth	0.002	-0.003	0.002	-0.008	-0.008	-0.006
	(0.29)	(-0.534)	(0.33)	(-1.437)	(-1.538)	(-1.160)
BEME	-0.001	**-0.002 ***	-0.001	-0.001	-0.001	-0.001
	(-1.053)	**(-1.701)**	(-0.737)	(-1.123)	(-0.977)	(-0.997)
Log(Firm's Age)	-0.021	**-0.055 ****	-0.011	0.038	0.005	**0.052 ***
	(-0.781)	**(-2.131)**	(-0.433)	(1.34)	(0.19)	**(1.83)**
1{NASDAQ}	0	0.022	-0.022	**0.144 *****	0.052	**0.137 *****
	(0.01)	(0.69)	(-0.734)	**(4.14)**	(1.54)	**(3.95)**
R&D Margin	0.155	0.094	0.185	**1.268 *****	**1.115 *****	**1.132 *****
	(1.16)	(0.74)	(1.53)	**(9.06)**	**(8.32)**	**(8.19)**
Adv. Margin	**0.444 ***	-0.002	**0.676 *****	-0.112	-0.153	-0.034
	(1.69)	(-0.007)	**(2.84)**	(-0.409)	(-0.579)	(-0.125)
log(1+#AnalystB/F)	0.024	**0.04 *****	0.008	**0.029 ***	0.02	**0.031 ****
	(1.60)	**(2.84)**	(0.58)	**(1.84)**	(1.33)	**(1.98)**

Log(1+#Interviews)	**0.057 *****	0.005	**0.036 ***	**-0.1 *****	**-0.096 *****	**-0.067 *****
	(2.61)	(0.23)	**(1.84)**	**(-4.384)**	**(-4.404)**	**(-2.980)**
Illiquidity	-4.051	**4.7 ***	**-6.845 *****	**8.68 *****	-0.082	**11.022 *****
	(-1.510)	**(1.84)**	**(-2.811)**	**(3.08)**	(-0.030)	**(3.94)**
1{Penny Stock}	0.029	**0.133 ***	-0.023	**-0.158 ****	-0.107	**-0.152 ***
	(0.39)	**(1.85)**	(-0.339)	**(-2.000)**	(-1.405)	**(-1.931)**
IMR Selection	**1.041 ***	0.307	**1.041 ***	-0.911	**-1.269 ****	-0.391
	(1.76)	(0.55)	**(1.94)**	(-1.469)	**(-2.127)**	(-0.634)
1{Recession}	**-0.11 *****	**-0.069 ***	**-0.086 ****	0.035	**0.128 *****	0.016
	(-2.665)	**(-1.760)**	**(-2.300)**	(0.80)	**(3.06)**	(0.38)
VIX	**-0.025 *****	**-0.026 *****	**-0.012 *****	-0.003	0.001	**-0.007 *****
	(-12.162)	**(-12.906)**	**(-6.133)**	(-1.213)	(0.55)	**(-3.188)**
Sentiment	**-0.15 *****	**-0.225 *****	-0.032	**0.097 *****	**0.313 *****	-0.003
	(-6.509)	**(-10.230)**	(-1.516)	**(3.99)**	**(13.36)**	(-0.142)
Constant	**1.042 *****	**0.957 *****	**0.459 *****	-0.099	**-0.215 ***	-0.031
	(8.18)	**(7.90)**	**(3.97)**	(-0.741)	**(-1.674)**	(-0.237)
N	5915	5919	5919	5915	5796	5796
Adj.R2	0.07	0.091	0.016	0.038	0.088	0.028

OLS regressions are used. Dependent variable of the first regression is the standardized relative word count of the positive words out of the total word count of the interview spelled out by both anchor and CEO. Dependent variable of the second (third) regression is the standardized relative word count of the positive words out of the total word count of the interview spelled out by anchor (CEO). Dependent variable of the fourth regression is the standardized relative word count of the academic words out of the total word count of the interview spelled out by both anchor and CEO. Dependent variable of the fifth (sixth) regression is the standardized relative word count of the academic words out of the total word count of the interview spelled out by anchor (CEO). All the standardizations are done across the interview sample.

Panel C. Negative Tone of Interview with Industry Fixed Effects

Dependent Variable:	Word Count of Both	Word Count of Anchorman	Word Count of CEO	Negative Words of Both	Negative Words of Anchorman	Negative Words of CEO
Prior Performance	**-34.738 *** **	**-23.215 *** **	**-33.328 *** **	**-15.11 *** **	**-10.202 ** **	-7.395
	(-6.772)	**(-6.338)**	**(-6.760)**	**(-3.495)**	**(-2.332)**	(-1.359)
CAR[-10,-1]	**-0.493 *** **	**-0.336 *** **	**-0.436 *** **	**-0.2 *** **	**-0.206 ** **	-0.087
	(-6.485)	**(-5.850)**	**(-5.083)**	**(-4.070)**	**(-3.090)**	(-1.261)
Std.Turnover[-3,-1]	**0.002 *** **	**0.002 *** **	**0.002 ** **	**0.001 ** **	**0.001 ** **	0
	(4.40)	**(4.18)**	**(2.73)**	**(2.20)**	**(3.00)**	(0.76)
Idiosyncratic Risk	**-1.871 ** **	**1.931 *** **	**-2.84 *** **	**5.702 *** **	**4.338 *** **	**3.051 * **
	(-2.411)	**(3.27)**	**(-3.214)**	**(4.10)**	**(3.78)**	**(1.87)**
Log (MVE)	**0.058 *** **	**0.084 *** **	**0.032 ** **	**-0.025 ** **	0.004	-0.03
	(4.70)	**(9.12)**	**(2.48)**	**(-2.283)**	(0.41)	(-1.681)
Ind.Rel.Sales Growth	0.009	0.001	0.007	0.005	0.004	**0.004 ** **
	(0.75)	(0.29)	(0.75)	(1.62)	(1.61)	**(2.95)**
BEME	-0.002	0	-0.002	-0.001	0	**-0.001 * **
	(-1.456)	(-0.497)	(-1.513)	(-1.049)	(-0.283)	**(-2.278)**
Log(Firm's Age)	**-0.152 *** **	**-0.075 ** **	**-0.151 *** **	**0.111 *** **	**0.051 *** **	**0.075 ** **
	(-3.919)	**(-2.839)**	**(-3.772)**	**(6.02)**	**(3.31)**	**(2.87)**
1{NASDAQ}	0.019	0.032	0.012	-0.041	-0.001	-0.051
	(0.55)	(0.91)	(0.31)	(-1.553)	(-0.017)	(-1.312)
R&D Margin	0.152	-0.025	0.257	**0.437 ** **	0.093	**0.405 *** **
	(0.86)	(-0.194)	(1.48)	**(2.89)**	(0.65)	**(3.82)**
Adv. Margin	0.392	**0.438 * **	0.137	**-0.976 *** **	-0.119	**-0.918 *** **
	(1.00)	**(2.07)**	(0.45)	**(-5.134)**	(-0.579)	**(-4.784)**
log(1+#AnalystB/F)	**-0.06 *** **	**-0.034 ** **	**-0.048 *** **	**0.033 ** **	0.014	**0.033 ** **
	(-4.278)	**(-2.653)**	**(-6.228)**	**(2.56)**	(1.07)	**(2.87)**

Log(1+#Interviews)	**-0.155 *** **	**-0.161 *** **	**-0.111 *** **	**0.092 *** **	**0.065 *** **	**0.074 * **
	(-4.716)	**(-7.249)**	**(-3.287)**	**(4.97)**	**(3.41)**	**(2.13)**
Illiquidity	**40.454 *** **	**29.038 *** **	**35.998 *** **	**-5.934 * **	-5.95	-2.903
	(9.15)	**(9.17)**	**(8.59)**	**(-1.923)**	(-1.697)	(-1.163)
1{Penny Stock}	0.139	**0.246 *** **	0.072	**0.126 ** **	0.055	0.127
	(1.74)	**(3.47)**	(0.88)	**(2.39)**	(1.11)	(1.72)
IMR Selection	**0.869 ** **	**1.154 * **	**0.943 *** **	-0.604	-0.067	-0.45
	(2.88)	**(2.13)**	**(4.05)**	(-1.212)	(-0.141)	(-1.226)
1{Recession}	**-0.255 *** **	**-0.179 ** **	**-0.235 *** **	**0.108 ** **	0.052	0.072
	(-4.027)	**(-2.980)**	**(-4.043)**	**(2.89)**	(1.14)	(1.74)
VIX	**0.012 ** **	**0.015 *** **	0.008	**0.006 *** **	**0.019 *** **	-0.003
	(2.52)	**(3.69)**	(1.68)	**(3.66)**	**(8.98)**	(-1.100)
Sentiment	**-0.195 *** **	-0.024	**-0.23 *** **	**-0.188 *** **	**-0.087 *** **	**-0.166 *** **
	(-6.715)	(-1.428)	**(-7.134)**	**(-8.254)**	**(-3.290)**	**(-4.265)**
Constant	**-0.846 *** **	**-1.237 *** **	**-0.513 * **	0.451	-0.284	0.657
	(-4.196)	**(-5.938)**	**(-2.190)**	(0.25)	(-0.222)	(0.57)
N	5918	5796	5919	5915	5919	5919
Adj.R2	0.116	0.089	0.118	0.092	0.038	0.103
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Cluster by	Month	Month	Month	Month	Month	Month

Dependent variable of the first regression is the standardized word count of the interview of both CEO and anchor. Dependent variable for the second (third) regression is the standardized word count of the interview spelled out by anchor (CEO). Dependent variable of the fourth regression is the standardized relative word count of the negative words out of the total word count of the interview spelled out by both anchor and CEO. Dependent variable of the fifth (sixth) regression is the standardized relative word count of the negative words out of the total word count of the interview spelled out by anchor (CEO). All the standardizations are done across the interview sample.

Panel D. Positive Tone of Interview with Industry Fixed Effects

Dependent Variable:	Positive Words of Both	Positive Words of Anchorman	Positive Words of CEO	Academic Words of Both	Academic Words of Anchorman	Academic Words of CEO
Prior Performance	**8.609 ****	4.579	**5.596 ****	-2.668	3.601	-1.709
	(2.50)	(1.24)	**(2.24)**	(-0.530)	(0.86)	(-0.266)
CAR[-10,-1]	**0.146 ****	0.1	0.082	0.035	0.05	-0.094
	(2.49)	(1.44)	(1.46)	(0.50)	(0.72)	(-0.810)
Std.Turnover[-3,-1]	**-0.001 ****	-0.001	-0.001	0	0	0
	(-2.518)	(-1.343)	(-1.762)	(-0.507)	(-0.248)	(0.54)
Idiosyncratic Risk	**-3.871 *****	**-4.268 *****	-0.954	**1.613 ***	**2.881 *****	1.825
	(-3.596)	**(-3.664)**	(-0.799)	**(2.03)**	**(3.24)**	(1.71)
Log (MVE)	**-0.049 *****	**-0.021 ***	-0.026	0.007	0.012	0
	(-3.455)	**(-1.892)**	(-1.643)	(0.62)	(0.85)	(0.00)
Ind.Rel.Sales Growth	0.002	-0.003	0.002	**-0.01 *****	**-0.009 ****	**-0.008 *****
	(0.34)	(-0.877)	(0.42)	**(-3.156)**	**(-2.692)**	**(-3.199)**
BEME	**-0.001 ***	**-0.002 ****	-0.001	-0.001	-0.001	-0.001
	(-2.002)	**(-2.215)**	(-0.895)	(-1.151)	(-1.141)	(-0.979)
Log(Firm's Age)	-0.003	**-0.057 ***	0.005	0.002	-0.018	0.015
	(-0.189)	**(-2.095)**	(0.25)	(0.05)	(-0.825)	(0.50)
1{NASDAQ}	0.035	0.045	0.005	**0.141 *****	0.05	**0.131 *****
	(0.73)	(0.91)	(0.13)	**(3.99)**	(1.36)	**(4.29)**
R&D Margin	**0.181 ***	0.104	**0.219**	0.196	**0.439 ****	0.102
	(1.91)	(0.63)	**(1.78)**	(1.24)	**(2.69)**	(0.57)
Adv. Margin	0.194	-0.04	**0.383**	-0.428	-0.321	-0.368
	(0.61)	(-0.109)	**(1.78)**	(-1.495)	(-1.115)	(-1.232)
log(1+#AnalystB/F)	0.005	0.028	-0.004	**0.02 ***	0.019	**0.02 ***
	(0.28)	(1.31)	(-0.288)	**(1.86)**	(1.37)	**(2.10)**

Log(1+#Interviews)	**0.082 *** **	0.018	**0.05 * **	**-0.088 *** **	**-0.088 *** **	**-0.059 ** **
	(3.16)	(0.52)	**(2.12)**	**(-4.026)**	**(-3.487)**	**(-2.684)**
Illiquidity	-4.263	**4.812 * **	**-6.845 ** **	5.011	-2.25	**7.402 * **
	(-1.756)	**(1.85)**	**(-2.918)**	(1.25)	(-0.577)	**(2.06)**
1{Penny Stock}	0.029	**0.148 ** **	-0.023	-0.101	-0.07	-0.09
	(0.42)	**(3.05)**	(-0.336)	(-1.407)	(-1.149)	(-1.321)
IMR Selection	0.984	0.307	0.985	**-0.827 ** **	**-1.014 *** **	-0.37
	(1.04)	(0.64)	(1.13)	**(-2.307)**	**(-3.639)**	(-1.041)
1{Recession}	-0.105	-0.069	-0.083	0.021	**0.11 ** **	0.006
	(-1.784)	(-1.372)	(-1.707)	(0.86)	**(2.38)**	(0.18)
VIX	**-0.025 *** **	**-0.024 *** **	**-0.012 *** **	-0.002	0.001	**-0.006 ** **
	(-8.041)	**(-5.749)**	**(-8.425)**	(-0.825)	(0.24)	**(-3.080)**
Sentiment	**-0.122 ** **	**-0.211 *** **	-0.014	**0.084 ** **	**0.305 *** **	-0.018
	(-2.446)	**(-6.698)**	(-0.291)	**(2.81)**	**(16.26)**	(-0.652)
Constant	0.019	0.967	**-0.478 * **	**-0.503 * **	**-0.915 *** **	-0.182
	(0.03)	(0.81)	**(-1.872)**	**(-2.095)**	**(-8.899)**	(-0.600)
N	5915	5919	5919	5915	5796	5796
Adj.R2	0.115	0.104	0.049	0.161	0.14	0.131
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Cluster by	Month	Month	Month	Month	Month	Month

Dependent variable of the first regression is the standardized relative word count of the positive words out of the total word count of the interview spelled out by both anchor and CEO. Dependent variable of the second (third) regression is the standardized relative word count of the positive words out of the total word count of the interview spelled out by anchor (CEO). Dependent variable of the fourth regression is the standardized relative word count of the academic words out of the total word count of the interview spelled out by both anchor and CEO. Dependent variable of the fifth (sixth) regression is the standardized relative word count of the academic words out of the total word count of the interview spelled out by anchor (CEO). All the standardizations are done across the interview sample.

Panel E. Governance Characteristics and the Tone of the Language of the CEOs in the Interviews

	Positive Words of CEO	Positive Words of CEO	Negative Words of CEO	Negative Words of CEO	Word Count of CEO	Word Count of CEO
Inst. Ownership	0.062	0.058	**0.166 ** **	**0.149 * **	**-0.366 ** **	**-0.345 ** **
	(0.60)	(0.54)	**(2.39)**	**(2.04)**	**(-2.693)**	**(-2.451)**
PPS of New Grants	**-72.863 * **		-37.276		**115.849 ** **	
	(-1.959)		(-1.102)		**(2.95)**	
Toal PPS		0.307		-0.233		-0.117
		(0.80)		(-0.771)		(-0.287)
Executive Age	**-0.007 *** ***	**-0.007 *** ***	**0.002 * **	**0.002 * **	-0.002	-0.002
	(-3.260)	**(-3.469)**	**(1.80)**	**(1.91)**	(-1.176)	(-1.172)
1{Chairman}	**0.082 *** ***	**0.081 *** ***	-0.017	-0.015	-0.001	-0.002
	(4.88)	**(4.70)**	(-0.686)	(-0.602)	(-0.037)	(-0.063)
G-Index	0.006	0.006	0.01	0.009	**-0.016 ** **	**-0.016 ** **
	(0.73)	(0.71)	(1.39)	(1.36)	**(-2.555)**	**(-2.541)**
constant	**0.904 *** ***	**0.889 *** ***	**-0.824 *** ***	**-0.817 *** ***	**-0.374 ** **	**-0.364 ** **
	(3.20)	**(3.16)**	**(-5.012)**	**(-4.925)**	**(-2.378)**	**(-2.205)**
N	3086	3086	3086	3086	3086	3086
Adj. R2	0.035	0.034	0.057	0.056	0.072	0.069
Clustered SE by month	Yes	Yes	Yes	Yes	Yes	Yes

Dependent variable of the first and second regressions are the standardized relative word count of the positive words out of the total word count of the interview spelled out by CEO. Dependent variable of the third and fourth regressions are the standardized relative word count of the negative words out of the total word count of the interview spelled out by CEO. Dependent variable of the fifth and sixth regressions are the standardized word count of CEO. All the standardizations are done across the interview sample. Control variables omitted in the table to save space: Prior Performance, CAR[-10,-1], Std.Turnover[-3,-1], Idiosyncratic Risk, Log (MVE), Ind. Rel. Sales Growth, BEME, Log(Firm Age), 1{NASDAQ}, R&D Margin, Adv. Margin, log(1+#AnalystB/F), Log(1+#Interviews), Illiquidity, 1{PennyStock}, IMR of selection model. Inst.Ownership is the institutional ownership by Thomson 13F dataset. PPS of New Grant is the pay to performance sensitivity of the option package that was granted to the CEO in the year prior to the CEO interview on CNBC. Total PPS is the total pay to performance sensitivity of all the option package and stock grants that the CEO has prior to the CEO interview on CNBC. 1{Chairman} is a dummy variable that is one if the CEO is a chairman. G-index is downloaded from Risk Metrics.

Panel F. Governance Characteristics and the Tone of the Language of the CEOs in the Interviews with Industry Fixed Effects

	Positive Words of CEO	Positive Words of CEO	Negative Words of CEO	Negative Words of CEO	Word Count of CEO	Word Count of CEO
Inst. Ownership	0.03	0.012	**0.173 ** **	**0.151 * **	**-0.441 ** **	**-0.422 ** **
	(0.28)	(0.11)	**(2.31)**	**(1.94)**	**(-2.811)**	**(-2.556)**
PPS of New Grants	**-82.378 * **		-46.094		**126.781 *** **	
	(-1.807)		(-1.390)		**(3.91)**	
Toal PPS		-0.049		-0.308		-0.113
		(-0.177)		(-1.055)		(-0.284)
Executive Age	**-0.006 ** **	**-0.006 ** **	**0.003 *** **	**0.003 *** **	-0.002	-0.002
	(-2.323)	**(-2.330)**	**(3.38)**	**(3.83)**	(-1.128)	(-1.097)
1{Chairman}	**0.047 ** **	**0.048 ** **	-0.023	-0.021	0.009	0.007
	(2.51)	**(2.56)**	(-0.858)	(-0.768)	(0.23)	(0.19)
G-Index	0.011	0.01	0.002	0.001	**-0.018 ** **	**-0.018 ** **
	(1.18)	(1.08)	(0.25)	(0.17)	**(-2.373)**	**(-2.374)**
constant	0.326	0.334	**-1.372 *** **	**-1.36 *** **	-0.293	-0.3
	(1.23)	(1.26)	**(-7.130)**	**(-7.047)**	(-1.760)	(-1.682)
N	3086	3086	3086	3086	3086	3086
Adj. R2	0.065	0.064	0.104	0.104	0.074	0.07
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE by month	Yes	Yes	Yes	Yes	Yes	Yes

We use the same controls as in Panel E.

Table II-XI. News Article Content and Firm Characteristics
Panel A. Prior to Interview

Dependent Variable:	News Article Word Count [-7,-1]	News Article Positive [-7,-1]	News Article Negative [-7,-1]	News Article Academic [-7,-1]
WordCount[-7,-1]		-0.01	**0.149 *** **	0.018
		(-0.219)	**(4.70)**	(0.32)
Prior Performance	**-9.233 ***	**13.897 ***	**-13.895 ****	7.075
	(-1.815)	**(1.76)**	**(-2.391)**	(0.71)
CAR[-10,-1]	-0.003	0.017	-0.119	-0.149
	(-0.044)	(0.15)	(-1.443)	(-1.051)
Std.Turnover[-3,-1]	0	0	0.001	0.001
	(0.68)	(-0.575)	(1.56)	(0.65)
Idiosyncratic Risk	1.534	0.604	**3.616 *** **	-3.66
	(1.32)	(0.34)	**(2.73)**	(-1.602)
Log (MVE)	**0.112 *** **	0.012	**0.061 *** **	-0.041
	(8.66)	(0.56)	**(4.03)**	(-1.580)
Ind.Rel.Sales Growth	0.002	-0.001	0.004	-0.008
	(0.62)	(-0.239)	(0.87)	(-1.171)
BEME	**0.013 *** **	-0.004	0.001	-0.003
	(5.98)	(-1.239)	(0.55)	(-0.726)
Log(Firm's Age)	-0.019	**0.088 ***	**0.176 *** **	0.004
	(-0.549)	**(1.65)**	**(4.48)**	(0.07)
1{NASDAQ}	-0.068	0.042	0.023	-0.007
	(-1.636)	(0.65)	(0.48)	(-0.080)
R&D Margin	0.154	0.026	**0.595 *** **	**1.55 *** **
	(1.22)	(0.13)	**(4.16)**	**(6.27)**
Adv. Margin	0.137	-0.544	-0.04	-0.463
	(0.44)	(-1.116)	(-0.112)	(-0.750)
log(1+#AnalystB/F)	**-0.036 ****	-0.013	-0.009	0.026
	(-2.218)	(-0.509)	(-0.482)	(0.81)
Illiquidity	**5.456 ***	2.548	-1.674	5.746
	(1.85)	(0.55)	(-0.496)	(0.99)

1{Penny Stock}	0.083	**0.254 ****	**0.212 ****	-0.117
	(1.08)	**(2.13)**	**(2.43)**	(-0.776)
IMR Selection	**9.608 *****	-1.753	-3.692	2.114
	(3.96)	(-0.463)	(-1.329)	(0.44)
1{Recession}	0.032	0.067	0.096	0.068
	(0.61)	(0.81)	(1.59)	(0.64)
VIX	**-0.008 *****	**-0.015 *****	-0.001	-0.006
	(-3.254)	**(-3.922)**	(-0.212)	(-1.132)
Sentiment	**-0.082 *****	-0.021	**-0.109 *****	0.006
	(-2.954)	(-0.473)	**(-3.443)**	(0.11)
Constant	**-0.667 *****	-0.133	**-1.147 *****	0.394
	(-4.170)	(-0.530)	**(-6.235)**	(1.24)
N	1305	1303	1303	1303
Adj.R2	0.126	0.012	0.097	0.031

OLS regressions are used. The dependent variable for the first regression is the standardized word count of the news articles of the firms over the [-7, -1] calendar days prior to the CEO interview on CNBC. The dependent variable for the second regression is the standardized relative word count of positive words (Positiv by General Inquirer) out of the total word count of the news articles over the [-7, -1] calendar days prior to CEO interview. The dependent variable for the third regression is the standardized relative word count of negative words (Negativ by General Inquirer) out of the total word count of the news articles over the [-7, -1] calendar days prior to CEO interview. The dependent variable for the fourth regression is the standardized relative word count of academic words (Academ by General Inquirer) out of the total word count of the news articles over the [-7, -1] calendar days prior to CEO interview. All the standardization is done within sample of news articles collected over the [-7, +7] calendar day period surrounding the CEO interviews. WordCount[-7,-1] is the standardized word count of the news articles of the firm over the [-7, -1] calendar day period prior to CEO interview. Prior performance is the alpha of the daily Carhart 4 factor model over the estimation window of [-150, -31] trading days prior to interview. CAR[-10,-1] is the cumulative abnormal return of the stock over the ten trading days prior to interview. Std.Turnover [-3,-1] is the standardized aggregated turnover of the stock (shares traded over the three trading days divided by total shares outstanding) over the three trading days prior to interview, whose mean and standard deviation is estimated over the trading day window of [-150, -31]. Idiosyncratic risk is the root mean squared error of the monthly Carhart 4 factor model over the 36 months prior to the interview. Log (MVE) is the log of market value of equity as a measure of the size of the firm. Ind.Rel.Sales Growth is the sales growth over the past one year prior to interview minus the industry median sales growth over the same period. The industry is grouped by Fama French 49 industry grouping. BEME is the book to market ratio of the firm. Log (Firm's Age) is the log of the maximum of the number of years counted since the first year of appearing either on CRPS or Compustat. R&D Margin (Adv. Margin) is the R&D expense (advertisement expense) divided by the total revues of the firm over the fiscal year that ended prior to the interview. Log(1+AnalystB/F) is the log of one plus the number of analysts covering the firm according to the I/B/E/S, prior to the interview. Log (1+# interviews) is the log of one plus the number of CEO interviews the firm's CEOs had prior to the interview. Illiquidity is the illiquidity measure by Amihud (2001), which is

the average daily absolute return to the dollar trading volume over one year prior to the interview.

$ILLIQ_i = \frac{1}{D_i}\sum_{t=1}^{D_i} \frac{|R_{id}|}{VOLD_{id}}$,

where D_i is the number of days for which data are available for stock i over the one year prior to interview. $VOLD_{id}$ is the daily volume in dollars. R_{id} is the return on stock i on day d. 1{Penny Stock} is a dummy variable that is one if the firm's stock price prior to interview was less than or equal to $5 per share. IMR Selection is the inverse Mills' ratio from the probit selection model of CEO interviews in Table II-IX. 1{Recession} is a dummy variable that is one if the interview took place during a period of NBER recession. VIX is the implied volatility of S&P500 index option by Whaley (1990). Sentiment is the sentiment index of the year by equation (3) of Baker and Wurgler (2006), and is downloaded from Jeffrey Wurgler's website.

Table II-XII. CAR Regression of CEO Interviews

Notes for Panels A ~ C

LogAge is the logarithm of firm's age, which is the maximum of the number of years since the firm first appeared on CRSP or Compustat. Turnover is the standardized abnormal turnover over the window of [-3, -1] trading days prior to interview. R&D Margin (Adv. Margin) is the R&D expense (advertisement expense) divided by the total revues of the firm over the fiscal year that ended prior to the interview. PIN is the probability of informed trading by Easley and O'Hara (2002) estimated over the window of [-80, -11] trading days before the interview. Log(1+AnalystB/F) is the log of one plus the number of analysts covering the firm according to the I/B/E/S, prior to the interview. Log (1+# interviews) is the log of one plus the number of CEO interviews the firm's CEOs had prior to the interview. Illiquidity is the illiquidity measure by Amihud (2001), which is the average daily absolute return to the dollar trading volume over one year prior to the interview.

$ILLIQ_i = \frac{1}{D_i}\sum_{t=1}^{D_i} \frac{|R_{id}|}{VOLD_{id}}$,

where D_i is the number of days for which data are available for stock i over the one year prior to interview. $VOLD_{id}$ is the daily volume in dollars. R_{id} is the return on stock i on day d. 1{Penny Stock} is a dummy variable that is one if the firm's stock price prior to interview was less than or equal to $5 per share. IMR Selection is the inverse Mills' ratio from the probit selection model of CEO interviews in Table II-IX. 1{Recession} is a dummy variable that is one if the interview took place during a period of NBER recession. VIX is the implied volatility of S&P500 index option by Whaley (1990). Sentiment is the sentiment index of the year by equation (3) of Baker and Wurgler (2006), and is downloaded from Jeffrey Wurgler's website. CEO Word count is the standardized word count of the conversation by the CEO in the interview. CEO Positive/Negative/Academic is the standardized relative word count of positive/negative/academic words of CEO in the interview. Host Word count is the standardized word count of the conversation by the anchor in the interview. Host Positive/Negative/Academic is the standardized relative word count of positive/negative/academic words of anchor in the interview. Article Word Count is the standardized word count of the surrounding news articles. Article Positive/Negative/Academic is the standardized relative word count of positive/negative/academic words of the surrounding news articles.

Panel A. Using R&D as a Measure of the Degree of Information Asymmetry

	CAR[-10,-1] All Sample	CAR[-10,-1] Unconfounded	CAR[-10,-1] Unconfounded	CAR[0] All Sample	CAR[0] Unconfounded	CAR[0] Unconfounded	CAR[1,10] All Sample	CAR[1,10] Unconfounded	CAR[1,10] Unconfounded
LogAge	0.005	0.004	-0.003	0.002	0.002	0.003	**0.008 ** **	0	-0.001
	(1.45)	(0.63)	(-0.341)	(1.17)	(0.73)	(0.70)	**(2.32)**	(-0.024)	(-0.116)
LogMVE	**-0.006 ** **	-0.013	-0.019	**-0.005 *** **	**-0.008 *** **	**-0.01 *** **	**-0.003 ** **	-0.002	-0.001
	(-2.510)	(-1.684)	(-1.432)	**(-5.148)**	**(-4.694)**	**(-5.196)**	**(-2.929)**	(-1.167)	(-0.516)
Turnover	-0.015	0.031	-0.292	-0.106	-0.18	-0.222	**-0.192 * **	**-0.61 ** **	**-0.73 ** **
	(-0.145)	(0.10)	(-0.727)	(-1.793)	(-1.122)	(-1.222)	**(-1.851)**	**(-2.332)**	**(-2.543)**
R&Dmargin	**0.198 ** **	**0.263 * **	**0.322 * **	0.021	0.014	0.02	**-0.084 ** **	**-0.081 * **	-0.077
	(2.29)	**(1.85)**	**(1.85)**	(1.04)	(0.72)	(0.76)	**(-2.427)**	**(-1.843)**	(-1.584)
AdMargin	0.106	0.148	0.351	-0.017	0.008	0.018	0.007	0.07	0.058
	(1.22)	(0.98)	(1.35)	(-0.793)	(0.28)	(0.67)	(0.22)	(1.19)	(0.83)
BEME	**0 ** **	**-0.001 * **	-0.003	0	**0 * **	0	0	**0.001 *** **	**0.001 ** **
	(-3.050)	**(-1.885)**	(-1.607)	(-1.369)	**(-1.894)**	(0.48)	(1.57)	**(3.29)**	**(2.53)**
NASDAQ	-0.009	**-0.017 * **	-0.022	0	0	-0.001	0.004	0.001	0.005
	(-1.778)	**(-1.969)**	(-1.534)	(0.30)	(-0.043)	(-0.228)	(0.76)	(0.10)	(0.89)
IMR	0.036	**1.264 * **	1.01	0.071	**1.821 *** **	**1.985 *** **	0.092	-0.103	-0.17
	(0.38)	**(2.03)**	(1.42)	(1.12)	**(3.89)**	**(3.52)**	(1.71)	(-0.251)	(-0.376)
Log(1+Analysts)	-0.004	-0.006	-0.003	**0.002 * **	**0.003 ** **	**0.004 ** **	0.003	0.002	0.002
	(-1.154)	(-0.954)	(-0.391)	**(2.01)**	**(2.80)**	**(2.38)**	(1.33)	(0.45)	(0.53)
Illiquidity	**3.386 ** **	**4.274 ** **	**8.926 ** **	**-0.529 ** **	**-0.717 * **	**-1.067 ** **	**-2.097 *** **	**-2.598 *** **	**-2.93 *** **
	(2.51)	**(2.59)**	**(2.57)**	**(-2.281)**	**(-2.048)**	**(-2.345)**	**(-4.628)**	**(-4.978)**	**(-4.594)**
1{PennyStock}	-0.044	**-0.116 * **	**-0.172 * **	**0.029 ** **	0.013	0.019	**0.037 *** **	**0.049 ** **	**0.059 ** **
	(-1.203)	**(-1.799)**	**(-2.175)**	**(2.21)**	(0.86)	(1.14)	**(3.49)**	**(2.48)**	**(2.45)**
1{Recession}	0.004	0.016	0.011	-0.002	-0.004	-0.003	0.006	0.005	0.006
	(0.30)	(0.64)	(0.30)	(-0.497)	(-0.442)	(-0.241)	(1.57)	(0.84)	(0.75)
VIX	0	0	0.001	0	**-0.001 * **	-0.001	0	0.001	0.001
	(1.06)	(0.13)	(1.12)	(-1.558)	**(-2.099)**	(-1.712)	(0.29)	(1.29)	(1.44)
Sentiment	0.004	-0.004	-0.01	**0.006 ** **	**0.006 * **	0.004	-0.005	**-0.018 ** **	**-0.015 ** **
	(0.68)	(-0.289)	(-0.564)	**(3.00)**	**(2.01)**	(1.13)	(-1.635)	**(-2.762)**	**(-2.241)**

CEO Word Count				**-0.004 *****	**-0.005 ****	**-0.005 ***	**0.006 *****	**0.006 ****	**0.008 ****
				(-4.061)	**(-2.736)**	**(-1.817)**	**(3.20)**	**(2.33)**	**(2.95)**
CEO Positive				**0.004 *****	**0.007 ****	**0.008 ****	0	0.002	0
				(3.49)	**(2.80)**	**(2.26)**	(-0.092)	(0.75)	(-0.005)
CEO Negative				-0.001	0	-0.001	0.002	0	-0.003
				(-0.810)	(-0.091)	(-0.306)	(0.90)	(0.11)	(-0.626)
CEO Academic				0.001	0.003	0.003	0	0.004	0.003
				(0.61)	(1.44)	(1.15)	(0.27)	(1.40)	(1.05)
Host Word Count				0.002	0.001	0.002	0.001	0.004	0
				(1.41)	(0.55)	(0.74)	(0.28)	(1.41)	(0.03)
Host Positive				0.002	0.002	0.003	0.001	0.003	0.003
				(1.74)	(1.50)	(1.32)	(0.56)	(1.12)	(1.11)
Host Negative				-0.001	-0.001	-0.001	0.002	**0.006 ***	**0.006 ****
				(-1.479)	(-0.788)	(-0.588)	(0.92)	**(2.10)**	**(2.31)**
Host Academic				0.002	0.002	0.002	**0.002 ***	0.003	0.003
				(1.01)	(0.58)	(0.43)	**(1.85)**	(0.96)	(0.97)
Article Word Count			0.026			-0.001			**0.004 *****
			(1.72)			(-0.550)			**(4.05)**
Article Positive			-0.003			-0.001			0.003
			(-0.343)			(-0.394)			(0.73)
Article Negative			0.015			0.002			0.003
			(0.79)			(0.89)			(1.48)
Article Academic			-0.005			0.002			0
			(-0.687)			(0.94)			(0.13)
Constant	**0.211 *****	0.173	-0.036	0.087	**0.072 ****	**0.077 *****	-0.175	-0.036	**-0.051 ***
	(3.60)	(1.71)	(-0.332)	(1.56)	**(3.01)**	**(3.89)**	(-1.730)	(-1.399)	**(-1.817)**
N	5958	1999	1315	5834	1953	1445	5834	1953	1627
R2	0.025	0.019	0.041	0.022	0.046	0.042	0.025	0.047	0.049
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ClusteredSE by Month	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B. Using PIN as a Measure of the Degree of Information Asymmetry

	CAR[-10,-1] All Sample	CAR[-10,-1] Unconfounded	CAR[-10,-1] Unconfounded	CAR[0] All Sample	CAR[0] Unconfounded	CAR[0] Unconfounded	CAR[1,10] All Sample	CAR[1,10] Unconfounded	CAR[1,10] Unconfounded
LogAge	0.006	0.003	0.007	0.003	0.001	-0.004	**0.007 ***	0.008	0.005
	(1.46)	(0.27)	(0.61)	(1.18)	(0.24)	(-0.762)	**(1.93)**	(0.94)	(0.42)
LogMVE	-0.001	0.002	-0.004	**-0.004 *****	**-0.008 ****	**-0.009 ****	**-0.005 *****	**-0.008 *****	**-0.007 *****
	(-0.578)	(0.26)	(-0.600)	**(-3.511)**	**(-3.031)**	**(-2.765)**	**(-4.980)**	**(-3.770)**	**(-3.126)**
Turnover	-0.332	-0.49	**-1.62 ****	-0.008	0.19	0.156	**-0.884 *****	-0.541	-0.794
	(-1.027)	(-0.794)	**(-2.355)**	(-0.062)	(1.05)	(0.85)	**(-3.311)**	(-1.214)	(-1.247)
R&Dmargin	**0.213 ****	0.266	0.273	-0.013	-0.012	-0.019	**-0.118 *****	**-0.151 *****	**-0.151 *****
	(2.37)	(1.78)	(1.67)	(-0.575)	(-0.463)	(-0.543)	**(-4.164)**	**(-3.526)**	**(-3.240)**
PIN	**-0.1 ***	**-0.217 ****	**-0.265 ***	0.008	-0.035	-0.028	**-0.065 ****	-0.008	0.025
	(-1.857)	**(-2.208)**	**(-2.109)**	(0.38)	(-1.073)	(-0.654)	**(-2.407)**	(-0.151)	(0.42)
AdMargin	0.07	-0.005	-0.117	-0.039	-0.011	-0.006	-0.063	0.06	0.073
	(1.11)	(-0.052)	(-1.055)	(-0.977)	(-0.356)	(-0.174)	(-0.942)	(0.55)	(0.66)
BEME	**0 ****	**-0.001 ***	**-0.001 ***	0	0	0	0	**0 ****	0
	(-2.737)	**(-1.881)**	**(-2.095)**	(-1.355)	(0.19)	(0.37)	(0.17)	**(2.28)**	(0.91)
NASDAQ	-0.005	-0.01	-0.004	0.004	-0.001	-0.003	**0.012 ***	0	0.008
	(-0.801)	(-0.656)	(-0.352)	(1.59)	(-0.157)	(-0.510)	**(2.17)**	(-0.046)	(0.83)
IMR	**-0.126 ****	0.097	0.121	0.056	**1.561 ***	1.722	-0.013	0.12	-0.267
	(-2.492)	(0.21)	(0.20)	(0.45)	**(1.81)**	(1.58)	(-0.129)	(0.29)	(-0.728)
Log(1+Analysts)	-0.006	-0.007	-0.003	0	**0.004 ***	0.004	0.003	0.008	**0.009 ***
	(-1.415)	(-1.062)	(-0.350)	(0.17)	**(1.82)**	(1.02)	(1.43)	(1.79)	**(2.01)**
Illiquidity	**2.371 ***	**4.222 ***	**5.581 ***	**-0.502 ***	-0.196	-0.421	**-1.123 ****	**-1.642 ***	**-1.927 ***
	(1.94)	**(2.03)**	**(2.04)**	**(-1.883)**	(-0.479)	(-0.649)	**(-2.486)**	**(-1.888)**	**(-1.936)**
1{PennyStock}	-0.033	-0.06	-0.079	0.022	0.011	0.02	**0.026 ***	0.02	0.026
	(-1.460)	(-1.354)	(-1.114)	(1.79)	(0.89)	(1.59)	**(1.84)**	(1.32)	(1.44)
1{Recession}	0.008	0.061	0.072	-0.005	-0.009	-0.012	0.014	0.006	0.006
	(0.61)	(1.19)	(1.13)	(-1.402)	(-0.983)	(-1.134)	(1.58)	(0.91)	(0.63)
VIX	0	0	0.001	0	0	0	0	**0.001 ****	**0.001 ***
	(0.57)	(0.25)	(0.50)	(-0.448)	(-0.214)	(0.25)	(0.85)	**(2.21)**	**(2.12)**
Sentiment	0.007	0.002	0.001	0.005	0.005	0.002	-0.004	**-0.014 ***	**-0.014 ***
	(0.93)	(0.11)	(0.06)	(1.45)	(1.18)	(0.31)	(-0.966)	**(-1.819)**	**(-1.867)**

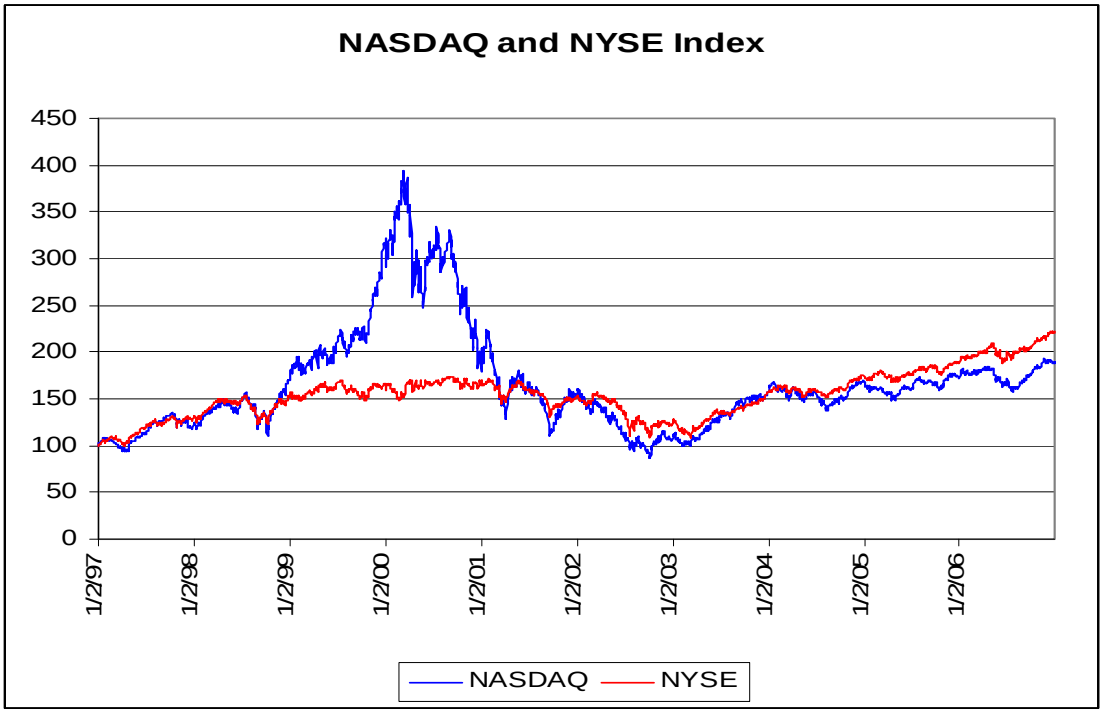
CEO Word Count				**-0.005 ** (-2.926)**	**-0.005 * (-2.025)**	-0.005 (-1.078)	0.003 (1.15)	0.003 (0.65)	0.001 (0.29)
CEO Positive				0.003 (1.48)	0.002 (0.63)	0.002 (0.55)	0.001 (0.38)	**0.009 ** (3.08)**	**0.008 ** (2.33)**
CEO Negative				0.001 (1.01)	-0.003 (-1.158)	-0.004 (-1.066)	0.003 (1.64)	0.002 (0.68)	-0.001 (-0.216)
CEO Academic				0.002 (0.84)	0.005 (1.21)	0.005 (1.13)	-0.001 (-0.569)	0 (0.07)	0 (-0.014)
Host Word Count				0.003 (1.62)	0.001 (0.29)	0.001 (0.25)	0.001 (0.52)	0.004 (1.20)	0.002 (0.69)
Host Positive				0 (0.40)	-0.001 (-0.456)	0 (-0.155)	-0.001 (-0.316)	0.005 (1.41)	0.007 (1.67)
Host Negative				**-0.002 ** (-2.460)**	-0.001 (-0.480)	-0.001 (-0.443)	0 (0.26)	0.004 (1.44)	0.004 (1.02)
Host Academic				0.001 (0.36)	0.004 (0.74)	0.004 (0.64)	-0.001 (-0.770)	-0.001 (-0.321)	-0.002 (-0.469)
Article Word Count			0.001 (0.34)			0 (0.25)			**0.006 *** (4.74)**
Article Positive			0.007 (1.06)			0.002 (0.77)			-0.004 (-0.981)
Article Negative			0.009 (0.80)			0.002 (0.68)			0.001 (0.44)
Article Academic			-0.011 (-1.142)			0 (0.08)			0.002 (0.43)
Constant	**0.293 *** (8.51)**	0.003 (0.06)	0.043 (0.55)	0.008 (0.76)	0.055 (1.41)	**0.087 * (2.02)**	-0.029 (-1.333)	**-0.089 ** (-2.227)**	**-0.094 ** (-2.647)**
N	2982	972	654	2923	953	722	2923	953	810
R2	0.031	0.046	0.058	0.009	0.015	-0.003	0.031	0.059	0.058
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ClusteredSE by Month	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C. CAR[1,30] Regression to Further Investigate the Reversal

	CAR[1,30] All Sample	CAR[1,30] All Sample	CAR[1,30] Unconfounded	CAR[1,30] Unconfounded	CAR[1,30] Unconfounded	CAR[1,30] Unconfounded
LogAge	**0.027 *** **	**0.018 ** **	0.009	0.006	0	0
	(3.31)	**(2.72)**	(0.78)	(0.31)	(-0.027)	(-0.014)
LogMVE	**-0.008 *** **	**-0.009 *** **	-0.007	-0.006	-0.004	-0.005
	(-3.944)	**(-3.517)**	(-1.305)	(-1.091)	(-0.647)	(-0.846)
Turnover	**-0.584 * **	**-2.133 ** **	**-2.35 *** **	**-2.627 ** **	**-2.606 *** **	**-3.26 ** **
	(-1.834)	**(-2.350)**	**(-7.179)**	**(-2.927)**	**(-8.253)**	**(-2.493)**
R&Dmargin	**-0.116 * **	**-0.15 * **	-0.086	**-0.169 * **	-0.044	**-0.148 * **
	(-2.146)	**(-1.863)**	(-1.599)	**(-2.121)**	(-0.932)	**(-2.114)**
PIN		**-0.194 ** **		-0.121		-0.065
		(-2.432)		(-1.045)		(-0.789)
AdMargin	0.001	-0.167	-0.075	-0.044	-0.05	0.053
	(0.02)	(-1.372)	(-0.648)	(-0.256)	(-0.374)	(0.43)
BEME	**0.001 ** **	**0 * **	**0.001 ** **	0	**0.001 * **	0
	(2.28)	**(2.10)**	**(2.79)**	(0.92)	**(1.82)**	(-0.087)
NASDAQ	-0.005	**0.018 * **	0.01	0.022	**0.019 * **	0.03
	(-0.693)	**(1.97)**	(1.02)	(1.15)	**(2.16)**	(1.54)
IMR	-0.141	**-0.402 * **	-0.774	-0.53	-0.806	-1.204
	(-1.152)	**(-2.069)**	(-1.002)	(-0.633)	(-1.050)	(-1.490)
Log(1+Analysts)	**0.011 *** **	0.009	0.012	0.014	0.01	0.012
	(3.88)	(1.66)	(1.75)	(1.31)	(1.52)	(1.29)
Illiquidity	**-5.302 *** **	**-3.101 *** **	**-6.519 *** **	**-4.133 *** **	**-7.191 *** **	**-4.413 *** **
	(-6.070)	**(-4.443)**	**(-6.466)**	**(-4.183)**	**(-6.385)**	**(-3.842)**
1{PennyStock}	**0.093 *** **	**0.064 ** **	**0.104 ** **	0.044	**0.115 ** **	0.029
	(3.75)	**(2.26)**	**(2.88)**	(0.77)	**(2.49)**	(0.46)
1{Recession}	0.008	-0.002	-0.011	**-0.045 * **	-0.011	-0.045
	(0.66)	(-0.080)	(-0.670)	**(-1.843)**	(-0.768)	(-1.692)
VIX	0	0	0.002	**0.002 ** **	0.002	**0.002 ** **
	(-0.132)	(-0.377)	(1.26)	**(2.28)**	(1.52)	**(2.48)**
Sentiment	-0.01	0.005	**-0.034 ** **	0.005	**-0.037 ** **	0.003
	(-1.613)	(0.62)	**(-2.632)**	(0.34)	**(-2.453)**	(0.31)

CEO Word Count	**0.016 *** (4.50)**	**0.012 *** (4.50)**	**0.018 *** (4.06)**	**0.023 ** (2.78)**	**0.021 *** (3.73)**	**0.02 ** (2.72)**
CEO Positive	**-0.009 ** (-2.232)**	-0.003 (-0.811)	-0.01 (-1.232)	0.003 (0.35)	**-0.014 * (-1.929)**	-0.001 (-0.087)
CEO Negative	**0.008 * (1.82)**	**0.013 *** (3.30)**	0.008 (1.26)	0.013 (1.59)	0.001 (0.08)	0.01 (1.09)
CEO Academic	-0.001 (-0.509)	-0.004 (-1.070)	0.005 (1.44)	0.001 (0.24)	0.005 (1.53)	0.001 (0.24)
Host Word Count	0.003 (0.87)	-0.001 (-0.311)	0.007 (1.58)	0.001 (0.14)	0.003 (0.50)	-0.002 (-0.189)
Host Positive	0.005 (1.34)	0 (0.11)	0.008 (1.50)	**0.013 * (1.82)**	0.007 (1.38)	0.013 (1.63)
Host Negative	0.001 (0.39)	-0.002 (-0.640)	0.007 (1.34)	**0.012 ** (2.35)**	0.007 (1.50)	0.011 (1.76)
Host Academic	0.004 (1.17)	0 (-0.006)	0.009 (1.48)	0.007 (1.39)	0.007 (1.18)	0.004 (0.72)
Article Word Count					**0.007 ** (2.28)**	**0.008 ** (2.80)**
Article Positive					-0.003 (-0.397)	-0.008 (-0.694)
Article Negative					**0.009 ** (2.23)**	**0.015 * (1.83)**
Article Academic					0.005 (0.96)	0.006 (0.61)
Constant	-0.095 (-0.613)	**0.152 *** (3.51)**	-0.079 (-1.654)	-0.089 (-0.923)	-0.082 (-1.541)	-0.086 (-0.860)
N	5834	2923	1953	953	1627	810
R2	0.043	0.029	0.067	0.025	0.081	0.024
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
ClusteredSE by Month	Yes	Yes	Yes	Yes	Yes	Yes

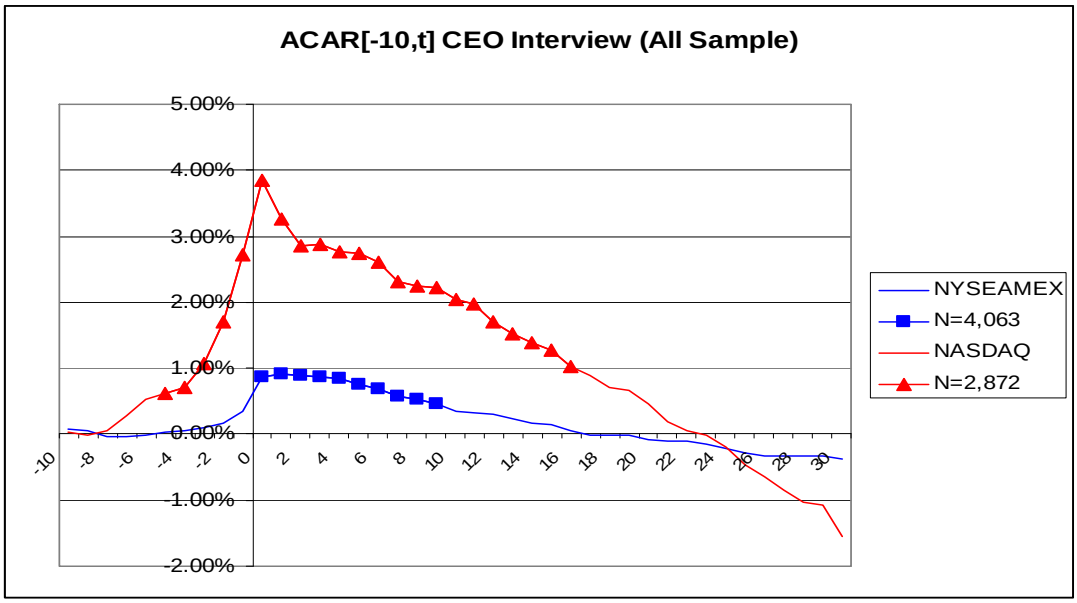
Figure II-I. NASDAQ and NYSE Stock Indices



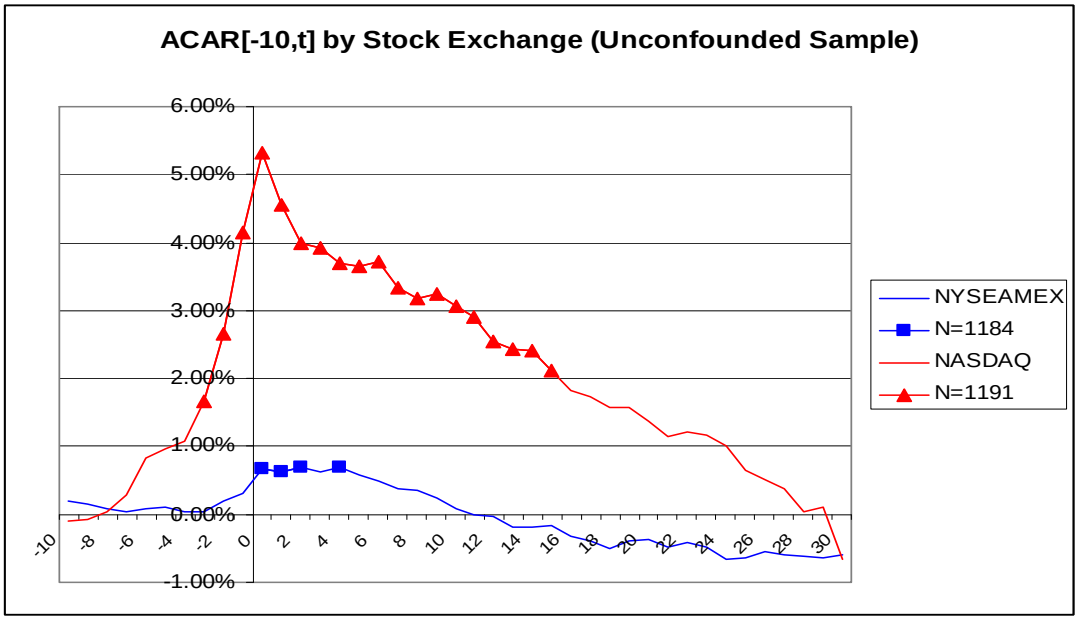
The figure plots the NASDAQ Composite index and the New York Stock Exchange (NYSE) index for the ten years between 1997 and 2006. Both indices are normalized to a value of 100 for the beginning of the sample period by dividing each index value by the index value of the first trading day of 1997 and multiplying it by 100.

Figure II-II. ACAR[-10,t] of CEO Interviews on CNBC by Stock Exchange

Panel A. All Interviews

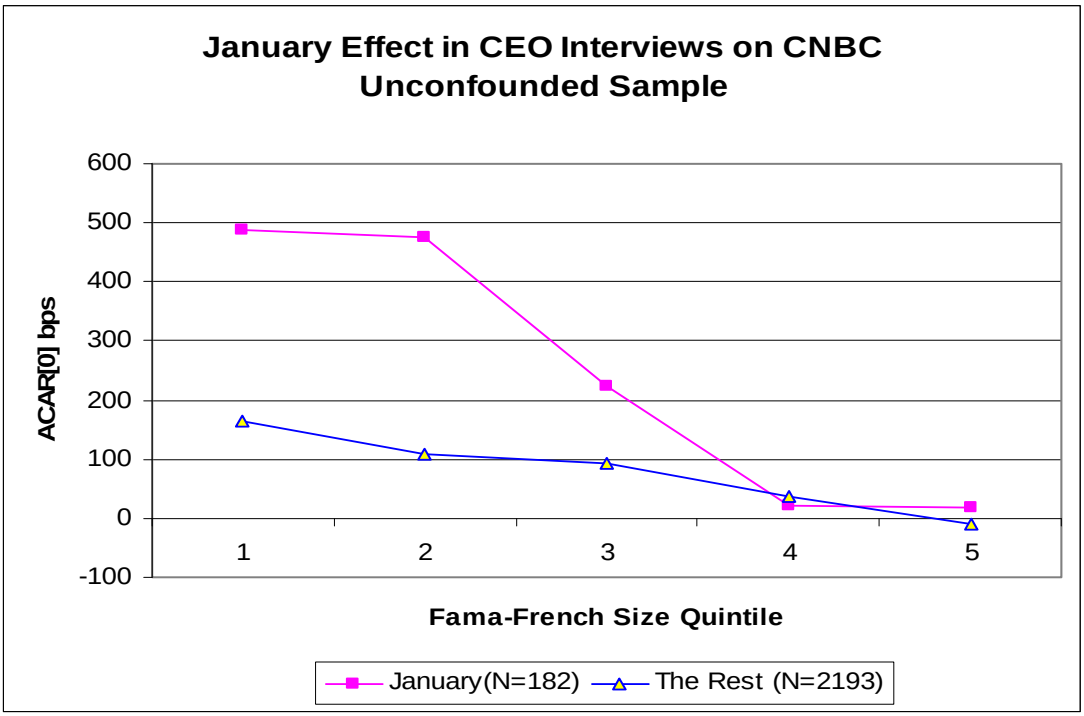


Panel B. Unconfounded Interviews



We accumulate abnormal return from 10th trading day prior to CEO interview to each trading day on the horizontal axis. Therefore, ACAR [-10,t] on t=0 is ACAR [-10,0], and on t=+5 is ACAR [-10,+5]. Blue square dots are the ACARs of NYSE/AMEX stocks that are statistically significant with the absolute value of t-stat by Boehmer, Musumeci, and Poulsen (1992) is greater than or equal to 1.96. Red triangle dots are the ACARs of NASDAQ stocks that are statistically significant. If the ACAR [-10,t] is not significant, we do not display with any dots. Number of observations for NYSE/AMEX stocks is 4,063 for all interviews, and 1,184 for unconfounded interviews. The number of observations for NASDAQ stocks is 2,872 for all interviews, and 1,191 for unconfounded interviews. We use Carhart 4 factor model as an asset pricing model (Market, size, book-to-market, and momentum). We estimate the betas over the window of [-150, -31] trading days before the event.

Figure II-III. January Effect in CEO interviews on CNBC
Panel A.



Panel B.

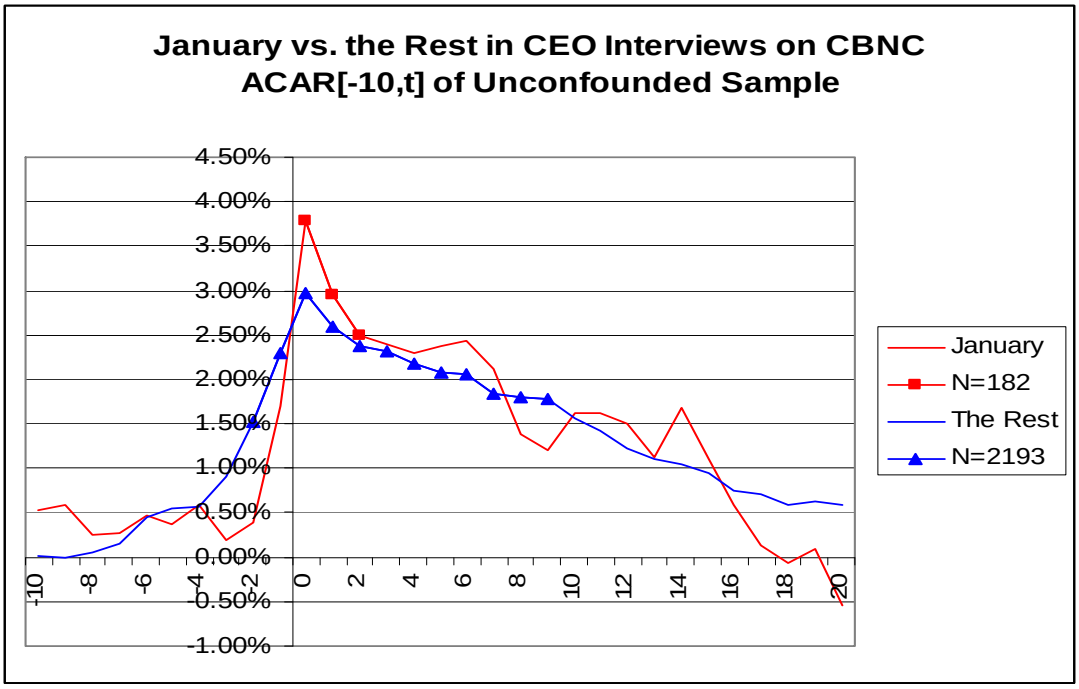
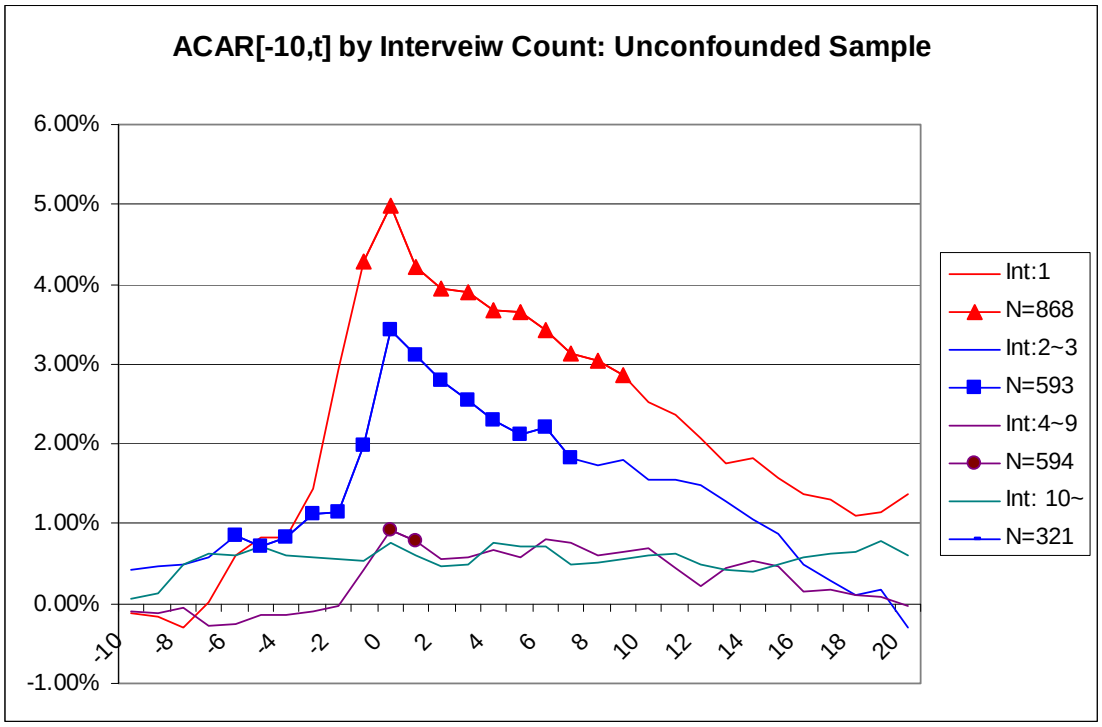
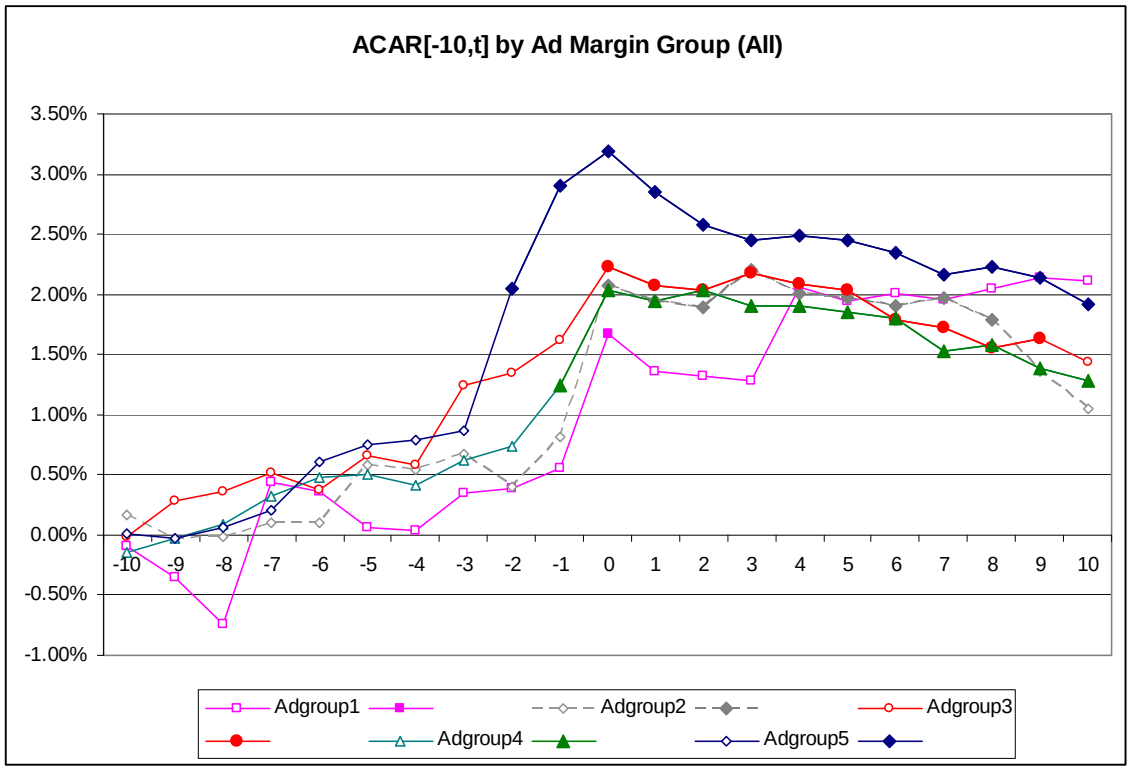


Figure II-IV. Diminishing Marginal Impact of Media Attention on Stock Price
Unconfounded Sample



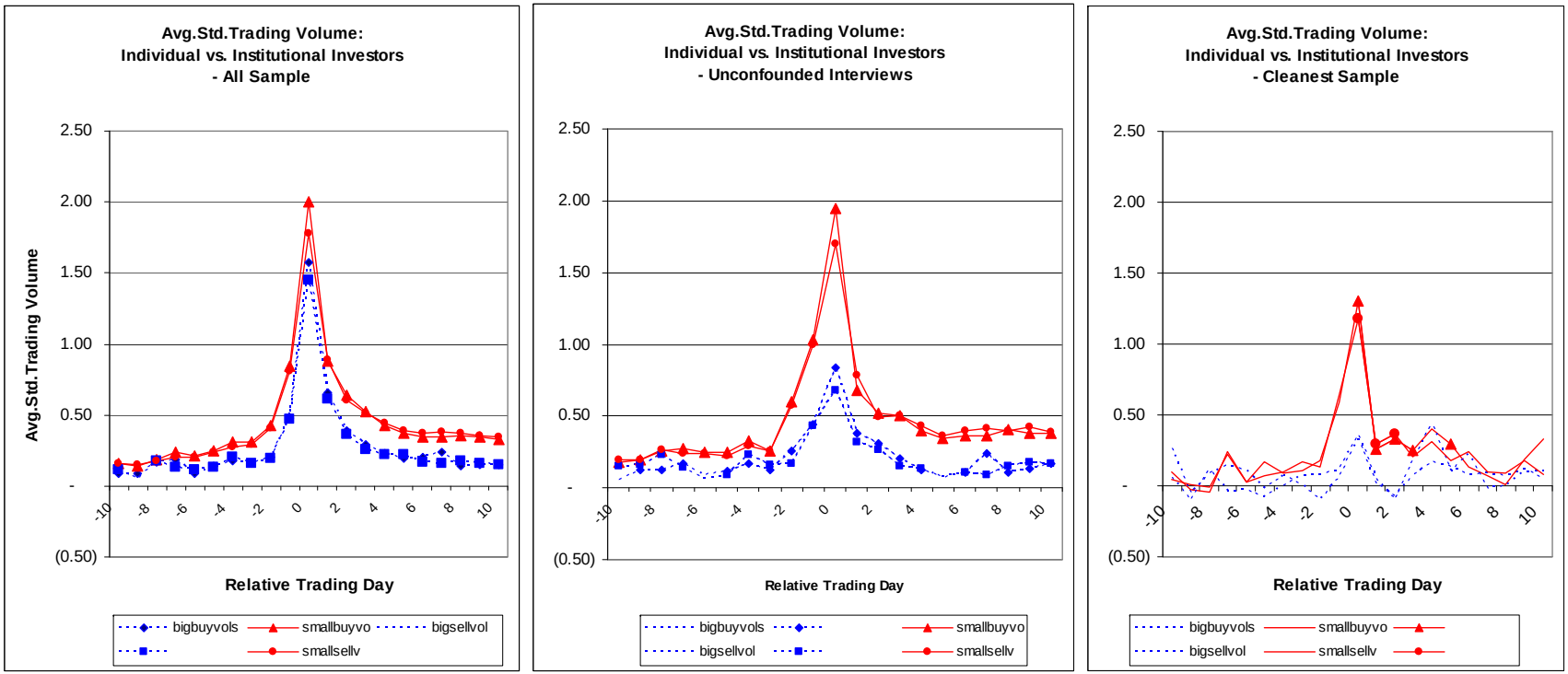
Int:1 refers to the sample of first-time interviewers. Int:2~3 refers to the sample of second- and third-timers. Int:4~9 refers to the sample of 4^{th}~9^{th} interviews for the same CEOs. Int:10~ refers to the sample of 10^{th} or more interviews for the same CEOs.

Figure II-V. Individual Investors and Stock Price Response to Media Attention
Event study by Advertisement Margin Quintile



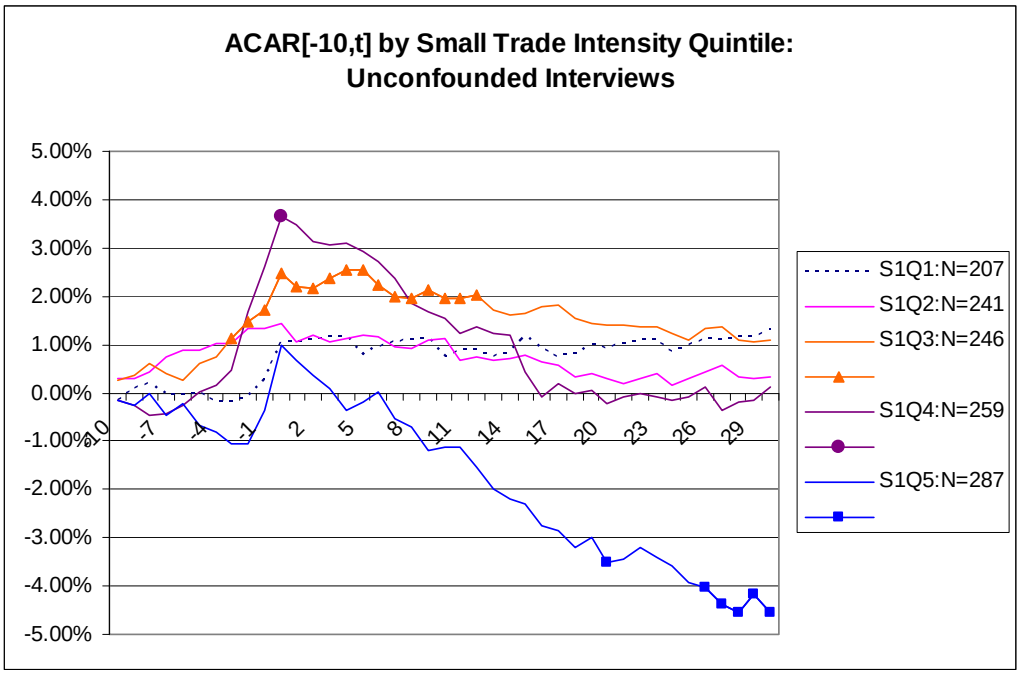
"Adgroup N" refers to the Nth quintile of the advertisement margin by the Compustat universe at the end of the fiscal year prior to the interview. The hollow dots are insignificant ACARs, whereas the color-filled dots are statistically significant ACARs with t-stats by BMPs greater than 1.96.

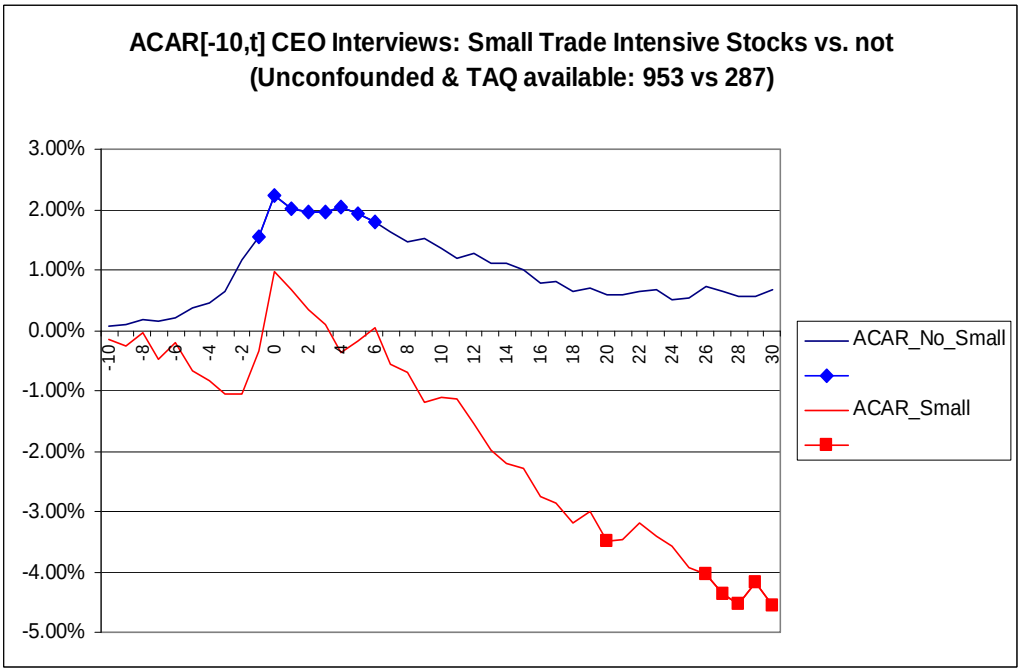
Figure II-VI. Abnormal Trading Volume by Trade Size Group for Different Samples



Average standardized trading volume is presented with color-filled dots if it is statistically significant (t-stat >= 1.96), and is not dotted otherwise. The average standardized trading volumes of buys and sells of large-sized trades are represented by blue-dashed lines, whereas those of small-sized trades (individual investors) are represented by red-solid lines. We followed Griffin, Harris, and Topaloglu (2003) in classifying the trades into small- (<= 500 shares), medium-, and large- (> 10,000 shares) sized groups. The medium-sized trade group was omitted here, but is available in the technical appendix at the authors' website. It is largely the same as the small-sized trade group..

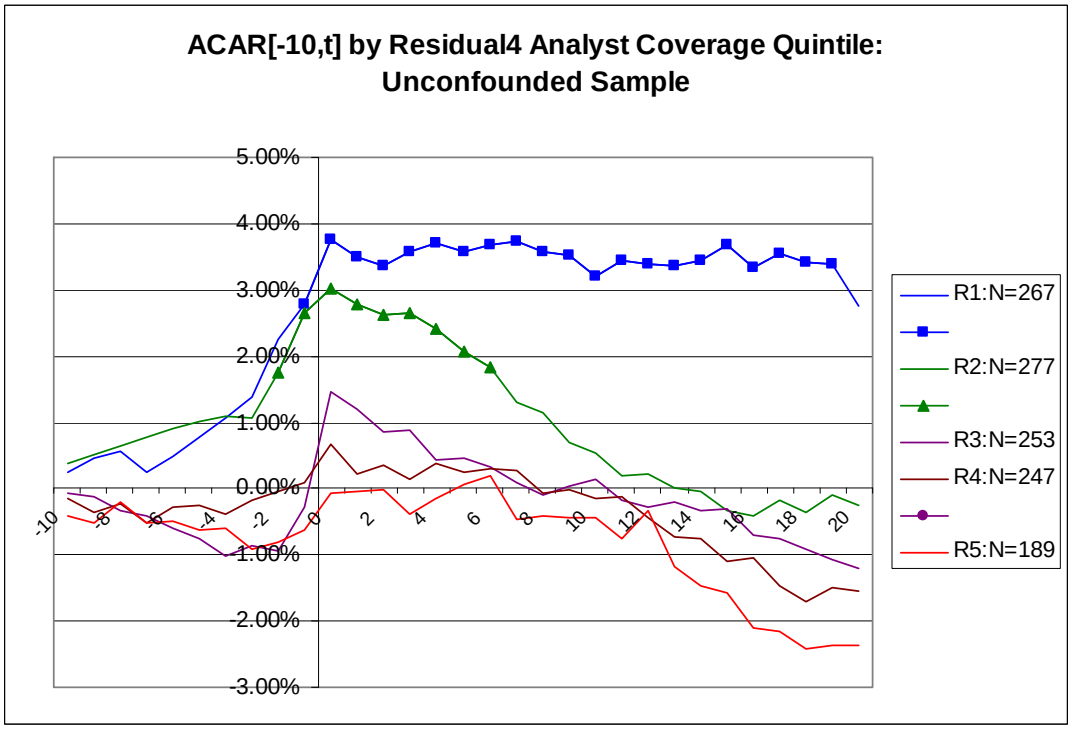
Figure II-VII. Intensity of Individual Trades and Stock Price Response to CEO Interviews on CNBC





Red dots are the CARs[-10,t] of the highest quintile of small trades over the estimation window of [-80,-10] trading days prior to the CEO interview. We followed Barber, Odean, and Zhu (2008) in classifying each trade into five different size groups, by dollar volume.

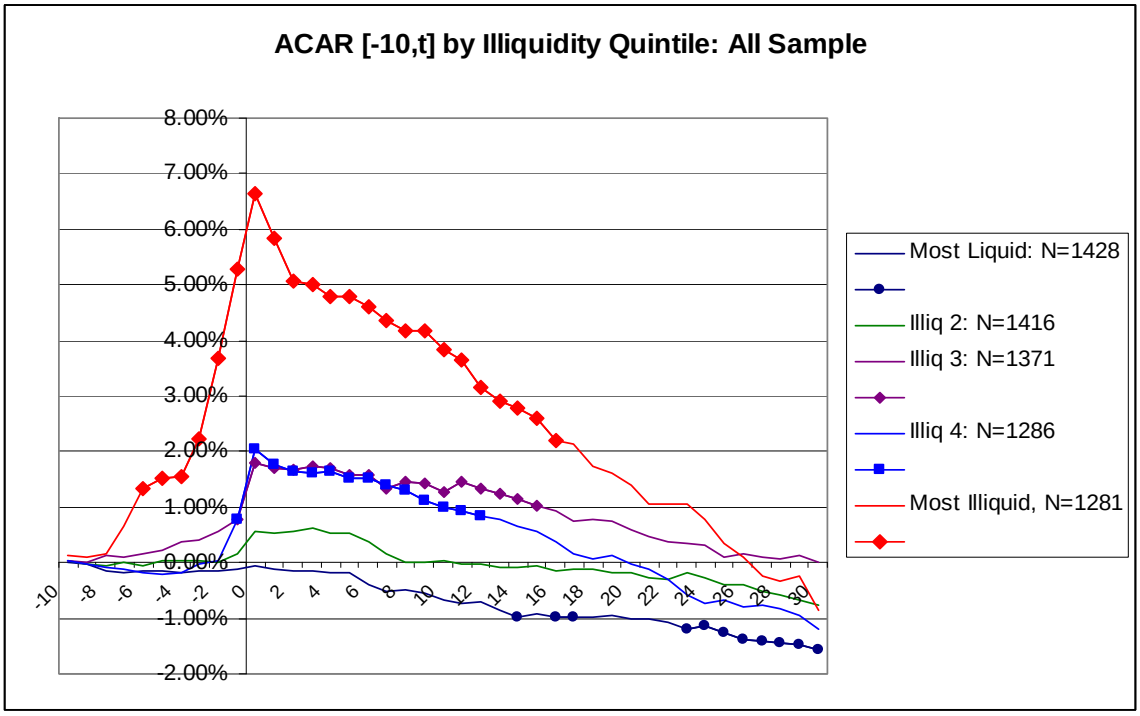
Figure II-VIII. Do CEO Interviews Increase Investor Awareness for Relatively Less-Known Firms?



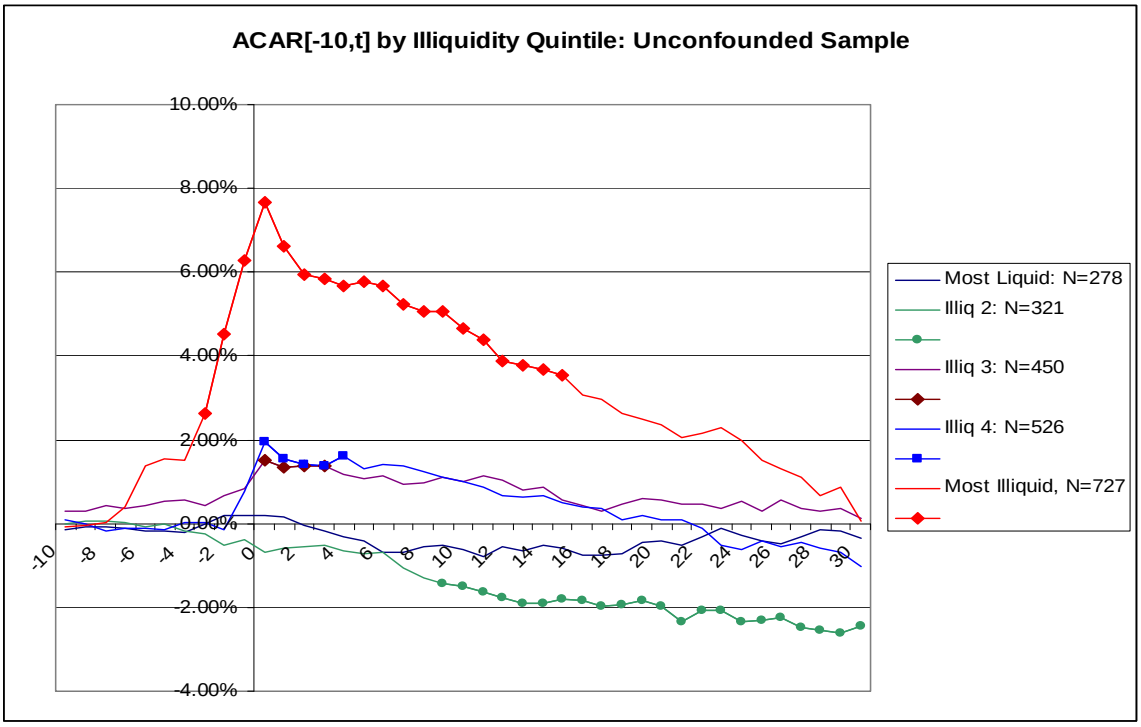
Statistically significant (t-BMP >= 1.96) ACAR[-10,t] is represented with color filled dots. Blue dots on top represents the lowest residual anlayst coverage stocks. Green dots with the second highest response represents the second lowest residual analyst coverage stocks. Orange line with the loest response represents the highest residual analyst coverage stocks.

Figure II-IX. Is the Result Driven by Liquidity?

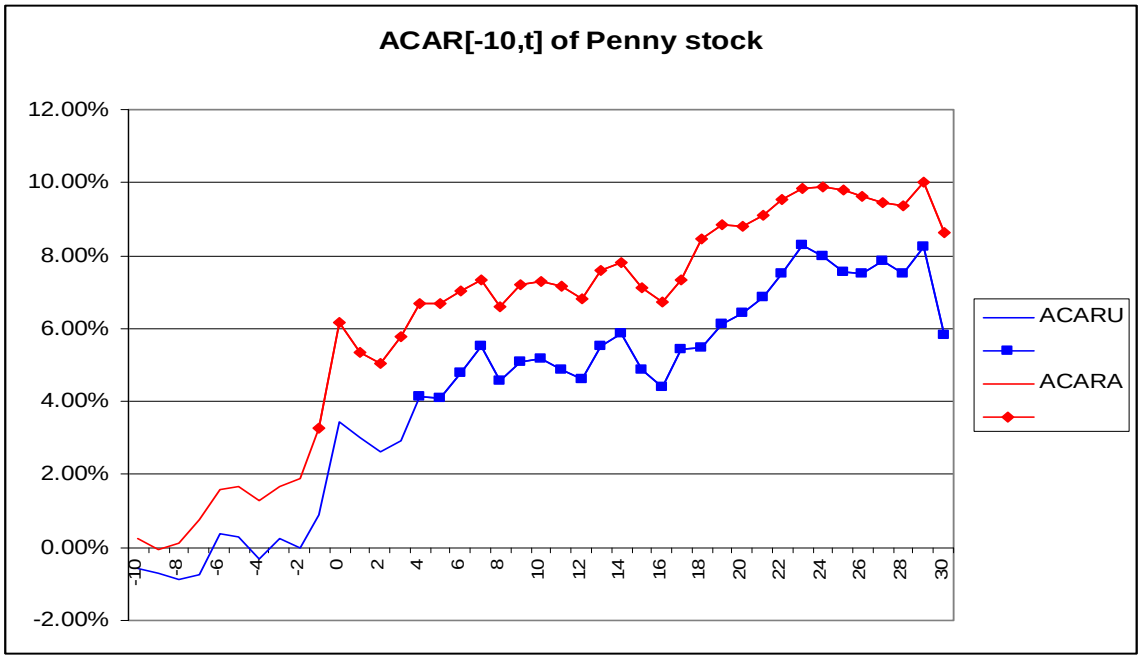
Panel A. Event Study by Illiquidity Quintile: The Entire sample



Panel B. Event Study by Illiquidity Quintile: Unconfounded Sample



Panel C. Event Study of Penny Stock: The Entire Sample and Unconfounded Sample



ACARU is ACAR of unconfounded sample, and ACARA is ACAR of all (entire) sample.

Chapter III . Are the Skills of CFOs Priced in the Financial as well as Labor Markets?

III.1. Introduction

Are the skills of a top manager reflected in the stock price? If so, is the reflection consistent with the compensation gap in the labor market due to these skill differences? Can we identify what aspect of the firm value is affected by the manager's skills? Ever since the seminal paper by Bertrand and Schoar (2003), researchers have found supporting evidence that managers are not just a homogenous input in the production function of the firm. Instead, they have found that managers' unique characteristics affect various financial decisions in a significant and persistent manner. As long as the human capital (broadly labeled "style") of executives in top management affects the key decision making of the firm in a systematic manner, what characteristics are important and how do they affect the stock price of the firm? Chang, Dasgupta, and Hillary (2008) find that the CEO's reputation – a component of human capital proxied by the past performance of the firm – is reflected in the stock price of the firm. In this paper, we examine whether specific skills of a manager in the top management team, which is another dimension of human capital, is reflected in the stock price of the firm. We focus on financial accounting skills that can be easily identified with a Certified Public Accountant (CPA) license of Chief Financial Officers. We find that a manager's skills are priced in the financial market. More specifically, we find that when a CPA licensed CFO is replaced with a non-CPA licensed CFO, the firm's loss of the higher skill level results in a significantly lower cumulative abnormal return than the CFO transition from a CPA licensed CFO to another CPA licensed CFO.

As a response to the unprecedented number and magnitude of corporate accounting scandals, such as Enron and WorldCom, Congress enacted Sarbanes Oxley Act of 2002 (SOX) to enhance corporate accountability and accounting transparency. More specifically, Section 302 of

SOX specified that both the CEO and CFO should certify for accuracy and completeness each quarterly and annual accounting report of the financial information released by the firm. In the case of false certification, the CEO and the CFO can be criminally prosecuted by the Department of Justice. The regulation change obviously increased the demand for CFOs with accounting expertise (O'Sullivan 2004). However, according to Geiger (2003), only 20 percent of CFOs in Fortune 500 firms (the largest 500 firms in the United States) had CPA licenses in 2002. This rather exogenous change in regulations gives us a convenient natural experiment setting to test whether the reflection of CPA skills in the stock price significantly changed. After an exogenous demand increase for CPA designated CFOs, the cumulative abnormal return for forced CFO transitions from non-CPA CFOs to CPA CFOs results in a significantly higher abnormal return relative to voluntary CFO transitions from CPA CFO to another CPA CFO.

One natural question is whether such reflection of the CFOs' skills is consistently manifested throughout the labor market as well as the financial market. For a small sample of firms with CFO compensation data available, we find that the compensation to book value of assets is 42% higher for a CPA licensed CFO than a non-CPA CFO. The next natural question is whether institutional investors significantly affect the hiring of managers with a certain skills. To the extent that CPA works as a certification of the quality of the CFO, MBA is another often used as a proxy for the skill level of the financial chief of the firm (Frank and Goyal, 2006). We find that institutional investors favored MBA CFOs over CPA CFOs during the dotcom bubble period. We also find that such institutional investors' preference switched from MBA CFOs to CPA CFO after SOX due to the more intense regulatory demand on financial reporting. As long as a firm's stock price is affected by the skills of the manager, the latter should affect the former either by influencing the cash flow or discount rate of the firm. Due to the nature of CFO tasks, which are more related to the capital markets than to the operation of the firm, we investigate the discount

rate channel. More specifically, we find that CFOs with a CPA license reduce information asymmetry of the firm, which in turn would reduce the expected return (Easley and O'Hara, 2002).

One legitimate question is why economists have to care about studying CFO data instead of CEO data. First, the skills needed in the job description of a CFO is easier to identify than that needed for the job description of a CEO. Mian (2001) documents that the primary responsibility of a CFO is to design and implement the financial policies of the firm. Thus, the portion of one skill needed for the position out of the total human capital of the manager is larger for the CFO than for the CEO. Second, the new regulatory regime of SOX that was specifically targeted at improving the firm's internal control of financial reporting system provides a natural experiment setting where the value of the financial accounting skills of the manager may be assessed differently by the investors in the stock market. Third, for the financial reporting responsibility of a CFO, a CPA skill license is available, which is easily identifiable using empirical testing. The certification requires passing a four-part written exam, administered by the American Institute of Certified Public Accountant (AICPA), covers the following subjects: (1) financial accounting and reporting; (2) business environment and concepts; (3) regulations; and (4) auditing and attestation. Considering the fact that most of the time people acquire their CPA license early in their careers rather than later, it is difficult to argue that the acquisition of the CPA license for a person is determined by the past performance of the firm for which he or she works. In contrast, most other managerial skills are not clearly identifiable because the managers accumulate their skills throughout their careers within and outside of the firm. Therefore, the skills, as an explanatory variable for the stock price response to the departure announcement, may be endogenous as long as both are influenced by firm's past performance. The CPA license for a CFO position is relatively free from such endogeneity concerns.

The paper proceeds as follows. We develop hypotheses in Section II. We describe the data in Section III, and run an event study followed by cumulative abnormal return (CAR) regressions to determine the reflection of skills in stock prices in Section IV. Then we investigate how CPA skilled CFOs receive better compensation than non-CPA CFOs in Section V. In Section VI, we investigate what influences the hiring of CPA CFOs, and test whether they reduce information asymmetry of the firm. We conclude in Section VII.

III.2. Hypotheses Development

The new regulation of SOX requires that the CFO personally certify the disclosure/internal controls and the material accuracy and completeness of their firm's financial statements, which increased the demand for CFOs with superior expert knowledge in accounting. Thus, replacing managers from CPA licensed CFOs to non-CPA licensed CFOs would be valued lower by investors in the stock market, because the firm's overall human capital decreased by as much as the value attributable to the CPA level accounting skills. Conversely, replacing a manager from a non-CPA licensed CFO to a CPA licensed one would be valued higher by investors in the stock market, because the firm's overall human capital increased by as much as the value of the skill level represented by the CPA designation. Of course, firm-specific knowledge of the incumbent manager would magnify the value loss whereas the lack of firm-specific knowledge of the appointed manager would shrink the value gain. Therefore, such incremental human capital coming from the gap in firm-specific knowledge would bias the results to zero when a non-CPA licensed CFO is replaced by a CPA licensed CFO. On the other hand, the value difference coming from the gap in organizational knowledge between the incumbent CFO vs. replacement CFO would bias towards finding the result when a CPA licensed CFO is replaced by a non-CPA licensed CFO from inside. In addition, such value gain and loss to the firm associated with the skill level of the departing and arriving CFO would be magnified if an exogenous shock in regulation, such as SOX, increases the demand for the specific skill in the labor market.

Other things being equal, our general predictions are as follows: (1) investors' response became less (more) favorable to the departure of a CPA licensed (a non-CPA licensed) manager after SOX; (2) investors' response became more favorable (negative) to a CFO replacement with (without) a CPA licensed manager after SOX. However, the favorable response to the arrival of a

CPA CFO would be less apparent, because of the uncertainty about the new financial strategy that the new manager would bring to the firm and about whether the new manager would successfully adapt to the position and the firm.

Hypothesis 1.

When the departing CFO has a CPA license, the investors' response would be more negative after SOX, ceteris paribus. In addition, when the arriving CFO has a CPA license, the investor's response would be more positive after SOX, other things being equal.

Once we test whether the value gain or loss of the firm by the arrival and departure of a skilled CFO is priced in the financial market, we move on to test whether the skill difference is priced consistently in the labor market. Chang, Dasgupta, and Hillary (2008) find that the reputation of the CEO is priced in the financial market and is consistently priced in the labor market. We hypothesize that the labor market reflects the difference in skill level represented by a CPA license by giving a higher salary to the CPA CFO.

Hypothesis 2.

CPA CFOs receive higher salaries than non-CPA CFOs in the labor market.

We further investigate what aspects of the firm value are affected by having a CPA CFO as opposed to a non-CPA CFO. As long as the price of the firm is affected, the impact of CPA CFO on value should occur via either a cash flow channel or discount rate channel. Since the CFO's function is non-operating, but more of a support function by working in the capital market, we investigate the discount rate channel. Easley and O'Hara (2004) find that the degree of information asymmetry is positively correlated with the expected return due to the adverse selection problem between informed traders and uninformed traders. One way that CPA CFOs

could contribute to the value of the firm would be to reduce the information asymmetry by providing better quality financial reports and communicating to the investors better, thus leveraging their superior expert knowledge in financial accounting rules.

Hypothesis 3.

A transition from a non-CPA CFO to a CPA CFO reduces the degree of information asymmetry.

Earnings management increases information asymmetry as long as the financial report distorts the true picture of a firm (Yu, 2009). When top management has been managing large amounts of their earnings to smooth out their financial performance, the board of directors may want to hire a CFO with better accounting qualifications (CPA) to reduce earnings management and improve the information environment. Thus, we hypothesize the following:

Hypothesis 4.

The probability of hiring a CPA CFO would be positively correlated with the amount of earnings management prior to a turnover.

III.3. Data

We hand collected 2,270 CFO departures from 1981 to 2006 from Factiva[10]. Unlike the usual turnover studies in recent days that focus on the firms in Execucomp, which include the largest 1,500 listed firms in the U.S. stock market out of over 7,000 firms in each year, we hand collected the data from a Factiva article search using generic key words such as "CFO resigned, retired, or forced out." Consequently, the size distribution of our sample, as shown in Panel A of Table I, is closer to that of CRSP-Compustat universe, which enables us to stay away from the size bias. One may argue that the relative size of the human capital of the manager to the size of the total firm assets is so miniscule that it would be impossible to observe a significant difference in abnormal return depending on the skills of a manager because it may be swamped by other noises surrounding the event. However, our sample firms are not concentrated on larger firms, which makes it easy to observe the impact of the manager's skills on the stock price relatively clear of the noises.

For each collected announcement of CFO departures, we classify the departure event as forced or voluntary, following Parrino (1997), which is commonly followed by Jenter and Kanaan (2008) and Kaplan and Minton (2006). We also classify whether the outgoing manager is replaced with a permanent replacement manager or an interim manager or with no manager. As can be seen from the breakdown by replacement force, as much as 20% of the departures take place without even appointing an interim (acting) manager. Although all of these firms eventually announce either an interim manager or permanent manager to fill the position, the duration of having no manager in place is unknown at this stage. One may argue that no-replacement cases may be closer to having an interim manager. However, in a series of event studies of the "permanent replacement," "interim manager," and "no replacement" groups, we

[10] These numbers exclude firms in the utility sector and financial sector.

find a clear distinction between interim manager replacement and no replacement, whereas we do not find such a distinction between a permanent replacement and an interim manager. At least, having no replacement manager surprises the market the most, and taking it at the face value, the situation is relatively better for capturing the loss of the human capital of the departing manager. This is because stock price responses to the other cases ("permanent replacement," and "interim manager") should always be understood as the interaction between the human capital of the arriving manager and that of the departing manager, which complicates the analysis. In addition, since we strictly base our classification on the facts announced in the articles on the day of the departures, the classification rule is free from the subjective judgment of the researcher.

For each departure observation, we determine whether the departing CFO has a CPA designation or MBA degree by investigating the Factiva news article search, EDGAR SEC filings of DEF 14 A, and 10-K. Furthermore, for the cases where replacement managers are appointed simultaneously as either an interim manager or permanent manager, we collect their background information about whether they have a CPA license or an MBA. We take a Master's in Accounting or Master of Science in finance, or Master's in Taxation as being the same as an MBA, because these degrees serve the purpose of enhancing the financial accounting skills of a manager to become a high level executive.

Summary statistics are shown in Panel D of Table III-I. Twenty five point six percent of departing CFOs possess a CPA license. Twenty six point three percent of the departing CFOs have an MBA degree. All in all, 41.8% of the departing CFOs have either a CPA license or MBA, and 10% of the CFOs have both CPA and MBA.

One may question whether firms became more likely to fill the CFO position with a CPA designated person after SOX. A simple t-test suggests that the answer is yes with the t-statistic of

2.36. Our findings show that 32.5% of the newly appointed CFOs after SOX had a CPA license, whereas 27.4% of the newly appointed CFOs before SOX had a CPA license[11]. This supports the argument that the demand for a financial chief with licensed financial accounting reporting skills has exogenously increased after SOX because of the strengthened financial reporting requirements.

The past 24 months' mean buy and hold return of the stock prior to departure is 19% for the CFO sample. This suggests that the departure of the CFOs is more likely to be promotional, because the CFO position is junior to the CEO or other top management positions for some firms. Moreover, the past 24 months' performance prior to CFO departure was only 9.8% before SOX, but the same measure is 30.2% after SOX. The difference in mean 2 year performance before and after SOX is statistically significant with a t-value of 2.9. This suggests that the promotion of high ability CFOs by being scouted by other firms became more prevalent after SOX.

In Panel E of Table III-I, we investigate whether there is a significant difference between before and after SOX for each variable by the subsample. Idiosyncratic volatility levels are significantly lower for the after SOX subsample, which may be attributable to the drastic decrease in market-wide volatility after 2001. The average spread level also decreased after SOX. This may suggest that there is an improved information environment after SOX due to enhanced transparency, or to improved liquidity in the market overall with decimalization. The result for the CFO subsample suggests that after SOX, more CFOs are leaving with significantly better prior performance than before SOX. This may suggest that CFOs are now finding better career

[11] These numbers are different from what is reported in Table I, because the numbers in Table I are based on the total departure observations, not the observations accompanied by an appointment of interim or permanent replacement manager.

prospects with more promotions outside due to the regulation change. Correlation table is provided in Panel F.

A nontrivial empirical detail that was not previously discussed in the literature is that more than 20% of the departure announcements say "no replacement is announced." We find that 32% of the departures announce an appointment of an interim manager, and that only the remaining 48% name a permanent replacement (Panel B of Table III-I). Therefore, a substantial number of observations that do not have a replacement manager gives us a nice testing ground for measuring the loss of human capital more precisely than any of the other two cases.

III. 4. Results

III.4.A. Event study

We split the event windows into three different ways to capture (1) information leakage; (2) investor responses to announcements; and (3) post announcement drift. The first group of event windows are [-10,-2], [-1,+1], [+2,+30], and [+2,+60] trading days; and the second group of event windows are (3) [-10,-1], [0], [+1,+30], and, [+1,+60] trading days. We split the CFO turnover sample into 16 subsamples (event time portfolios). First, the whole CFO departure sample is split into two subgroups according to whether the departing CFO was a CPA or not. Then each subgroup is further subdivided into three groups depending on the following criteria: (1) the replacement CFO was a CPA; and (2) the replacement CFO was not a CPA. Although 20% of turnovers take place without a replacement manager being appointed, we remove these observations in the event study, because the point of comparison is between the CFOs who are CPAs versus the CFOs who are not. Then, each of the four subgroups is further

divided according to whether the departure was forced or voluntary following the classification by Parrino (1997)[12]. Each of the eight subgroups is finally subdivided according to whether the announcement of the departure took place before SOX (2002) or after SOX. In order to control for the event induced volatility and cross-sectional correlation, we use the t-statistics by Boehmer, Musumeci, and Poulsen (1991).

The event study result is shown in Table III-II. Given that the incumbent CFO had a CPA designation, the investor response was more negative when the replacement CFO was not a CPA than when the replacement CFO was a CPA after SOX. When a CPA CFO was forced out after SOX, the CAR [-1, +1] was -0.65% (t-stat=0.07, N=11) when replaced by another CPA CFO, and -3.47% (t-stat=1.75, N=24) when replaced by a non-CPA CFO. When the departure of the CPA CFO was voluntary, the ACAR [-1, +1] is 0.06% (t-stat=0.17, N=76) when replaced by another CPA CFO, and -1.15% (t-stat=2.30, N=114) when replaced by non-CPA CFO. Although the statistical significance by t-statistics are maximum 2.3 because of the small number of observations, the economic magnitude of value loss is larger when the CPA CFO leaves the firm and not replaced by another CPA CFO. This evidence supports that after SOX, investors prefer a replacement CFO who is also a CPA to a CFO who is not a CPA, and they prefer a CFO who is not a CPA to no replacement.

[12] A departure is classified as forced if the article states that the manager was ”fired,,“ ”forced out,,“ or ”ousted,“ or that the manager resigned due to policy differences with the board members or due to a fight with the board members. When the manager under the age of 60 resigned or retired, we classify the event as forced turnover if the reason for departure is not health or death or being scouted by a different publicly listed firm or if the reason is not disclosed.

When a CPA CFO was forced out and replaced by another CPA CFO, the investors' response was negative before SOX, but not after SOX. Before SOX, the ACAR [0] was -4.23% (t-stat=1.95, N=20), and the ACAR [+1,+60] was -16.97% (t-stat=2.21, N=19), whereas the ACAR[0] was +1.27% (t-stat=0.82, N=11), ACAR [+1,+60] was -8.92% (t-stat=1.13, N=11) after SOX. Moreover, when a CPA CFO was voluntarily replaced with a CPA CFO before SOX, investors responded negatively on the day of the announcement, followed by a positive response within the post-event window. In contrast, such a transition did not receive any negative investor response on the day of the announcement, and yet was still followed by a marginally positive response within the post-event window. The ACAR [-1,+1] of a voluntary transition from a CPA CFO to another CPA CFO was -4.12% (t-stat=2.92, N=66) and the ACAR [+2,+60] was +13.86% (t-stat=1.95, N=65) before SOX, but the ACARs over the same event windows were +0.06% (t-stat=0.17, N=76) and 9.69% (t-stat=2.40, N=75), respectively, after SOX. These results suggest several points. First, the investors favor the smooth transition from a skilled financial manager to another skilled financial manager with a somewhat delayed response. The initial response of -4.12% followed by the subsequent reversal of +13.86% gives a net value of 9.74% positive return before SOX, which is surprisingly close to the 9.96% post announcement drift after SOX. Second, the investors were usually overly stunned by a voluntary departure of a CFO before SOX even if the transition was from a CPA CFO to another CPA CFO. Anecdotal evidence suggests that a voluntary departure of a CFO is usually taken as a negative event due to investors' presumption that hidden negative information of the firm triggered the departure event, because the CFO knows the most important private financial information of the firm. However, this short-term

overreaction by investors about a potential adverse selection has largely disappeared after SOX, as long as the transition is from CPA CFO to CPA CFO. Instead, investors respond quite positively over the sixty trading day horizon. It may be that the investors' initial worries about a potential adverse selection by the departing CFO is largely taken care of by the arrival of another CPA CFO. It may also be that hiring a CPA CFO has a certification effect indicating that the financial reporting of the firm is strong enough.

Contrary to the transition from one CPA CFO to another CPA CFO that gives a delayed positive bounce back, the transition from a CPA CFO to a non-CPA CFO results in a permanent loss of value after SOX. The ACAR [-1, +1] is 1.15% (t-stat=2.30, N=114), and it is not followed by any reversal in the post-event window. This strongly suggests that the difference in skill level of the CFO is priced in the stock market. The delayed response, as opposed to the immediate response may be due to the initial uncertainty about the new CFO, such as his or her new financial policy.

The CFO transition from non-CPA CFO to either a CPA CFO or non-CPA CFO largely supports the skill recognition argument. A forced turover replaced by a CPA CFO gave a marginally positive delayed stock price response of 5.20% ACAR [+1, +60] (t-stat=1.68, N=25) after SOX, while the same event gave a -4.19% ACAR [+1,+60] (t-stat=0.21, N=24) before SOX. While a forced replacement of a non-CPA CFO with a CPA CFO after SOX gives no significant abnormal return, the a forced replacement of a non-CPA CFO with a non-CPA CFO after SOX gives -1.92% ACAR [-1,+1] (t-stat=2.50, N=56). The difference should be largely attributable to the skill difference between the departing CFO and the arriving CFO.

The event study result of the voluntary replacement of a non-CPA CFO with either a non-CPA CFO or a CPA CFO is largely mixed, partially because many other factors such as the human capital of the departing CFO and firm characteristics affect the results. Therefore, we are able to draw a more complete picture when we run CAR regressions.

III. 4.B. CAR Regressions

In order to better investigate the stock price impact of CFO transition patterns, we run multiple regressions that use the cumulative abnormal returns over event windows as the dependent variables and the dummy variables that represent each kind of transition as the explanatory variable. There are six different kinds of CFO transitions. Since the announced events are the departures of CFOs, the departing CFOs may or may not have CPA licenses. The firm may or may not appoint a CFO, and the newly appointed CFO may or may not have a CPA license. Thus, the combination of the two different kinds of departing CFOs and three different kinds of new CFO appointments, we have six different transition outcomes, five of which are represented by dummy variables[13]. The default transition outcome is the transition from a CPA CFO to another CPA CFO, whose dummy variable is omitted to avoid the dummy variable trap. However, we exclude the

[13] We intentionally do not classify into whether the CFO was replaced by insider or outsider. Although the literature has been trying to argue that more disciplinary turnover is done with outside replacement (Parrino 1997), it is awfully hard to clearly distinguish whether a replacement CFO is truly an outsider or an insider. Although the literature has treated the manager who joined the firm within one year prior to the departure announcement as an outsider, many of such outsiders had actually worked for the same firm a handful years before, or are closely tied to the management via family. Sometimes, they have been serving as a financial consultant or auditor of the firm for a long time, which makes it doubtful about their classification as real "outsiders." Besides, the event study evidence about outside replacement in the literature is largely mixed.

events where no succeeding CFOs are appointed, because the potential finding that a loss of human capital is recognized significantly when there is nobody succeeding the position is not surprising and is out of the scope for this paper. Yet, selecting only the observations that have four different transition outcomes out of six can suffer from selection bias. Therefore, in an unreported regression, we run the Heckman selection model, but we fail to find significant selection bias. The coefficient of the inverse Mills' ratio is not significant at the conventional (10%) significance level. Therefore, we move ahead with the observations of four transition outcomes: (1) from CPA CFO to CPA CFO, (2) from CPA CFO to non-CPA CFO, (3) from non CPA CFO to CPA CFO, and (4) from non-CPA CFO to non-CPA CFO). For each outcome dummy we interact with the After SOX dummy and Forced Departure dummy as well as the three-way interaction of After SOX and Forced Departure.

In panel A, of Table III-III, we run regressions using two dimension clustered standard error by Petersen (2008) where the standard errors are clustered by firm and year to control for the firm specific correlation and year specific cross correlation among the residuals. The default CFO transition is from a CPA CFO to another CPA CFO. First, we find that investors welcome the announcement of a CFO transition from a CPA CFO to another CPA CFO after SOX, reflecting the increased awareness of the importance in having a CFO with financial accounting expertise after the passage of the regulation and the massive accounting fraud cases in 2001. The coefficient of the After SOX dummy variable is 0.025 (t-stat = 2.82) in CAR[0] regression, which states that the transition from a CPA CFO to another CPA CFO is met with a 2.5 percentage point higher CAR[0].

However, welcoming the announcement of a CFO after SOX is rather transitory. Over the coefficient of the same SOX dummy variable in the CAR [-10, +60] is insignificant.

We next find that the stock price response is negative when a CPA CFO is forced out and replaced by another CPA CFO. Firing a CPA CFO sends out such a negative signal to the market that over the [-10,-60] horizon, the CAR is likely to go down by as much as 30.2% (t-stat=2.38). Furthermore, the investor selling due to the firing comes rather slowly. Only the post announcement drift (CAR[2,60]) is negatively affected significantly. Most important for our paper is that investors' response is significantly negative over the [-10, +60] horizon when a CPA CFO is replaced by a non-CPA CFO as opposed to when a CPA CFO is replaced by a CPA CFO. On the day of such a transition, the investor response is significantly more positive than the response to the transition from a CPA CFO to another CPA CFO. The coefficient of the dummy for a transition from a CPA CFO to a non-CPA CFO is 0.026 (t-stat=2.40) for CAR [-1, +1] regression, which states that the response is 2.6 percentage point higher. However, after SOX, a CPA CFO to non-CPA CFO transition received significantly more negative investor response than a CPA CFO to CPA CFO transition. The coefficient of the interaction between the transition from a CPA CFO to a non-CPA CFO and the after SOX dummy is -0.031 (t-stat=-4.48), which states that the investor response is 3.1 percentage points lower after SOX. Interestingly, the value loss is not permanent, but rather transitory, because the coefficients of the same explanatory variable are not significant for CAR [-10, +60] and CAR [+2, +60].

A non-CPA CFO to CPA CFO transition is welcomed significantly more than a CPA CFO to CPA CFO transition after SOX only when the incumbent CFO is being forced out. The coefficient of the triple interaction among the transition dummy from a non-CPA CFO to a CPA CFO and after SOX dummy and the dummy for forced turnover is 0.144 (t-stat=2.05) for CAR [-10, +60] regression, and 0.255 (t-stat=2.97) for CAR [+2, +60] regression. This suggests that the investor response for firing a non-CPA CFO and having a CPA CFO after SOX is met with 14.4 (25.5) percentage point higher CAR [-10, +60] (CAR[+2, +60]). This shows that after SOX, when a non-CPA CFO was performing poorly, the shareholders began to look for a CPA licensed CFO to clear up the mess. The positive effect of firing a non-CPA CFO to have a CPA CFO is permanent after SOX, whereas before SOX, it was transitory on the announcement day only. A negative response about the departure of a non-CPA CFO is quite common, given \ the adverse selection concerns of investors. When the CFO transition is from a non-CPA CFO to another one, the investor response on the longer horizon is worse (by 18.6%) than the transition between two CPA CFOs at a marginal statistical significance level (t-stat=1.62). After SOX, investors' immediate response to non-CPA CFO to non-CPA CFO transitions worsened compared to the CPA CFO to CPA CFO transitions, except when the transition was a forced turnover of the CFO. The coefficient of the interaction term between the transition from a non-CPA CFO to another non-CPA CFO and the After SOX dummy is -0.026 (t-stat=2.94) for CAR [0] regression and -0.033 (t-stat=1.97) for CAR [-1, +1] regression.

Consistent with Chang Dasgupta and Hillary (2008), investor response to the departure of a CFO is negatively correlated with the past performance of the firm, which supports the argument that the reputation of the manager is priced in the stock market not only when the manager is CEO, but also when the manager is CFO. The economic magnitude is rather small: the coefficient of the three year buy and hold return is -0.002 (t-stat=2.05). If the past 3 years' stock price performance is 30 percentage points higher, the announcement date CAR is 6 basis points lower. The VIX index, the index for the forward looking volatility measure of the financial market (implied volatility of S&P 500 index option: Whaley 1993), is negatively correlated with investor response to CFO departures. The idiosyncratic volatility, measured by the root mean squared error of the monthly Carhart 4 factor model over the estimation window of [-41, -6] months, is negatively correlated with the investor response to CFO departures on the day of the announcement, but is not correlated with CAR over a longer event window. . These findings confirm that investor response on announcement day is larger when the stock price is volatile either by market-wide volatility or firm-specific volatility. Also, the findings also suggest that short-run overreaction to the CFO transition announcement is more apparent during a volatile period. The investor response to CFO departure is negatively correlated with the size of the firm, which supports that the relative weight of the human capital of the CFO to the value of the firm becomes smaller for larger firms in the first place. The result is similar when we use a different measure of idiosyncratic volatility by EGARCH model in Panel B of Table III-III (the forward looking firm-specific volatility measure estimated six months prior to departure, based on the monthly Carhart 4 factor model over the estimation window of [-41,-6] months (Fu, 2009)). The

event study result as well as the CAR regression result supports that the stock price reflects the difference in financial accounting skills of the manager.

III. 4.C. Consistency with Labor Market Compensation

Given that we find evidence that the financial market response to a manager's career movement is proportional to his or her skill level, we investigate whether such a skill difference is consistently priced in the labor market. For a small number of departure observations that overlap with the Execucomp dataset, we collect the compensation data of the CFO and the CEO of the firm prior to the departure event. For 198 CFO departure observations that are not covered by Execucomp, we collect the compensation information from the Proxy Statement as of the fiscal year ended right after the departure announcement at the SEC website. We collected only information about the CFO and CEO of the firms from the compensation tables including salary, bonuses, other annual compensation, long-term stock ownership grants, and all other compensation. Since the stock options granted are recorded in the compensation table, the sum of these items is the same as the TDC1 in Execucomp. We scale the salary and TDC1 given to the CFO by the book value of assets, and then we take the natural logarithm of it to use as dependent variables. The key explanatory variable is the dummy variable that takes the value of unity when the CFO has a CPA license. We also include an MBA dummy to compare how CFOs with MBA degrees differ from CPA CFOs. We also include a SOX dummy to investigate whether the compensation to the CFO went down after SOX due to public criticism of excessive executive compensation. Also included is the dummy variable of a forced departure to investigate whether the CFOs being fired were

commanding excessive compensation (positive significant coefficient) or whether they were replaced due to poor ability (negative significant coefficient). Hartzell and Starks (2003) find that concentrated ownership by a handful of institutional investors contributes to better governance such as more pay for performance sensitivity of the executive compensation and a lower compensation level through more effective monitoring. Therefore, we include the ownership by top five institutional investors of each firm to investigate whether a better monitoring proxied by the concentrated ownership of institutional investors results in a lower compensation level for the CFO (negative coefficient). We also control for the one year growth in operating profit margin and the one year stock price performance . Since the size of the firms in Execucomp is more than two times higher than the firms outside Execucomp, (average book value of assets: $2,574 million vs. $1,292 million, t-stat = 2.59), we include the dummy variable of one if the observation is from Execucomp.

Table III-IV shows that CFO compensation is significantly higher if the CFO has a CPA license. This suggests that both financial and labor markets recognize the difference in the skills of top managers in a consistent manner. Having an MBA degree does not add much to a manager's compensation as long as the manager is the financial chief, which shows that the key functionality of the financial manager is financial accounting skills, and better qualifications are identified by having a CPA license. In panel B, of Table III-IV, we run an OLS regression with industry dummies to control for industry specific heterogeneity in CFO compensation. The results are robust, although the coefficients are more conservative. We use these coefficients of 0.4179 and 0.3464 in

the following analysis. This is a log-linear model, where the coefficient is the semi-elasticity, which measures a percentage change in compensation normalized by the book value of assets. Given that the average salary (TDC1) of the CFO in non-Execucomp firms is $162,792 ($400,757), [$232,565 ($586,423)] and assuming the size of the firm is fixed at the average book value of assets of $958,415,000, the CFO who is a CPA receives $97,189 ($203,136) higher annual salary (TDC1) than the CFO without a CPA license. Such compensation gap in salary (TDC1) increase to $105,693 ($221,211) as we include the sample in Execucomp. We also run a separate regression on the subsample of Execucomp firms, and we find only marginally significant result. Therefore, the recognition of a CPA license is more apparent for smaller sized firms. Since the sample of firms is not chosen randomly, we do not try to overemphasize the exact magnitude of the CPA impact on CFO labor market compensation. However, the significant positive impact of a CPA license on compensation should be pointed out[14].

Panel C shows results with more observations and more explanatory variables. Here we control for the number of years of work experience and its square term, where the number of years of work experience is proxied by subtracting 23 from the age as of the year of departure of the firm. We also include accruals and relative spread to test whether the compensation to the CFO is higher in the firms with lower degrees of information asymmetry. As long as one of the major tasks of CFOs is to reduce the

[14] Whether the compensation gap between CPA CFO vs. non-CPA CFO increased after SOX is not presented in the table, because the sample of CFO compensation data happened to be concentrated on after SOX period. 84% of the sample firms outside Execucomp dataset are from after SOX period due to the time constraint. One thing for sure is that the compensation gap is apparent for after SOX period, at the least.

information gap between insider and outside investors, their pay should be higher if the firm's information asymmetry is lower due to the superior ability of the CFO. However, at this stage, this is largely association study. We include the interaction between SOX dummy and CPA dummy to test whether the increase in compensation to the CPA CFO took place after SOX. We also include the interaction term between MBA CFO dummy and after SOX dummy to test whether MBA CFOs had similar pay increase after SOX. Also, we control for the size of the firm (log of market value of equity) to control or the empirical regularity of reducing portion of salary to the size of the firm as the size of the firm increases.

The coefficient of the interaction term between CPA CFO and "After SOX" is positive and significant. Even though the coefficient of CPA CFO dummy is negative and marginally significant, the Wald test of whether the coefficients of both CPA dummy and the interaction between CPA and After SOX is zero is rejected with p-value of 0.0046~0.076 depending on the specification. This supports strongly that the salary of CPA CFOs have increased significantly after SOX. Also, accruals and relative spread, the inverses of which are the proxies for the ability of the CFO to reduce the information asymmetry, are all negatively associated with the salary relative to total assets of the firm. This supports the argument that one of the most important tasks of CFO is to reduce the information gap between insiders and outside investors. One thing not clear is whether a lowering of the degree of information asymmetry causes the salary to increase or whether high salary of the CFO causes

III.4. Hiring and Skills of a Manager

III.4.A. Determinants of Hiring a Manager with a Skill

What makes the CPA so special that the financial market and labor market significantly price the CPA CFO higher than other CFOs? In order to answer this question, we need to first understand firms with what characteristics and firms under what circumstances tend to hire CPA CFOs more than non-CPA CFOs. We run a multinomial logit model to understand empirically what drives the firm to choose a CPA CFO as a replacement manager. The dependent variable is the qualifications and availability of newly appointed CFOs. A new CFO may have no CPA license, which forms the base outcome. A new CFO may have a CPA license (outcome 1), and a succeeding CFO may not be appointed (outcome 2).

We hypothesize that firms with different monitoring capability of the shareholders may have different preference in hiring CFO with different qualifications. Therefore, we include institutional ownership as a proxy for the monitoring capability of the shareholders. It could be that firms with better monitoring capability prefer to have high quality CFO proxied by CPA designation. Alternatively, it could be that shareholders with poor monitoring capability prefer to hire a candidate with CPA license, because the license is the most visible certification about the quality of the manager. In contrast, shareholders with better monitoring capability, which provides better information about the candidate for the CFO position may not prefer CPA license, because the shareholders have better information about the candidate than the information coming from the visible license. We also hypothesize that the firms with larger amount of earnings management

tend to hire CPA CFOs to reduce the earnings management and enhance accounting transparency. We, therefore, include industry relative discretionary accruals as an explanatory variable and predict that it would be positively correlated with the likelihood of hiring CPA CFOs. We follow Ayers, Jiang, and Yeung (2006) in constructing the measure of discretionary accrual as follows:

$$Accruals_{i,t} = \frac{NetIncomeBeforeExtraItems(data123)_{i,t} - (OperatingCashflow(data308 - data124))_{i,t}}{TotalAssets(data6)_{i,t-1}}$$

The data numbers are the data items from Compustat. We subtract the industry median accruals by Fama-French's 49 industry group to calculate the industry relative accruals of the firm, which controls for industry-wide shocks in earnings management.

It may be that some industries tend to hire more CPA CFOs than others due to industry heterogeneity; therefore, we include industry dummies. It may also be that organizational inertia could be at play such that the firms that had CPA CFOs are more likely to hire CPA CFOs. We also investigate whether the tendency to hire CPA CFO increased after SOX due to the tough regulation requirement in terms of financial accounting. In addition, we interact the After SOX dummy with the aforementioned key explanatory variables to test whether there was an incremental change after SOX. We also investigate whether small-sized firms tend to hire CPA CFOs to enhance their monitoring capability. In contrast, large firms are more likely to already have a well established internal control system which reduces its demand for CPA CFOs (Aier, Comprix, Gunlock, and Lee, 2004). We also hypothesize that firms hire CPA CFOs as a way to tighten their financial strategy after a poor performance. Therefore, we include

past stock performance, operating profit margin, sales growth, and the growth in operating profit margin. We predict that these performance measures are negatively correlated with the probability of hiring a CPA CFO. In the same spirit, we include a dummy variable that is one if the nearest prior earnings announcement was a negative surprise to the market. We predict the coefficient would be positive and significant. We also include idiosyncratic risk measured six months prior to the departure announcement to test whether the firms with higher idiosyncratic risk tend to hire CPA CFOs to reduce the risk. Finally, we include confounding event dummy variables to test if a firm is more likely to hire CPA CFOs right after they experienced certain major corporate events, such as restatements, lawsuits, or mergers. The result is shown in Panel C **OLS with After SOX Interactions**

Dependent Variable:	Log(CFO Salary/BVA)			
1{CPA}	-0.2275		**-0.2828**	**
	(-1.3265)		**(-1.9566)**	
1{MBA}	-0.0664		-0.1308	
	(-0.4115)		(-0.9369)	
1{After SOX}	-0.0109		-0.0427	
	(-0.0713)		(-0.3323)	
1{CPA}*1{After SOX}	**0.6738**	***	**0.5125**	***
	(2.92)		**(2.67)**	
1{MBA}*1{After SOX}	0.2374		0.286	
	(1.01)		(1.44)	
1{Forced Out}	0.0382		-0.0677	
	(0.26)		(-0.5490)	
Experience	-0.0143		-0.0171	
	(-0.7398)		(-1.0414)	
Experience^2	0.0001		0.0003	
	(0.12)		(0.60)	
Top 5 Inst.Ownership	**-1.1964**	**	**-0.9094**	**
	(-2.5583)		**(-2.3447)**	
Op.Inc.Growth 1y	0.0153		0.0049	
	(1.30)		(0.52)	
1 yr BHR	0.0761		0.0354	
	(1.28)		(0.70)	
Log(MVE)	**-0.5455**	***	**-0.5527**	***
	(-15.8907)		**(-19.1281)**	
constant	**3.1792**	***	**-4.3882**	***
	(16.15)		**(-5.7888)**	
Include Execucomp	No		No	
N	298		296	
Adj.R2	0.5808		0.7469	
Industry Dummies	No		Yes	
Wald Test: Beta(1{CPA})+Beta(1{CPA}*1{AfterSOX})=0				
pvalue	0.0053		0.0831	

Experience is the age of the CFO at the year of departure minus 23.

Table III-V.

We find that industry fixed effects are significant in explaining what firms tend to hire CPA CFOs. When we include the industry dummies, the Pseudo R2 goes up from 0.06 to 0.108. In addition, the result suggests that a firm is more likely to hire a CFO with a CPA license if the incumbent CFO has a CPA license (t-stat=1.79). Finally, the result in the second column suggests that if the incumbent CFO has a CPA license, his or her departure is less likely to be without a replacement. This suggests two possibilities: (1) CPA CFOs add value to the firm by having a seamless succession to the next CFO; or (2) the firms that hire CPA CFOs are the ones that usually make a smooth succession of the CFOs in the first place. At this stage, we do not have clear evidence to distinguish these two.

Interestingly, institutional ownership prior to departure is negatively associated with the outcome of hiring a CPA CFO. This indicates that firms whose shareholders have poor monitoring capability rely more on a visible certification about the quality of the job candidates, such as CPA license, when hiring a new CFO. Also, unsophisticated shareholders prefer to have a financial manager with better qualification due to their poor monitoring capability. Put differently, the result suggests that the firms whose shareholders have better monitoring capability rely less on the CPA licensed CFOs for monitoring purposes, because the shareholders are already sophisticated enough to process the information provided by the financial manager. The result may also suggest that the preference of the institutional investors is against candidates with CPA

qualifications. In such case, the institutional ownership should decrease after hiring a CPA CFO. We investigate this possibility in the next subsection. It may be that institutional investors would like to have a key contact person (CFO) who has forward looking (finance) perspectives than a person who has a backward looking (accounting) perspective. However, we do not have clear evidence that CPA holding CFO candidates are necessarily lacking in forward looking perspectives in the first place. One may argue that institutional ownership is simply capturing the size effect of the firm, and that larger firms' demand for CPA CFOs is lower than that of smaller firms because the large firms are more likely to have better established internal control systems in the first place (O'Sullivan 2004). However, we explicitly control for the size of the firm, and find a negative and significant coefficient of the size variable. The size effect already supports that smaller firms, which are characterized as having poorer accounting transparency, try to hire more CPA CFOs than non-CPA CFOs to improve their accounting transparency.

Still another possibility is that CEOs of poorly governed firms (low institutional ownership) try to hire CPA CFOs to encourage more skillful earnings management or accounting manipulations to maximize their short-term compensation. Feng Ge, Luo, and Shevlin (2009) find that CFOs become involved in material accounting manipulation under pressure from the CEO. We investigate these possibilities further in the subsection V.B. If the negative correlation is attributable to a governance problem, then the institutional investors would reduce their exposure to the firm because the manager is not maximizing the shareholder value in the long run.

The coefficient of the interaction between the After SOX dummy and institutional ownership for the CPA CFO outcome is marginally positive in specification 2. This suggests that institutional investors' preference against CFO qualifications has diminished after SOX due to the tightened financial reporting regulatory environment.

Firms that have a larger amount of earnings management are more likely to hire CPA CFOs (t-stat=2.71). It may be that CPA skills are needed to maintain the high level of earnings management to smooth the earnings. More specifically, it may be that CEOs of the firms with large earnings management tend to hire CPA CFOs to manage earnings even more, which is a manifestation of an agency problem. Alternatively, the board of directors may hire the CPA CFOs to carefully reduce the earnings management and enhance accounting transparency. In the next subsection, we distinguish these two possibilities by testing whether the earnings management goes down after the hiring of CPA CFOs. CPA CFOs are more likely to be hired after a bad performance over the past one year or after a negative earnings surprise to tidy up a lousy stock market and improve accounting performance.

Turnover without a replacement manager is a negative surprise to the market. At least, it shows that the board of directors is unable to make a smooth and seamless transition from one manager to the next. The result in the last column shows that firms with declining sales, financial distress (high book-to-market). The positive and significant coefficient of the relative spread suggests that CFO turnover without replacement is associated with increased degree of information asymmetry, which is consistent with the role of CFO as a key contact person to the outside investors. A CFO

transition without a replacement manager is more likely to occur after SOX, partially due to the quick disciplinary firings after the accounting scandals and increased public awareness. The difference in the likelihood of firing the CFO without appointing a new CFO between high information asymmetry firms and low information asymmetry firms has also disappeared after SOX. After merger announcements, a CFO replacement is more likely to be followed by a replacement CFO who is naturally from the management of the acquiring firm.

Having found that hiring of a CFO with a certain qualification depends on various firm characteristics, such as organizational inertia, monitoring capability of the shareholders, informational environment of the firm, and prior performance, we refine the outcomes of the succeeding CFO's qualification in Panel B and C of Table V. The outcomes are: (0) non-CPA & non-MBA CFO, (1) CPA CFO, (2) MBA CFO, (3) CPA&MBA CFO, and (4) no replacement.

Here again, the results are largely consistent with the previous result. We find strong evidence of organizational inertia. A firm that had MBA CFO is more likely to hire an MBA CFO. The interaction between institutional ownership and the After SOX dummy is negative and significant for the MBA CFO outcome. This suggests that an MBA degree became unpopular as a CFO qualification for institutional investors after the dot-com bubble burst as well as after the series of mega-scale accounting scandals such as Enron and Worldcom whose CFOs had MBAs[15]. This finding is consistent with

[15] Andrew Fastow, former CFO of Enron, earned his MBA at Kellogg of Northwestern University, and Scott D. Sullivan of Worldcom earned his MBA at Oswego State University.

O'Sullivan (2004) who documents that employers look for "less visionary but more tactical" CFO candidates after Enron and after the 1990s. MBA CFOs are more likely to be appointed when the market value based leverage ratio is low but the industry relative leverage ratio is high (Panel C). MBA CFOs are more likely to be hired by a firm with a lower degree of information asymmetry after SOX, as is evidenced by the negative significant coefficient on the interaction term between the relative spread and the After SOX dummy. This may suggest that firms with high degrees of information asymmetry have become reluctant to hire MBA CFOs after the accounting scandals due to the worry about creative accounting methods. We next investigate the question of why CPA CFOs are valued highly and examine the two points found in this subsection more closely: (1) Do firms that hire CPA CFOs experience a decrease in earnings management? (2) Do institutional investors disapprove of the firm hiring a CPA CFOs due to the potential agency problem of abusing their CPA expertise in manage earnings more? (3) Did the institutional investors start to prefer a CPA CFO after SOX?

III.4.B. Reducing the Degree of Information Asymmetry vs. Agency Problem

This subsection is primarily devoted to answering the question about in what aspect the CPA CFOs add value to the firm. As long as the value of the firm is a discounted future cash flow, the channel of adding value to the firm should be either via discount rate channel or via cash flow channel. Given that the function of the CFO is non-operational, but more supportive by communicating with the bankers in the Wall Street and by making financial decisions of the firm, we investigate the discount rate channel. Easley and O'Hara (2004) find that uninformed investors would demand a

lower required return if their information disadvantage becomes smaller. Staying with this line of thought, if a CPA CFO can reduce the degree of information asymmetry compared to non-CPA CFO, the former would have a positive impact on the stock price. One plausible way that CPA CFO could make difference is to reduce the degree of information asymmetry which may reduce the cost of capital through producing more transparent accounting report. Therefore, we investigate whether the CPA CFOs are more effective in reducing the information asymmetry. The degree of information asymmetry is proxied by two different measures. The first is the industry relative discretionary accruals, which measures how much the firm is managing its accounting earnings. The other is the relative spread in microstructure data, which measures the adverse selection cost of the stock as well as inventory cost to the market maker.

In the former subsection, we found that the firms with higher earnings management are more likely to hire CPA CFOs. Does the earnings management decrease after the firm hires a CPA CFO? One may argue that CEOs hire CPA CFOs so that they can abuse the CPA expert's knowledge of doing earnings management in a more intelligent manner. If so, we should be able to detect an increase in discretionary accruals after a switch from a non-CPA CFO to a CPA CFO. Otherwise, if the board of directors favors hiring a CPA CFOs to reduce earnings management and enhance information asymmetry and reduce the agency problem of short-term oriented earnings manipulations, we should observe a declining discretionary accrual for CFO transitions from a non-CPA CFO to a CPA CFO. In order to test this hypothesis, we regress the difference in discretionary accruals before and after the CFO turnover on CFO transition dummies.

More specifically, the industry relative accruals after a CFO departure minus that prior to the departure is used as the dependent variable.

The results in Table III-VI show that discretionary accrual relative to the industry median significantly decreases when the CFO transition from a non-CPA CFO to CPA CFO is made. Therefore, the results support the argument that the board of directors replaces a non-CPA CFO with a CPA CFO to improve accounting transparency by reducing earnings management done by discretionary accruals. Such an impact of CPA CFOs on discretionary accrual is consistent regardless of whether it occurred before or after SOX. Discretionary accrual increases when the stock performance over the past six months is good, or when the operating profit margins are high. The discretionary accrual level also shows mean reversion, because the difference in discretionary accrual is negatively and significantly correlated with the lagged relative discretionary accrual levels.

Can a manager really affect the degree of information asymmetry in a systematic way? As long as the transition from a non-CPA CFO to a CPA CFO reduces earnings management more than the transition from a non-CPA to another non-CPA CFO, the degree of information asymmetry should decrease at the same time. Brochet, Faurel, and McVay (2008) find that an abrupt CFO departure (with the typical outcome of having no replacement manager) is associated with having breaks in earnings guidance. Together with our evidence, this supports that managers, especially CFOs, can significantly influence the information environment of a firm. In this subsection, we test whether the degree of information asymmetry measured by the relative spread of the stock decreases

more if the CFO transition is from a non-CPA CFO to a CPA CFO, instead of a transition from a non-CPA to another non-CPA CFO. We follow Chae (2005) to use the average relative spread obtained from the NYSE Trade and Quote (TAQ) data as a proxy for the degree of information asymmetry. For each trade, we measure the relative spread as follows:

$$\mathrm{Re}\,lativeSpread = \frac{Ask - Bid}{\left\{\frac{Ask + Bid}{2}\right\}}$$

Because the TAQ data are especially noisy at for the first and last 30 minutes of trading sessions (McInish and Wood, 1992), we estimate the relative spread over the time interval of [10:00 am ~ 3:30 pm], and take the average of the relative spreads every day. Over the estimation window of [-50, -11] trading days prior to the event, we estimate the average of the mean spreads. We do the same for the estimation window of [11, 50] trading days after the departure event. We calculate the difference in the average relative spreads after versus before the departure events as follows.

Difference in Avg. Rel. Spread = Avg. Rel. Spread [11, 50] – Avg.Rel.Spread [-50,-11]

The difference in average relative spread is used as the dependent variable in Table III-VII. Hiring a CPA CFO as a replacement manager, regardless of whether the former CFO was a CPA or not, reduces the relative spread by as much as 8 basis points

(t-stat=2.11). Switching from a non-CPA CFO to a CPA CFO reduces the relative spread by 11 basis points (t-stat=2.10) compared to a CFO transition from a Non-CPA CFO to another Non-CPA CFO. Considering the fact that the mean relative spread over the 40 days window prior to CFO departure is 206 bps, the decrease in relative spread is non-trival. Therefore, the results indicate that having a CPA CFO reduces the information asymmetry of the firm. Given the expertise in financial reporting represented by CPA license, it is quite intuitive that CPA CFOs reduce information asymmetry by improving accounting transparency. An equally interesting finding is that when a CPA CFO leaves the firm without a replacement CFO, the information environment of the firm becomes significantly more asymmetric. The coefficient of the dummy variable for CFO transitions from CPA to no replacement CFO has 43 basis points (t-stat=2.39). If the estimation window is longer, the average spread increases even further (55 basis points with t-stat=3.12). The departure of a non-CPA CFO with no replacement CFO also increases the relative spread because a CFO should be functioning as an important communication channel to the outside investors. However, the degree of increase in relative spread is either insignificant or much smaller in magnitude than the case of a CPA CFO's disappearance. Recollected the finding in Table III-VI, one might have also argued that CPA CFOs are simply good at taking "big bath" when they are newly appointed, while they have nothing to do with improving information environment. However, such counterargument is not supported with the evidence in Table III-VII. Because if CPA CFOs are simply good in taking big-bath after coming, their arrival and departure should not be correlated with increased information asymmetry. Thus far, we find supporting evidence that CPA licensed CFOs reduce the information asymmetry

between the insiders and outsiders through more transparent accounting reports. Consequently, a firm losing a CPA licensed CFOs becomes more asymmetric in information than a firms who is replacing a non-CPA CFO with another non-CPA CFO, which results in a higher expected return and negative permanent abnormal return. Equivalently, a firm replacing a non-CPA CFO with a CPA CFO becomes more symmetric in information than the firm replacing a non-CPA CFO with another non-CPA CFO, which should result in a lower expected return and positive (or less negative) permanent abnormal return.

As a last step to find out whether the negative correlation between institutional ownership and the probability of hiring a CPA CFO is attributable to the institutional investors' dislike of CPA CFOs or an equilibrium outcome based on each firm's unique monitoring environment, we investigate how the institutional ownership changes surrounding CFO transitions. Thus far, the evidence we obtained supports that CPA CFOs are more effective than non-CPA CFOs in reducing the earnings management and the degree of information asymmetry. These findings reject the conjecture that a CEO may intentionally hire a CPA CFO to skillfully manage earnings, as a symptom of poor governance coming from lower institutional ownership. We regress the difference of institutional ownership (the institutional ownership at the end of the fourth quarter after the CFO departure minus the institutional ownership at the end of the quarter prior to the departure) on the CFO transition dummies as well as controls.

If the negative association between the likelihood of hiring CPA CFO and institutional ownership is attributable to the preference of the institutional investors

against CPA CFOs, we should observe a decrease in institutional ownership after a transition from a non-CPA CFO to a CPA CFO. However, in Table III-VIII, we do not find such result. This indicates that the aforementioned negative correlation is largely attributable to the equilibrium outcome of each firm depending on the monitoring capability of the shareholders about the quality of the candidate managers. Firms whose shareholders have poor monitoring capability, proxied by low institutional ownership, are more likely to appoint a financial manager with apparent expertise in decreasing information asymmetry. This is also consistent with the literature about optimal degree of management autonomy (Chakraborty, 2009). Moreover, after SOX, we find a significant increase in institutional ownership after a CFO transition from a non-CPA CFO to a CPA CFO. This indicates that institutional investors began to care more about the CPA license as a certification of the quality of the financial chief after SOX due to the stronger regulatory environment.

III.5. Conclusion

The neoclassical view of managers is that they are a homogeneous replaceable factor in the production function. In contrast, we find evidence that managers are heterogeneous in a significant manner in the sense that managers with different skill sets affect the stock price of the firm differently. The evidence suggests that the stock price reflects the different skill level of the manager in a significant and permanent manner. Moreover, the reflection of skills in the financial market is consistent with that in labor market. In financial market, we find that the stock price response to the transition from a

CPA CFO to a non-CPA CFO is significantly negative in a permanent fashion relative to the transition from a CPA CFO to another CPA CFO. In labor market, we also find that CPA CFOs command higher compensation relative to non-CPA CFOs. In comparison, we do not find a significant compensation difference for MBA CFOs. The monitoring capability of the shareholders significantly affects the outcome of hiring the CPA CFOs, and the preference of the institutional shareholders plays a significant role in hiring a manager with certain qualifications. We find that CFOs affect the discount rate channel of the stock price of the firm in a significant manner by influencing the informational environment of the firm. Our empirical testing results suggest that the value contribution of a CPA CFO is reducing the earnings management and information asymmetry of the firm. Though the exogenous change in regulation of SOX demands a stronger internal control system and better accounting transparency, we do not find that the firms are more likely to replace a CFO with a CPA CFOs. Yet, we find that institutional shareholders welcome the hiring of CPA CFOs. Whether the influence of the institutional investors in hiring the candidates of which characteristics as a CFO comes from the long-term investors as opposed to momentum traders would be an interesting future research. Also, how the transition outcome of CFO is affected by the financial expertise of the board members especially after SOX would be an interesting avenue for research from the perspective of principal agent problem.

Table III-I. Summary Statistics

A. Means

Label	Mean	Std Dev	N
Size:Log(MVE)	5.358	1.945	2,018
Book to Market Ratio FF	2.041	46.896	1,988
1{After SOX}	0.420	0.494	2,270
Old Mgr. CPA	0.256	0.436	2,270
Old Mgr. MBA	0.263	0.440	2,270
Old Mgr. CPA or MBA	0.418	0.493	2,270
New Mgr. CPA	0.239	0.426	2,270
New Mgr. MBA	0.202	0.401	2,270
New Mgr. CPA or MBA	0.359	0.480	2,270
1{Forced}	0.164	0.371	2,270
1{Merger Confounded}	0.073	0.260	2,270
1{Repurchase Confounded}	0.008	0.091	2,270
1{Joint Venture Confounded}	0.116	0.320	2,270
1{Departure in 90 days after lawsuitment}	0.013	0.112	2,270
1{Departure in 90 days after Restatement}	0.019	0.136	2,270
OIBD/lagged Assets	-0.002	0.298	2,067
1yr Sales Growth	0.676	5.223	2,009
1yr OI Margin growth	-0.440	14.982	2,034
Past 24 month Performance	0.190	1.393	1,652
Idiosyncratic Vol (RMSE)	0.185	0.106	1,994
Idiosyncratic Vol (EGARCH)	0.152	0.114	1,841
Average of Avg. Relative Spread [-50,-11]	0.019	0.019	1,734
Average of Avg. Relative Spread [-80,-11]	0.016	0.015	1,486
CAR[-1,+1]	-0.026	0.115	2,126
CAR[-1,+7]	-0.024	0.167	2,062
CAR[-10,+30]	-0.030	0.381	2,062

B. Distribution by size and book-to-market quintile by Fama-French

		Fama-French Book to Market Quintile						Total
		Negative	Low	2	3	4	High	
NYSE Quintile by Fama-French	Small	257	290	210	161	178	334	1430
	%	11.5	12.98	9.4	7.21	7.97	14.95	64.01
	2	28	123	62	37	43	31	324
	%	1.25	5.51	2.78	1.66	1.92	1.39	14.5
	3	16	90	43	38	22	6	215
	%	0.72	4.03	1.92	1.7	0.98	0.27	9.62
	4	10	71	36	14	12	14	157
	%	0.45	3.18	1.61	0.63	0.54	0.63	
	Larga	6	61	19	15	4	3	108
	%	1.89	9.61	5.14	5.66	1.54	0.77	
	Total	317	635	370	265	259	388	2234
	%	14.19	28.42	16.56	11.86	11.59	17.37	100

C. Breakdown of turnover by replacement manager

Replacement Force	CFO
Interim Manager	663
(Column %)	29.19
No Replacement Force	440
(Column %)	19.37
Permanent Replacement	1,168
(Column %)	51.43
Total	2,271
%	100

D. Comparison of the means before and after SOX

Label	Mean	Std Dev	N	Mean	Std Dev	N	t Value
Size:Log(MVE)	**5.141**	**1.856**	**1,173**	**5.661**	**2.024**	**845**	**-5.89**
Book to Market Ratio FF	0.840	3.306	1,167	3.749	72.860	821	-1.14
Old Mgr. CPA	0.244	0.429	1,317	0.272	0.445	953	-1.51
Old Mgr. MBA	0.251	0.434	1,317	0.279	0.449	953	-1.48
Old Mgr. CPA or MBA	0.409	0.492	1,317	0.429	0.495	953	-0.95
New Mgr. CPA	**0.216**	**0.411**	**1,317**	**0.271**	**0.445**	**953**	**-3.01**
New Mgr. MBA	**0.181**	**0.385**	**1,317**	**0.231**	**0.422**	**953**	**-2.9**
New Mgr. CPA or MBA	**0.333**	**0.471**	**1,317**	**0.396**	**0.489**	**953**	**-3.09**
1{Forced}	0.162	0.369	1,317	0.167	0.373	953	-0.28
1{Merger Confounded}	0.072	0.259	1,317	0.073	0.261	953	-0.12
1{Repurchase Confounded}	0.008	0.087	1,317	0.009	0.097	953	-0.47
1{Joint Venture Confounded}	**0.100**	**0.300**	**1,317**	**0.137**	**0.345**	**953**	**-2.68**
Departure in 90 days after lawsuitment	0.011	0.103	1,317	0.016	0.125	953	-1.04
Departure in 90 days after Restatement	**0.011**	**0.103**	**1,317**	**0.030**	**0.172**	**953**	**-3.17**
OIBD/lagged Assets	-0.002	0.301	1,210	-0.003	0.293	857	0.13
1yr Sales Growth	**0.982**	**6.753**	**1,167**	**0.251**	**1.269**	**842**	**3.62**
1yr OI Margin growth	**-0.944**	**18.310**	**1,182**	**0.258**	**8.373**	**852**	**-1.99**
Past 24 month Performance	0.098	1.231	908	0.302	1.561	744	-2.9
Idiosyncratic Vol (RMSE)	**0.197**	**0.111**	**1,184**	**0.168**	**0.095**	**810**	**6.15**
Idiosyncratic Vol (EGARCH)	**0.163**	**0.123**	**1,066**	**0.136**	**0.098**	**775**	**5.13**
Average of Avg. Relative Spread [-50,-11]	**0.026**	**0.020**	**915**	**0.012**	**0.014**	**819**	**18.12**
Average of Avg. Relative Spread [-80,-11]	**0.022**	**0.017**	**749**	**0.009**	**0.011**	**737**	**17.39**
CAR[-1,+1]	-0.028	0.128	1,252	-0.023	0.093	874	-0.98
CAR[-1,+7]	-0.027	0.189	1,224	-0.021	0.128	838	-0.9
CAR[-10,+30]	-0.032	0.430	1,224	-0.027	0.294	838	-0.34

E. Correlation Table

	Size:Log(MVE)	Book to Market Ratio FF	1{After SOX}	Old Mgr. CPA	Old Mgr. MBA	New Mgr. CPA	New Mgr. MBA	1{Forced}	1{Merger Confounded}	Departure in 90 days after lawsuitment	Departure in 90 days after Restatement	OIBD/lagged Assets	1yr Sales Growth	1yr OI Margin growth	Past 24 month Performance	Idiosyncratic Vol (EGARCH)	Average of Avg. Relative Spread [-80,-11]	CAR[-1,+7]
Book to Market Ratio FF	**0.04**																	
1{After SOX}	**0.17**	0.03																
Old Mgr. CPA	**-0.04**	-0.01	**0.07**															
Old Mgr. MBA	0.03	-0.01	**0.04**	**0.21**														
New Mgr. CPA	-0.02	-0.01	**0.08**	**0.21**	**0.10**													
New Mgr. MBA	**0.05**	-0.01	**0.07**	**0.12**	**0.16**	**0.23**												
1{Forced}	**0.06**	0.04	**0.04**	0.01	0.02	-0.02	-0.02											
1{Merger Confounded}	**0.22**	0.00	-0.01	**-0.03**	-0.02	**-0.04**	-0.03	**0.03**										
Departure in 90 days after lawsuitment	**0.07**	0.00	0.01	-0.02	**-0.04**	-0.02	0.02	**0.04**	0.00									
Departure in 90 days after Restatement	**0.06**	0.00	**0.04**	0.00	-0.01	-0.02	0.02	0.03	0.02	**0.29**								
OIBD/lagged Assets	**0.33**	0.01	0.02	-0.01	-0.03	-0.01	0.00	0.00	**0.07**	-0.02	0.00							
1yr Sales Growth	-0.01	0.00	**-0.04**	0.00	0.03	-0.01	0.00	0.00	-0.01	0.00	0.00	-0.03						
1yr OI Margin growth	0.00	0.00	0.01	0.01	0.01	0.01	0.00	-0.01	-0.03	0.00	0.02	-0.01	0.00					
Past 24 month Performance	**0.16**	-0.01	**0.07**	0.01	0.00	0.01	0.02	-0.02	**0.04**	-0.04	-0.02	**0.14**	0.03	0.00				
Idiosyncratic Vol (EGARCH)	**-0.27**	-0.02	**-0.10**	0.02	0.01	0.01	0.00	-0.01	**-0.08**	**0.05**	0.03	**-0.28**	0.01	-0.01	**-0.05**			
Average of Avg. Relative Spread [-80,-11]	**-0.66**	0.00	**-0.42**	-0.01	-0.02	0.00	-0.03	-0.04	**-0.11**	**-0.04**	-0.04	**-0.32**	0.03	-0.03	**-0.22**	**0.24**		
CAR[-1,+7]	-0.02	0.00	0.00	0.00	0.00	-0.01	0.02	0.00	0.02	-0.02	0.00	0.00	0.01	-0.01	**-0.08**	**-0.05**	**0.06**	
CAR[-10,+30]	**-0.05**	0.00	0.00	-0.01	0.02	-0.01	0.01	0.00	-0.01	0.01	-0.03	-0.01	0.00	0.00	**-0.13**	**-0.04**	**0.11**	0.55

Table III-II. Event Study of CFO Departure Announcements

Panel A. Departures of CPA CFOs

			Event Windows 1				Event Windows 2			
			Pre-event	Event	Post Event		Pre-event	Event	Post Event	
CFO Transition	Departure	SOX	[-10.-2]	[-1,+1]	[+2,+30]	[+2,+60]	[-10,-1]	[0]	[+1,+30]	[+1,+60]
CPA->CPA	Forced	Before SOX	-6.07%	-2.10%	**-15.33%**	**-18.79%**	-5.31%	**-4.23%**	**-13.97%**	**-16.97%**
			(1.16)	(0.43)	**(1.75)**	**(2.25)**	(0.83)	**(1.95)**	**(1.85)**	**(2.21)**
			20	20	**20**	**19**	20	**20**	**20**	**19**
		After SOX	-0.60%	-0.65%	1.00%	-6.51%	-0.11%	1.27%	-1.41%	-8.92%
			0.01	(0.07)	(0.06)	(0.92)	0.13	0.82	(0.48)	(1.13)
			11	11	11	11	11	11	11	11
	Voluntary	Before SOX	1.16%	**-4.12%**	3.22%	**13.86%**	-0.05%	**-1.75%**	2.07%	**12.70%**
			1.13	**(2.92)**	0.49	**1.95**	0.53	**(2.49)**	0.36	**1.93**
			66	**66**	65	**65**	66	**66**	65	**65**
		After SOX	-1.18%	0.06%	3.06%	**9.96%**	-1.20%	0.96%	2.03%	**8.92%**
			(1.56)	0.17	0.64	**2.40**	(1.40)	0.98	0.45	**2.22**
			76	76	75	**75**	76	76	75	**75**
CPA->No CPA	Forced	Before SOX	-3.36%	-0.93%	6.89%	10.75%	-2.42%	-1.42%	6.43%	10.26%
			(1.49)	(0.86)	0.39	0.46	(1.11)	(1.28)	0.36	0.43
			30	30	29	28	30	30	29	28
		After SOX	-3.82%	**-3.47%**	2.12%	1.32%	-2.94%	**-3.39%**	1.16%	0.37%
			(1.16)	**(1.75)**	0.20	0.11	(0.63)	**(1.96)**	0.02	(0.01)
			24	**24**	24	24	24	**24**	24	24
	Voluntary	Before SOX	-1.07%	-1.55%	-2.63%	-4.33%	-0.97%	**-1.13%**	-2.51%	-4.19%
			(0.43)	(1.51)	(1.28)	(1.32)	(0.53)	**(2.55)**	(1.02)	(1.10)
			138	138	135	134	138	**138**	135	134
		After SOX	-0.33%	**-1.15%**	0.34%	-1.02%	0.51%	**-1.22%**	-0.28%	-1.62%
			(0.06)	**(2.30)**	0.03	0.31	0.31	**(3.50)**	(0.36)	0.10
			114	**114**	112	111	114	**114**	112	111

Estimation window: [-150, -31] trading days prior to the first CFO departure announcement. Asset pricing model: Carhart 4 factor model. T-statistics used is by Boehmer, Musumeci, and Poulsen (1991) to control for the event induced volatility.

Panel B. Departures of non-CPA CFOs

			Event Windows 1				Event Windows 2			
			Pre-event	Event	Post Event		Pre-event	Event	Post Event	
CFO Transition	Departure	SOX	[-10.-2]	[-1,+1]	[+2,+30]	[+2,+60]	[-10,-1]	[0]	[+1,+30]	[+1,+60]
NoCPA->CPA	Forced	Before SOX	-0.06%	**-4.99%**	-4.05%	-0.93%	-0.77%	-1.02%	-7.32%	-4.19%
			0.57	**(1.75)**	(0.08)	0.11	0.42	(0.55)	(0.48)	(0.21)
			24	**24**	24	24	24	24	24	24
		After SOX	-2.04%	-0.29%	0.03%	4.94%	-1.41%	-1.18%	0.29%	**5.20%**
			(1.35)	(0.20)	0.42	1.61	(0.84)	(1.01)	0.40	**1.68**
			25	25	25	25	25	25	25	**25**
	Voluntary	Before SOX	-2.04%	**-2.87%**	0.08%	-0.67%	**-2.81%**	**-1.75%**	-0.27%	-1.02%
			(1.20)	**(3.52)**	0.42	0.04	**(1.79)**	**(3.02)**	0.39	0.02
			145	**145**	145	145	**145**	**145**	145	145
		After SOX	2.08%	**-3.12%**	1.43%	5.30%	1.45%	**-1.38%**	0.31%	4.18%
			0.51	**(4.80)**	0.33	0.58	(0.09)	**(3.80)**	(0.20)	0.21
			115	**115**	113	113	115	**115**	113	113
NoCPA->NoCPA	Forced	Before SOX	**-3.88%**	**-2.56%**	-0.43%	2.45%	**-3.90%**	**-1.63%**	-1.37%	1.14%
			(1.92)	**(2.31)**	(0.41)	0.29	**(1.82)**	**(1.96)**	(0.72)	0.02
			83	**83**	82	81	**83**	**83**	82	81
		After SOX	-1.14%	**-1.92%**	-0.98%	-0.41%	-0.97%	**-1.01%**	**-2.07%**	-1.49%
			(1.06)	**(2.50)**	(1.12)	(0.45)	(0.57)	**(2.18)**	**(1.79)**	(0.84)
			56	**56**	56	56	56	**56**	**56**	56
	Voluntary	Before SOX	0.65%	**-1.95%**	0.58%	**3.75%**	0.86%	**-1.09%**	-0.49%	2.68%
			(0.56)	**(3.94)**	(0.11)	**1.73**	(0.47)	**(3.71)**	(0.56)	1.38
			428	**428**	427	**427**	428	**428**	427	427
		After SOX	0.01%	**-2.79%**	1.06%	**2.42%**	-0.40%	**-1.27%**	-0.04%	1.39%
			0.28	**(6.92)**	0.73	**1.73**	(0.11)	**(4.92)**	(0.05)	1.21
			274	**274**	272	**268**	274	**274**	272	268

Estimation window: [-150, -31] trading days prior to the first CFO departure announcement. Asset pricing model: Carhart 4 factor model. T-statistics used is by Boehmer, Musumeci, and Poulsen (1991) to control for the event induced volatility.

Table III-III. CAR Regression

Panel A. CAR regression using a Industry dummy and year clustered standard error

Dependent Variable: CAR			[-10,+60]	[0]	[-1,+1]	[+2,+60]
1{SOX}			-0.059	**0.023 *** **	0.017	-0.112
			(-0.545)	**(2.68)**	(1.35)	(-0.865)
1{Forced}			**-0.302 ** **	-0.007	-0.005	**-0.326 ** **
			(-2.378)	(-0.736)	(-0.286)	**(-2.575)**
CPA --> No CPA			**-0.188 ** **	0.013	**0.026 ** **	**-0.268 ** **
			(-2.246)	(1.64)	**(2.40)**	**(-2.326)**
CPA --> No CPA	*1{SOX}		0.091	**-0.031 *** ***	**-0.038 *** ***	0.157
			(0.90)	**(-4.477)**	**(-3.472)**	(1.31)
CPA --> No CPA	*1{Forced}		**0.338 * **	-0.005	-0.015	**0.454 ** **
			(1.74)	(-0.177)	(-0.578)	**(2.36)**
CPA --> No CPA	*1{SOX}	*1{Forced}	-0.083	-0.016	0.001	-0.115
			(-0.401)	(-0.597)	(0.02)	(-0.574)
No CPA --> CPA			-0.045	0.001	-0.01	-0.052
			(-0.276)	(0.22)	(-0.688)	(-0.273)
No CPA --> CPA	*1{SOX}		0.03	**-0.022 *** **	-0.013	0.005
			(0.18)	**(-3.224)**	(-0.851)	(0.03)
No CPA --> CPA	*1{Forced}		0.203	0.026	**0.041 *** **	0.129
			(1.22)	(1.63)	**(2.88)**	(0.80)
No CPA --> CPA	*1{SOX}	*1{Forced}	**0.144 ** **	-0.011	-0.009	**0.255 *** **
			(2.05)	(-0.636)	(-0.545)	**(2.97)**
No CPA--> No CPA			-0.109	0.005	0.008	-0.186
			(-1.086)	(0.77)	(0.50)	(-1.618)
No CPA--> No CPA	*1{SOX}		0.067	**-0.026 *** **	**-0.033 ** **	0.134
			(0.59)	**(-2.939)**	**(-1.971)**	(1.12)
No CPA--> No CPA	*1{Forced}		0.164	0.001	-0.01	**0.218 * **
			(1.22)	(0.08)	(-0.593)	**(1.66)**
No CPA--> No CPA	*1{SOX}	*1{Forced}	0.08	**0.019 * **	**0.025 *** **	0.072
			(1.05)	**(1.94)**	**(2.64)**	(1.19)
Past 3 year Stock Performance			**-0.028 *** ***	**-0.002 ** **	-0.001	**-0.029 *** ***
			(-3.062)	**(-2.054)**	(-0.569)	**(-3.062)**
VIX Index			0.002	0	**-0.001 *** **	0.003
			(0.49)	(-1.122)	**(-3.309)**	(0.64)
Size:Log (MVE)			**-0.018 * **	-0.001	-0.001	-0.012
			(-1.815)	(-1.263)	(-0.776)	(-1.022)
Sigma(RMSE, -6m)			-0.049	0.005	**-0.077 * **	0.067
			(-0.199)	(0.30)	**(-1.951)**	(0.29)
Constant			**0.231 * **	0	0.02	0.236
			(1.75)	(0.02)	(0.99)	(1.65)
N			1152	1149	1152	1149
Adj. R2			0.003	0.007	0.009	0.008
Firm Cluster			Yes	Yes	Yes	Yes
Year Cluster			Yes	Yes	Yes	Yes

Panel B. Robustness check: CAR regression using firm and year clustered standard error

Dependent Variable: CAR			[-10,+60]	[0]	[-1,+1]	[+2,+60]
1{SOX}			-0.058	**0.024 *** **	0.017	-0.11
			(-0.540)	**(2.88)**	(1.37)	(-0.861)
1{Forced}			**-0.302 ** **	-0.007	-0.005	**-0.326 ** **
			(-2.348)	(-0.762)	(-0.273)	**(-2.565)**
CPA --> No CPA			**-0.187 ** **	**0.013 * **	**0.027 ** **	**-0.268 ** **
			(-2.179)	**(1.69)**	**(2.25)**	**(-2.293)**
CPA --> No CPA	*1{SOX}		0.095	**-0.03 *** **	**-0.038 *** **	0.16
			(0.95)	**(-4.551)**	**(-3.140)**	(1.34)
CPA --> No CPA	*1{Forced}		**0.333 * **	-0.005	-0.019	**0.455 ** **
			(1.74)	(-0.189)	(-0.728)	**(2.41)**
CPA --> No CPA	*1{SOX}	*1{Forced}	-0.077	-0.015	0.004	-0.114
			(-0.383)	(-0.548)	(0.10)	(-0.585)
No CPA --> CPA			-0.044	0.002	-0.01	-0.05
			(-0.273)	(0.30)	(-0.744)	(-0.269)
No CPA --> CPA	*1{SOX}		0.034	**-0.022 *** **	-0.012	0.006
			(0.21)	**(-3.160)**	(-0.745)	(0.04)
No CPA --> CPA	*1{Forced}		0.203	0.026	**0.041 *** **	0.129
			(1.21)	(1.65)	**(2.95)**	(0.80)
No CPA --> CPA	*1{SOX}	*1{Forced}	**0.14 ** **	-0.012	-0.011	**0.254 *** **
			(2.04)	(-0.667)	(-0.587)	**(3.01)**
No CPA--> No CPA			-0.104	0.006	0.009	-0.184
			(-1.011)	(0.92)	(0.60)	(-1.562)
No CPA--> No CPA	*1{SOX}		0.066	**-0.025 *** **	**-0.034 ** **	0.134
			(0.57)	**(-3.077)**	**(-2.066)**	(1.10)
No CPA--> No CPA	*1{Forced}		0.161	0	-0.013	**0.219 * **
			(1.19)	(0.02)	(-0.752)	**(1.66)**
No CPA--> No CPA	*1{SOX}	*1{Forced}	0.084	**0.019 ** **	**0.029 *** **	0.071
			(1.15)	**(2.07)**	**(3.01)**	(1.22)
Past 3 year Stock Performance			**-0.027 *** **	**-0.002 * **	-0.001	**-0.028 *** **
			(-2.811)	**(-1.802)**	(-0.560)	**(-2.872)**
VIX Index			0.003	0	**-0.001 *** **	0.003
			(0.59)	(-0.790)	**(-2.777)**	(0.70)
Size:Log (MVE)			**-0.022 ** **	**-0.002 ** **	-0.001	-0.015
			(-2.431)	**(-2.213)**	(-0.763)	(-1.430)
Sigma(EGARCH, -6m)			-0.259	**-0.049 *** **	**-0.105 *** **	-0.104
			(-1.270)	**(-2.688)**	**(-2.986)**	(-0.487)
Constant			**0.266 ** **	0.009	0.02	**0.271 * **
			(2.18)	(0.76)	(0.95)	**(1.91)**
N			1150	1147	1150	1147
Adj. R2			0.004	0.011	0.014	0.008
Firm Cluster			Yes	Yes	Yes	Yes
Year Cluster			Yes	Yes	Yes	Yes

Table III-IV. CFO Compensation and CPA License

Panel A. OLS regression

Dependent Variable:	Log(CFO Salary/BVA)	Log(CFO TCD1/BVA)	Log(CFO Salary/BVA)	Log(CFO TCD1/BVA)
1{CPA}	**0.7074 *** **	**0.6001 *** **	**0.5478 *** **	**0.433 *** **
	(3.24)	**(2.98)**	**(3.34)**	**(2.77)**
1{MBA}	0.0039	-0.0145	-0.079	-0.0506
	(0.02)	(-0.0688)	(-0.5114)	(-0.3430)
1{After SOX}	0.1231	0.1137	0.1887	0.111
	(0.41)	(0.41)	(0.92)	(0.57)
1{Forced Out}	-0.2141	-0.0545	-0.0799	-0.0159
	(-0.7943)	(-0.2192)	(-0.4030)	(-0.0844)
Top 5 Inst.Ownership	**-5.928 *** **	**-5.0246 *** **	**-3.0017 *** **	**-2.3368 *** **
	(-6.2870)	**(-5.7840)**	**(-4.3341)**	**(-3.5541)**
Op.Inc.Growth 1y	0.0071	0.0207	-0.0124	0
	(0.23)	(0.74)	(-0.8460)	(0.00)
1 yr BHR	-0.1392	-0.0616	**-0.2094 * **	-0.1188
	(-0.7717)	(-0.3725)	**(-1.6545)**	(-0.9867)
1{Execucomp Firm}			**-0.7969 *** **	**-0.4982 ** **
			(-3.8804)	**(-2.5260)**
Constant	**1.0517 *** **	**1.4532 *** **	0.3695	**0.8938 *** **
	(2.89)	**(4.35)**	(1.36)	**(3.46)**
N	161	160	325	320
Adj.R2	0.2616	0.2254	0.2185	0.1238
Sample	Outside Execucomp	Outside Execucomp		

Top 5 Inst. Ownership is the percentage of the aggregate ownership of the five largest institutional investors for each firm by ownership as of the quarter end prior to the CFO departure. Op.Inc.Growth 1y is the yearly growth rate of the operating income (OIBD) prior to the CFO departure. 1yrBHR is one year stock price performance prior to CFO departure.

Panel B. OLS with Industry dummies

Dependent Variable:	Log(CFO Salary/BVA)	Log(CFO TCD1/BVA)	Log(CFO Salary/BVA)	Log(CFO TCD1/BVA)
1{CPA}	**0.4179 ***	0.3464	**0.4211 *****	**0.2941 ***
	(1.79)	(1.59)	**(2.60)**	**(1.86)**
1{MBA}	0.1004	0.0718	-0.1189	-0.0316
	(0.41)	(0.31)	(-0.7572)	(-0.2062)
1{After SOX}	-0.0712	-0.0766	0.2513	0.1134
	(-0.2252)	(-0.2557)	(1.22)	(0.56)
1{Forced Out}	-0.0999	0.0492	-0.1036	-0.0327
	(-0.3460)	(0.18)	(-0.5130)	(-0.1667)
Top 5 Inst.Ownership	**-5.8842 *****	**-5.1036 *****	**-3.4475 *****	**-2.6038 *****
	(-6.1229)	**(-5.6914)**	**(-4.9697)**	**(-3.8803)**
Op.Inc.Growth 1y	-0.0185	-0.0183	-0.0155	-0.0019
	(-0.5277)	(-0.5593)	(-1.0792)	(-0.1355)
1 yr BHR	-0.0502	0.051	**-0.2166 ***	-0.1041
	(-0.2570)	(0.28)	**(-1.7205)**	(-0.8503)
1{Execucomp Firm}			**-0.4581 ****	-0.202
			(-2.1973)	(-0.9873)
Constant	0.1075	1.7569	0.2211	0.6531
	(0.08)	(1.39)	(0.17)	(0.53)
N	160	159	322	317
Adj.R2	0.3335	0.2785	0.3205	0.2042
Firm Dummies	Yes	Yes	Yes	Yes
Sample	Outside Execucomp	Outside Execucomp		

Top 5 Inst. Ownership is the percentage of the aggregate ownership of the five largest institutional investors for each firm by ownership as of the quarter end prior to the CFO departure. Op.Inc.Growth 1y is the yearly growth rate of the operating income (OIBD) prior to the CFO departure. 1yrBHR is one year stock price performance prior to CFO departure.

Panel C OLS with After SOX Interactions

Dependent Variable:	Log(CFO Salary/BVA)			
1{CPA}	-0.2275		**-0.2828**	*
	(-1.3265)		**(-1.9566)**	
1{MBA}	-0.0664		-0.1308	
	(-0.4115)		(-0.9369)	
1{After SOX}	-0.0109		-0.0427	
	(-0.0713)		(-0.3323)	
1{CPA}*1{After SOX}	**0.6738**	***	**0.5125**	***
	(2.92)		**(2.67)**	
1{MBA}*1{After SOX}	0.2374		0.286	
	(1.01)		(1.44)	
1{Forced Out}	0.0382		-0.0677	
	(0.26)		(-0.5490)	
Experience	-0.0143		-0.0171	
	(-0.7398)		(-1.0414)	
Experience^2	0.0001		0.0003	
	(0.12)		(0.60)	
Top 5 Inst.Ownership	**-1.1964**	**	**-0.9094**	**
	(-2.5583)		**(-2.3447)**	
Op.Inc.Growth 1y	0.0153		0.0049	
	(1.30)		(0.52)	
1 yr BHR	0.0761		0.0354	
	(1.28)		(0.70)	
Log(MVE)	**-0.5455**	***	**-0.5527**	***
	(-15.8907)		**(-19.1281)**	
constant	**3.1792**	***	**-4.3882**	***
	(16.15)		**(-5.7888)**	
Include Execucomp	No		No	
N	298		296	
Adj.R2	0.5808		0.7469	
Industry Dummies	No		Yes	
Wald Test: Beta(1{CPA})+Beta(1{CPA}*1{AfterSOX})=0				
pvalue	0.0053		0.0831	

Experience is the age of the CFO at the year of departure minus 23.

Table III-V. Multinomial Logit Model of CFO Transition Outcome

Panel A. CPA CFO, Non-CPA CFO, and No Replacement

	Model 1		Model 2	
Base Outcome Appointment: Non-CPA	Outcome 1 CPA	Outcome 2 Nobody	Outcome 1 CPA	Outcome 2 Nobody
1{Old CFO has CPA}	**0.3116 ***	**-0.9299 ****	**0.3418 ***	**-0.8539 ****
	(1.74)	**(-2.5707)**	**(1.79)**	**(-2.4499)**
1{Old CFO has MBA}	-0.1883	**-1.0573 *****	-0.1649	**-0.9462 *****
	(-1.0118)	**(-3.2171)**	(-0.9504)	**(-2.9831)**
Instiutional Ownership	**-1.3901 *****	-0.3308	**-1.5014 *****	-0.2312
	(-3.7012)	(-0.4449)	**(-5.1840)**	(-0.3337)
Instiutional Ownership * 1{After SOX}	1.0144	-0.2415	1.19	-0.2759
	(1.32)	(-0.2849)	(1.61)	(-0.3404)
Prior 1 yr Stock Performance	**-0.1871 *****	-0.0201	**-0.169 *****	0.0024
	(-3.7198)	(-0.2332)	**(-3.4299)**	(0.03)
OIMargin	-0.6784	-0.3402	-0.9788	-0.9274
	(-0.9436)	(-0.3742)	(-1.5528)	(-1.0357)
1{After SOX}	-0.2503	0.8259	-0.309	0.7193
	(-0.4695)	(1.37)	(-0.6109)	(1.25)
1{Forced}	0.1205	**0.5356 ****	0.119	**0.4294 ***
	(0.54)	**(2.10)**	(0.53)	**(1.82)**
Relative Spread [-50,-11]	-0.9357	**25.7927 ****	-2.8635	**22.2316 ****
	(-0.1414)	**(2.34)**	(-0.4832)	**(2.25)**
Relative Spread [-50,-11] * 1{After SOX}	11.8468	-18.2424	9.5444	-17.0527
	(0.91)	(-1.2690)	(0.79)	(-1.2108)
Ind. Rel. Accrual	**1.2307 ****	0.1284	**1.2793 ****	0.4379
	(2.02)	(0.20)	**(2.20)**	(0.71)
Ind. Rel. Accrual * 1{After SOX}	-0.3393	-0.4892	-0.358	-0.4969
	(-0.7778)	(-0.9331)	(-0.8018)	(-0.9954)
Sales Growth 1 yr	-0.0443	-0.233	-0.035	-0.2223
	(-0.9534)	(-1.5081)	(-1.0355)	(-1.5407)
Profit Growth 1yr	-0.0109	-0.0001	-0.0106	0.0023
	(-0.8462)	(-0.0125)	(-0.9224)	(0.32)
Size: Log(MVE)	-0.0733	0.0452	**-0.0909 ***	0.0117
	(-1.2130)	(0.69)	**(-1.6778)**	(0.18)
BEME	-0.0016	**0.0024 *****	-0.0016	**0.002 *****
	(-0.2558)	**(5.01)**	(-0.3642)	**(7.55)**
Sigma(RMSE -6m)	-1.2956	0.8035	-1.4974	0.3011
	(-1.2321)	(0.47)	(-1.4838)	(0.17)
MV Leverage Ratio	0.0984	-0.3781	0.1755	0.1641
	(0.06)	(-0.1257)	(0.39)	(0.19)
Ind. Rel. MV Leverage	-0.3972	-0.1038	-0.4094	-0.6631
	(-0.2423)	(-0.0330)	(-0.5990)	(-0.7565)
1{Merger Confounded}	-0.2604	**-0.7531 ****	-0.2515	**-0.8203 *****
	(-0.7994)	**(-2.4923)**	(-0.8044)	**(-2.6710)**
1{Repurchase Confounded}	0.1545	0.8103	0.3055	0.9499
	(0.24)	(0.76)	(0.63)	(0.98)

(Continued)

1{JV Confounded}	-0.4261	0.0845	-0.3235	0.1092
	(-0.7007)	(0.22)	(-0.5849)	(0.33)
1{Lawsuit}	**-1.4094 ***	-0.2929	-1.1842	-0.0786
	(-1.7748)	(-0.8096)	(-1.4759)	(-0.1849)
1{Restatement}	-0.1322	-0.1013	-0.0644	-0.0163
	(-0.3210)	(-0.2753)	(-0.1712)	(-0.0508)
1{Worse Earnings}	**0.8834 ***	0.5526	**0.8015 ***	0.6619
	(1.66)	(1.21)	**(1.76)**	(1.10)
Constant	-21.1384	-26.288	0.4295	**-1.593 ***
	.	.	(0.98)	**(-1.8271)**
N	1238		1238	
PseudoR2	0.108		0.0602	
Industry Dummy	Yes		No	
Year Cluster	Yes		Yes	

OIMAR is OIBD divided by book value of assets. MV Leverage ratio (market value based leverage ratio) is the sum of current portion long term liabilities and interest bearing long term debt divided by the market value of equity as of the end of the fiscal year prior to the CFO departure. Ind.Rel.MV Leverage (Industry relative market value leverage ratio) is the market value based leverage ratio of the firm minus the median of the market value based leverage ratio by the industry grouping by Fama-French 49 industry group. Profit growth 1y is the OIMAR as of the fiscal year prior to the CFO departure minus the OIMAR as of one fiscal year prior to the departure.

$$Accruals_{i,t} = \frac{NetIncomeBeforeExtraItems(data123)_{i,t} - (OperatingCashflow(data308 - data124))_{i,t}}{TotalAssets(data6)_{i,t-1}}$$

Relative accruals is the firm's accrual minus the industry median accruals by Fama-French 49 industry group.

Panel B. CPA CFO, MBA CFO, CPA & MBA CFO, and No Replacement

Base Outcome Appointment: Non-CPA Non-MBA		Outcome1 CPA	Outcome2 MBA	Outcome3 CPA & MBA	Outcome4 Nobody
1{Old CFO has CPA}		**0.5767 *** (2.76)**	**0.3164 * (1.94)**	0.0644 (0.24)	**-0.846 ** (-2.2552)**
1{Old CFO has MBA}		**-0.313 ** (-2.0693)**	**0.4144 *** (2.86)**	0.2716 (1.10)	**-0.9302 *** (-2.8978)**
Instiutional Ownership		**-1.4752 *** (-3.2140)**	0.6394 (1.08)	-0.7661 (-0.9602)	-0.1635 (-0.1974)
Instiutional Ownership	* 1{After SOX}	0.9567 (0.95)	**-1.4131 * (-1.8548)**	0.1777 (0.21)	-0.5407 (-0.5481)
Prior 1 yr Stock Performance		**-0.2238 *** (-2.8586)**	0.0274 (0.29)	-0.1428 (-1.2299)	-0.0167 (-0.1604)
OIMargin		-0.7222 (-0.8260)	-0.4239 (-0.5509)	-0.7095 (-0.9871)	-0.4014 (-0.4915)
1{After SOX}		-0.2546 (-1.2034)	-0.183 (-0.7738)	**0.514 * (1.66)**	**0.4789 ** (2.04)**
1{Forced}		-0.2215 (-0.3436)	**1.0158 ** (2.09)**	0.29 (0.50)	1.0184 (1.59)
Relative Spread [-50,-11]		-1.9007 (-0.2303)	8.9735 (0.85)	3.9804 (0.40)	**28.1342 ** (2.37)**
Relative Spread [-50,-11]	* 1{After SOX}	-6.4904 (-0.3974)	**-55.0839 *** (-4.0189)**	11.3459 (0.84)	**-27.7288 ** (-1.9728)**
Ind. Rel. Accrual		**1.3558 * (1.90)**	0.267 (0.76)	**1.216 ** (2.26)**	0.18 (0.31)
Ind. Rel. Accrual	* 1{After SOX}	0.1159 (0.22)	0.3094 (0.75)	-0.6152 (-1.2909)	-0.4456 (-0.8015)
Sales Growth 1 yr		-0.1346 (-1.6304)	0.0111 (0.77)	-0.0112 (-0.2244)	-0.24 (-1.5372)
Profit Growth 1yr		-0.0092 (-0.5654)	-0.0078 (-0.6832)	-0.018 (-1.0836)	-0.0021 (-0.2066)
Size: Log(MVE)		**-0.1205 * (-1.7043)**	0.1023 (1.28)	0.0615 (0.66)	0.0738 (1.28)
BEME		-0.0051 (-0.5011)	**-0.0946 ** (-2.4593)**	-0.0031 (-0.3227)	**0.0022 *** (3.86)**
Sigma(RMSE -6m)		**-1.9775 ** (-2.3955)**	-0.7016 (-0.5943)	-0.353 (-0.1957)	0.7526 (0.44)
MV Leverage Ratio		-1.9278 (-0.7787)	0.4417 (0.27)	3.1037 (1.15)	-0.5384 (-0.1807)
Ind. Rel. MV Leverage		2.0115 (0.86)	0.0798 (0.06)	-3.7413 (-1.4627)	0.1537 (0.05)
1{Merger Confounded}		-0.2392 (-0.6538)	-0.5888 (-1.0816)	-0.7491 (-1.3943)	**-0.8885 *** (-2.5997)**
1{Repurchase Confounded}		-0.659 (-0.4917)	0.1817 (0.36)	0.8677 (1.48)	0.8474 (0.82)

(Panel B. continued)

1{JV Confounded}	-0.1005	0.0406	-0.9122	0.0985
	(-0.1913)	(0.10)	(-0.8755)	(0.22)
1{Lawsuit}	-0.9943	**0.9727 ***	-1.2268	0.01
	(-0.8798)	**(1.96)**	(-1.2315)	(0.02)
1{Restatement}	-1.4031	0.0777	0.7465	-0.0734
	(-1.3271)	(0.12)	(1.10)	(-0.1578)
1{Worse Earnings}	**1.0382 ****	-0.5001	0.2248	0.4374
	(2.05)	(-0.5841)	(0.32)	(1.03)
Constant	-20.5635	**-27.8719 *****	-24.5186	-25.3423
	-	**(-18.3039)**	-	(-0.1097)
N	1238			
PseudoR2	0.1163			
Industry Dummies	Yes			
Year cluster	Yes			

OIMAR is OIBD divided by book value of assets. MV Leverage ratio (market value based leverage ratio) is the sum of current portion long term liabilities and interest bearing long term debt divided by the market value of equity as of the end of the fiscal year prior to the CFO departure. Ind.Rel.MV Leverage (Industry relative market value leverage ratio) is the market value based leverage ratio of the firm minus the median of the market value based leverage ratio by the industry grouping by Fama-French 49 industry group. Profit growth 1y is the OIMAR as of the fiscal year prior to the CFO departure minus the OIMAR as of one fiscal year prior to the departure.

$$Accruals_{i,t} = \frac{NetIncomeBeforeExtraItems(data123)_{i,t} - (OperatingCashflow(data308 - data124))_{i,t}}{TotalAssets(data6)_{i,t-1}}$$

Relative accruals is the firm's accrual minus the industry median accruals by Fama-French 49 industry group.

Panel C. Robustness check

Base Outcome Appointment: Non-CPA Non-MBA	Outcome1 CPA	Outcome2 MBA	Outcome3 CPA & MBA	Outcome4 Nobody
1{Old CFO has CPA}	**0.5955 *** (3.04)**	0.3293 (1.46)	0.1254 (0.57)	**-0.7701 *** (-3.1427)**
1{Old CFO has MBA}	-0.2475 (-1.4038)	**0.4844 *** (4.00)**	0.2684 (1.30)	**-0.8055 *** (-3.7574)**
Instiutional Ownership	**-1.6157 ** (-2.5283)**	**0.7659 * (1.65)**	-0.7489 (-0.8999)	-0.0408 (-0.0676)
Instiutional Ownership * 1{After SOX}	**1.1384 * (1.65)**	-1.4056 (-1.5915)	0.3417 (0.29)	-0.5655 (-0.9511)
Prior 1 yr Stock Performance	**-0.184 * (-1.7198)**	0.0334 (0.35)	-0.1487 (-0.9464)	0.0081 (0.08)
OIMargin	**-1.1251 * (-1.9116)**	-0.3155 (-0.4739)	-0.9753 (-1.1304)	-0.9758 (-1.5716)
1{After SOX}	-0.1893 (-0.4306)	0.8817 (1.34)	0.0134 (0.02)	**0.879 ** (2.23)**
1{Forced}	-0.2106 (-0.8135)	-0.2609 (-1.0931)	0.4188 (1.61)	0.3635 (1.34)
Relative Spread [-50,-11]	-2.6517 (-0.2314)	7.9236 (0.82)	0.3836 (0.04)	**24.1838 ** (2.35)**
Relative Spread [-50,-11] * 1{After SOX}	-8.3317 (-0.6701)	**-49.1553 ** (-2.0454)**	14.254 (0.84)	**-24.7466 ** (-2.1030)**
Ind. Rel. Accrual	**1.424 *** (2.71)**	0.2566 (0.55)	1.2602 (1.35)	0.4831 (1.43)
Ind. Rel. Accrual * 1{After SOX}	0.1652 (0.39)	0.252 (0.73)	-0.6844 (-0.9264)	-0.4578 (-1.0076)
Sales Growth 1 yr	-0.1019 (-0.9689)	0.0136 (0.93)	-0.0032 (-0.1394)	**-0.2281 * (-1.6508)**
Profit Growth 1yr	-0.0107 (-1.0279)	-0.0077 (-1.1787)	-0.0165 (-1.5600)	0.0002 (0.03)
Size: Log(MVE)	-0.1175 (-1.1266)	0.0837 (0.90)	0.0114 (0.12)	0.0345 (0.39)
BEME	-0.0041 (-0.5196)	**-0.0846 ** (-2.4071)**	-0.004 (-0.2583)	**0.0018 *** (3.06)**
Sigma(RMSE -6m)	-1.9485 (-1.4602)	-0.4584 (-0.3332)	-0.8638 (-0.5344)	0.2549 (0.34)
MV Leverage Ratio	-0.2468 (-0.2709)	**-1.3902 ** (-2.1486)**	-0.2094 (-0.2499)	-0.1935 (-0.2110)
Ind. Rel. MV Leverage	0.4236 (0.44)	**1.8962 ** (2.32)**	-0.4386 (-0.5565)	-0.2068 (-0.1960)
1{Merger Confounded}	-0.1662 (-0.4460)	-0.4541 (-1.2554)	**-0.723 ** (-2.2076)**	**-0.9299 * (-1.9558)**
1{Repurchase Confounded}	-0.5248 (-0.4801)	0.3404 (0.34)	1.1038 (1.41)	1.0367 (1.43)

(Panel C. continued)

1{JV Confounded}	-0.0467	0.1893	-0.6486	0.1603
	(-0.1202)	(0.44)	(-0.8145)	(0.34)
1{Lawsuit}	-0.6506	1.0278	-1.0452	0.2422
	(-0.5091)	(1.57)	(-1.3851)	(0.41)
1{Restatement}	-1.2511	-0.0107	0.6846	-0.0053
	(-1.4664)	(-0.0188)	(1.58)	(-0.0131)
1{Worse Earnings}	**0.9137 ****	-0.3718	0.3083	0.5669
	(2.21)	(-0.5931)	(0.44)	(0.92)
Constant	0.6073	**-1.7753 *****	-1.3381	**-1.4941 ***
	(0.65)	**(-2.6028)**	(-1.3403)	**(-1.7613)**
N	1238			
PseudoR2	0.06			
Industry cluster	Yes			

OIMAR is OIBD divided by book value of assets. MV Leverage ratio (market value based leverage ratio) is the sum of current portion long term liabilities and interest bearing long term debt divided by the market value of equity as of the end of the fiscal year prior to the CFO departure. Ind.Rel.MV Leverage (Industry relative market value leverage ratio) is the market value based leverage ratio of the firm minus the median of the market value based leverage ratio by the industry grouping by Fama-French 49 industry group. Profit growth 1y is the OIMAR as of the fiscal year prior to the CFO departure minus the OIMAR as of one fiscal year prior to the departure.

$$Accruals_{i,t} = \frac{NetIncomeBeforeExtraItems(data123)_{i,t} - (OperatingCashflow(data308 - data124))_{i,t}}{TotalAssets(data6)_{i,t-1}}$$

Relative accruals is the firm's accrual minus the industry median accruals by Fama-French 49 industry group.

Table III-VI. How Earnings Management Changes with CFO Transitions

Dependent Variable: Dfference in Ind.Rel. Discretionary Accruals					
1{NoCPA --> CPA}		**-0.0986 *** **	**-0.1032 *** **	**-0.1347 *** **	**-0.0986 *** **
		(-4.0547)	**(-3.9888)**	**(-3.4248)**	**(-4.0483)**
1{After SOX}				**0.043 ****	
				(2.14)	
1{NoCPA --> CPA}	*1{After SOX}			0.0864	
				(1.69)	
1{CPA-->CPA}		-0.0712	-0.0561	-0.0831	-0.0712
		(-0.8623)	(-0.7633)	(-0.7655)	(-0.8623)
1{CPA-->CPA}	*1{After SOX}			0.0912	
				(0.75)	
1{CPA-->NoCPA}		-0.114	-0.1021	-0.1399	-0.114
		(-1.2170)	(-1.2836)	(-1.1526)	(-1.2165)
1{CPA-->NoCPA}	*1{After SOX}			0.1057	
				(0.81)	
1{CPA-->No Replacement}		-0.0652	-0.0893	-0.075	-0.0652
		(-0.9137)	(-1.3067)	(-1.0119)	(-0.9132)
1{CPA-->No Replacement}	*1{After SOX}			-0.0807	
				(-0.5016)	
1{NoCPA --> No Replacement}		-0.0075	-0.011	-0.0085	-0.0075
		(-0.2911)	(-0.3781)	(-0.1842)	(-0.2930)
1{NoCPA --> No Replacement}	*1{After SOX}			-0.0121	
				(-0.2164)	
Stock Performance		**9.5829 ** **	**10.1876 ** **	8.515	**9.5829 ****
		(1.98)	**(1.94)**	(1.40)	**(1.97)**
Stock Performance	*1{After SOX}			6.5901	
				(0.58)	
Operating Profit Margin		**0.8071 *** **	**0.7482 *** **	**0.7191 *** **	**0.8071 *** **
		(5.29)	**(5.80)**	**(6.29)**	**(5.29)**
Operating Profit Margin	*1{After SOX}			0.1245	
				(0.48)	
1 year Sales Growth		-0.0055	-0.0056	-0.0054	-0.0055
		(-1.0463)	(-1.0046)	(-0.9937)	(-1.0456)
1 year Profit Growth		0.0001	-0.0001	-0.0002	0.0001
		(1.19)	(-0.4432)	(-0.5031)	(1.14)
Lagged Relative Accruals		**-1.0307 *** **	**-1.0152 *** **	**-1.02 *** **	**-1.0307 *** **
		(-8.9694)	**(-9.8518)**	**(-9.6315)**	**(-8.9576)**
Constant		**-0.0578 *** **	-0.065	-0.0898	**-0.0578 *** **
		(-3.0253)	(-1.0330)	(-1.5944)	**(-3.0124)**
N		1420	1420	1420	1420
Adjusted R2		0.1184	0.1018	0.1	0.1184
Industry Dummy			Yes	Yes	Firm Cluster
Clustered Standard Error		Year	Year	Year	Year Cluster

$$Accruals_{i,t} = \frac{NetIncomeBeforeExtraItems(data123)_{i,t} - (OperatingCashflow(data308 - data124))_{i,t}}{TotalAssets(data6)_{i,t-1}}$$

Relative accruals is the firm's accrual minus the industry median accruals by Fama-French 49 industry group.

Table III-VII. Does hiring CPA CFO reduce Information Asymmetry?

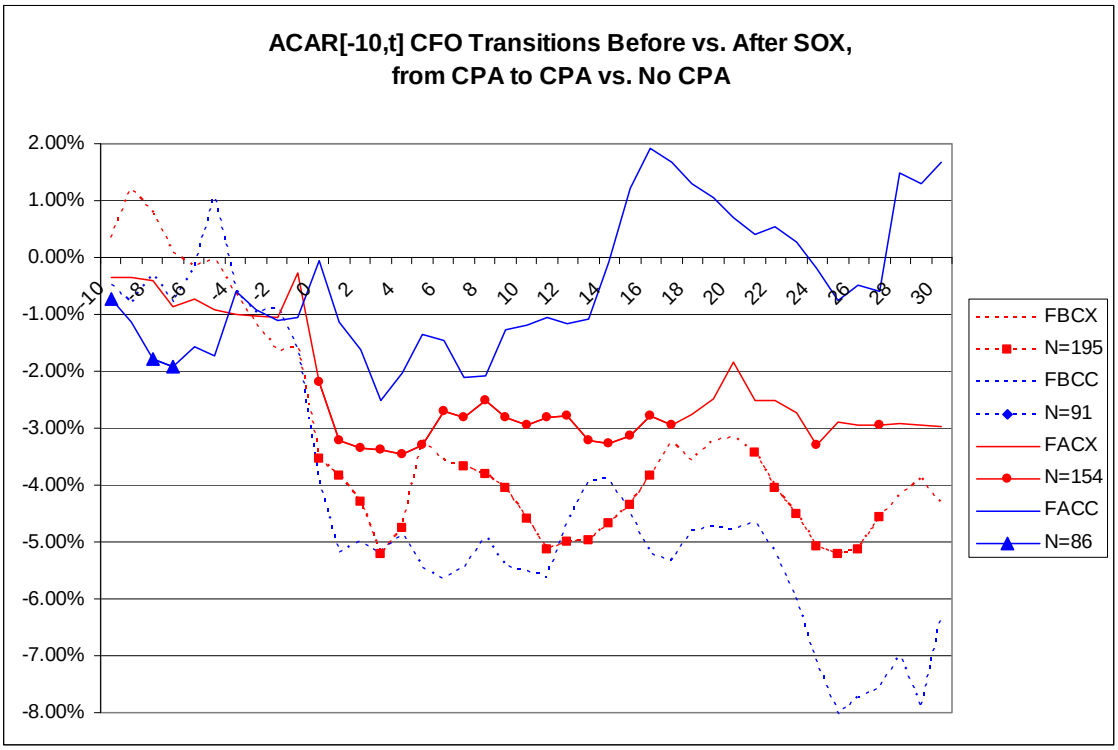
Dependent Variable:	Rel.Spread After - Rel.Spread Before CFO Turnover			
	[+11, +50] - [-50, -11]		[+11, +80] - [-80, -11]	
1{NewCFO CPA}	**-0.0008 ** (-2.0958)**		**-0.0008 ** (-2.1137)**	
NoCPA to CPA		**-0.0011 ** (-2.1000)**		-0.0007 (-1.5992)
CPA to NoCPA		0 (0.02)		0.0002 (0.55)
CPA to CPA		0.0002 (0.32)		0.0003 (0.44)
CPA to NoReplacement		**0.0043 ** (2.39)**		**0.0055 *** (3.12)**
NoCPA to NoReplacement		0.0003 (0.63)		**0.0011 * (1.75)**
Rel.Spread[-50,-11]	**-0.146 *** (-5.9330)**	**-0.1476 *** (-6.3527)**		
Rel.Spread[-80,-11]			**-0.1238 *** (-2.8579)**	**-0.1277 *** (-3.0603)**
Size:Log(MVE)	**-0.0005 *** (-2.6858)**	**-0.0004 ** (-2.4601)**	-0.0002 (-1.0136)	-0.0002 (-0.8222)
BEME	**0 *** (9.98)**	**0 *** (7.83)**	**0 *** (5.82)**	**0 *** (4.70)**
Idiosyncratic Risk (-1yr)	**0.0059 ** (2.27)**	**0.0055 ** (2.33)**	**0.0126 *** (3.46)**	**0.0123 *** (3.75)**
1{AfterSOX}	**-0.0016 *** (-2.6716)**	**-0.0016 *** (-2.5958)**	**-0.0018 ** (-2.4822)**	**-0.0019 *** (-2.6298)**
Institutional Ownership	**-0.0023 ** (-2.1073)**	**-0.0023 ** (-2.1083)**	-0.0009 (-0.9824)	-0.0008 (-0.8867)
Past 1 yr Stock Performance	**-0.001 *** (-2.7195)**	**-0.001 ** (-2.5592)**	**-0.0011 *** (-2.8817)**	**-0.001 *** (-2.7158)**
1{Forced}	0.0004 (1.39)	0.0003 (1.07)	**0.0008 *** (2.84)**	**0.0007 ** (2.33)**
constant	**0.0062 *** (3.95)**	**0.006 *** (3.75)**	0.0024 (1.12)	0.002 (0.90)
N	1230	1230	1018	1018
Adj. R2	0.0759	0.0838	0.0843	0.1001
Firm Cluster	Yes	Yes	Yes	Yes
Year Cluster	Yes	Yes	Yes	Yes

Table III-VIII. How Do Institutional Investors Respond to CFO Transitions?

Time Period	All	Before SOX	After SOX
Dependent Variable: Inst.Ownership After - I.O.Before CFO Turnover			
NoCPA to CPA	0.0083	-0.0096	**0.0359 ****
	(0.61)	(-0.4997)	**(2.30)**
CPA to NoCPA	-0.0154	-0.02	-0.0042
	(-1.6902)	(-1.6586)	(-0.3095)
CPA to CPA	-0.0179	-0.0202	-0.0023
	(-1.1210)	(-0.8808)	(-0.2090)
CPA to NoReplacement	-0.0124	-0.0289	-0.0199
	(-0.4918)	(-0.8230)	(-0.6704)
NoCPA to NoReplacement	**-0.0265 *****	**-0.0389 *****	-0.0132
	(-3.6574)	**(-3.9959)**	(-1.6651)
1{Forced}	-0.0031	0.0077	-0.0164
	(-0.3564)	(0.62)	(-0.9951)
1{AfterSOX}	0.0248		
	(1.68)		
1 year Stock Performance	**0.0217 *****	**0.0341 *****	**0.015 *****
	(3.96)	**(4.04)**	**(8.04)**
1 year Sales Growth	0.0003	0.0003	0.0085
	(0.44)	(0.41)	(0.89)
Operating Income Margin	**0.0746 ****	0.0549	**0.093 ***
	(2.82)	(1.54)	**(2.41)**
1 year Profit Growth	0.0001	0	0
	(1.05)	(-0.0841)	(-0.0728)
Size: Log(MVE)	**0.0085 ***	**0.0124 ****	0.0013
	(2.12)	**(2.59)**	(0.45)
BEME	0	**-0.0041 ****	0
	(-1.4422)	**(-2.5299)**	(0.42)
Institutional Ownership	**-0.1525 *****	**-0.1863 *****	**-0.101 ****
	(-4.5472)	**(-3.4808)**	**(-4.4901)**
Year Trend	0.0018	0.0015	0.0007
	(0.83)	(0.65)	(0.10)
Constant	-0.0754	**-0.1946 *****	0.0548
	(-1.1163)	**(-14.6663)**	(0.48)
N	1094	677	417
Adj.R2	0.0817	0.1018	0.0674
Industry Dummies	Yes	Yes	Yes
Year Cluster	Yes	Yes	Yes

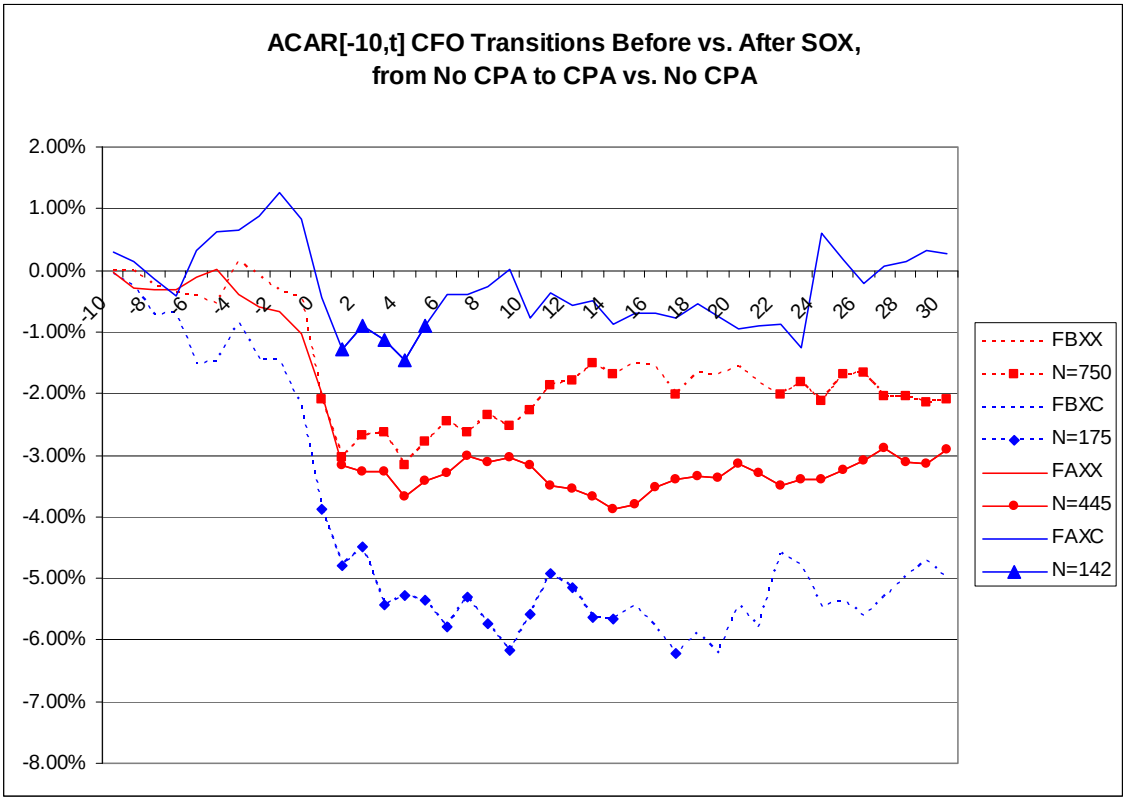
Figure III-I. ACAR [-10, t] of CFO Departures with a Replacement (Interim or Permanent).

Panel A.



Note:
FBCX: CFO departure Before SOX. A CFO with CPA is replaced with a CFO without CPA.
FBCC: CFO departure Before SOX. A CFO with CPA is replaced with a CFO with CPA.
FACX: CFO departure After SOX. A CFO with CPA is replaced with a CFO without CPA.
FACX: CFO departure After SOX. A CFO with CPA is replaced with a CFO with CPA.
Each point at time t is the average cumulative abnormal return over the period [-10,t]. The number of observations for each subsample is shown on every second line of the legend on the chart. Each point is displayed with colored dots with its respective shape if the ACAR is statistically significant at the 5% level by t-statistics by Bhoemer, Musumeci, and Paulson (1991).

Panel B.



Note:
FBXX: CFO departure Before SOX. A CFO without CPA is replaced with a CFO without CPA.
FBXC: CFO departure Before SOX. A CFO without CPA is replaced with a CFO with CPA.
FAXX: CFO departure After SOX. A CFO without CPA is replaced with a CFO without CPA.
FAXX: CFO departure After SOX. A CFO without CPA is replaced with a CFO with CPA.
Each point at time t is the average cumulative abnormal return over the period [-10,t]. The number of observations for each subsample is shown on every second line of the legend on the chart. Each point is displayed with colored dots with respective shape if the ACAR is statistically significant at the 5% level by t-statistics by Bhoemer, Musumeci, and Paulson (1991).

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Appendices

Appendix I-1. Hand-collecting process and the number of observations.

113,746 articles about CEO departures and 36,635 articles about CFO departures were collected from Factiva. Restriction to the source: Dow Jones Newswires, Major News and Business Publications, Press Release Wires, or Reuters Newswires. The articles were first matched with the CRSP dataset by matching the firm name in the Factiva article and the firm names in the CRSP database. The first departure, whether the CEO or CFO was taken and the following events that occurred within 180 days after the first announcement were removed. For each firm, the first departure announcement of the CEO (CFO) was taken as long as it was at least 180 days after the prior event announcement of the CEO (CFO). For each firm, if the CEO (CFO) departure occurred within 180 days after a CFO (CEO) departure, the observation was removed. Then I read each article and removed the articles that were not related to CEO/CFO departure events. This reduction resulted in 5,324 event observations. I also removed the observations if the firm belonged to the utility or financial industry (Industry group of 31, 45, 46, 47, and 48 by Fama French 49 industry grouping), leaving me with 4,614 observations. Out of the 4,614 observations, 997 were confounded by major corporate events and were removed in the event study.

Detailed breakdown of the 997 confounded events are as follows:

405 observations were confounded (+/- 10 days) by merger and acquisition announcements.

176 observations were confounded (+/- 10 days) by earnings announcements.

46 observations were confounded (+/- 10 days) by stock repurchase announcements.

469 observations were confounded (+/- 10 days) by joint venture announcements.

5 observations were within 90 days after bankruptcy filing

78 observations were within 90 days after an accounting restatement

69 observations were within 90 days after a lawsuit

Panel A. Breakdown of hand collected observations

	CEO	CFO	Total
Unconfounded	1600	2017	3617
Confounded	461	536	997
Total	2061	2553	4614

Panel B. Relative frequency comparison by Fama-French size quintile

	My	Execucomp		CRSP
%	Sample	Turnover	All	Universe
Small	63.92	16.19	39.15	57.68
2	13.53	19.04	17.1	14.45
3	9.16	19.5	15.31	10.16
4	7.09	20.89	14.33	8.17
Big	6.32	24.37	14.13	9.56

Note: Fama-French Size bin as of December of each Calendar Year

Panel C. Year distribution of sample by the year and position title

Year	A. Original Factiva Hand collected Set			B. Intersection with Execucomp			C. Observations of B with Default Probability Available		
	CFO	CEO	TOTAL	CFO	CEO	TOTAL	CFO	CEO	TOTAL
1979	2	0	2						
1980	2	0	2						
1981	2	3	5						
1982	2	0	2						
1983	4	3	7						
1984	9	2	11						
1985	13	6	19						
1986	13	1	14						
1987	16	0	16						
1988	17	2	19						
1989	34	22	56						
1990	29	47	76						
1991	39	61	100						
1992	50	53	103	10	6	16	7	5	12
1993	68	77	145	16	17	33	14	16	30
1994	66	60	126	13	14	27	10	13	23
1995	61	59	120	14	8	22	13	8	21
1996	112	82	194	23	18	41	18	16	34
1997	146	113	259	41	25	66	32	23	55
1998	186	186	372	42	50	92	34	45	79
1999	220	181	401	56	52	108	51	47	98
2000	249	196	445	46	41	87	35	37	72
2001	157	155	312	42	41	83	38	34	72
2002	113	147	260	41	46	87	36	42	78
2003	148	106	254	53	36	89	43	31	74
2004	187	109	296	53	48	101	39	41	80
2005	270	183	453	70	54	124	54	42	96
2006	314	190	504	40	36	76	32	30	62
Total	2529	2044	4573	560	492	1052	456	430	886

Panel D. Year distribution of sample by the year and departure type

Year	A. Original Factiva Hand collected Set			B. Intersection with Execucomp			C. Observations of B with Default Probability Available		
	Voluntary	Forced	TOTAL	Voluntary	Forced	TOTAL	Voluntary	Forced	TOTAL
1979	2	0	2						
1980	2	0	2						
1981	5	0	5						
1982	2	0	2						
1983	6	1	7						
1984	8	3	11						
1985	17	2	19						
1986	13	1	14						
1987	14	2	16						
1988	17	2	19						
1989	47	9	56						
1990	61	15	76						
1991	90	10	100						
1992	88	15	103	15	1	16	12	0	12
1993	123	22	145	24	9	33	21	9	30
1994	110	16	126	24	3	27	20	3	23
1995	108	12	120	19	3	22	18	3	21
1996	166	28	194	32	9	41	27	7	34
1997	221	38	259	56	10	66	48	7	55
1998	313	59	372	81	11	92	69	10	79
1999	337	64	401	84	24	108	76	22	98
2000	377	68	445	72	15	87	58	14	72
2001	242	70	312	58	25	83	50	22	72
2002	192	68	260	62	25	87	54	24	78
2003	212	42	254	72	17	89	59	15	74
2004	230	66	296	75	26	101	58	22	80
2005	365	88	453	97	27	124	76	20	96
2006	409	95	504	61	15	76	48	14	62
Total	3777	796	4573	832	220	1052	694	192	886

Appendix I-2. Common comment to the tables throughout the paper

Multinomial logit regressions are used throughout the paper. Base outcome is the no-turnover (control firms). If the departure was confounded by bankruptcy by one year before the event and one month after the event, the observation was removed. Default Prob. 2m Prior is the default probability measured using structural model of default as of the end of the second last month prior to departure of the CEO or CFO. Chg in DP 2 yr is the default probability at the end of the month prior to departure announcement minus the default probability 2 years prior to departure. 2 (3) yr Ind.Rel.Stk.Perf. is the buy and hold abnormal return of the stock relative to the industry median (Fama French 49 industry group) over the 2 (3) year period that ended before the announcement of the executive's departure, measured at the end of the month. 2 (3) yr VW Mkt Return is the CRSP value weighted return over the specified period that ended before the announcement of the executive's departure, measured at the end of the month. OROA is operating income before depreciation in Compustat divided by book value of assets. Chg.OROA 1yr is the change in OROA over the one-year period whose fiscal year ended prior to the announcement of the executive's departure. % Indep.Dirs is the number of independent directors divided by the number of total board members. Chg.Inst.Own1QPrior is the change in aggregate institutional ownership over the one quarter that ended before the announcement of the executive's departure. 1{CEO} takes the value of one if the observation is CEO departure or its control firm, and zero if the observation is CFO departure or its control firm. Change in leverage ratio is the leverage ratio of the firm as of the end of the fiscal year prior to departure minus the leverage ratio one year before. The (MV) leverage ratio is measured as the book value of debt divided by the sum of book value of debt and market value of common equity. Absolute value of heteroscedasticity robust standard error is reported under each coefficient. 10%, 5%, and 1% statistical significance are shown as *, **, and ***, respectively.

Appendix II-1: Procedure of obtaining "unconfounded" interviews.

Note: All CEO interview observations were collected from Factiva. The numbers of observations are based on the stocks whose stock returns on the day of the event are non-missing. For the interviews that took place after 3:30 pm, the event day is recognized as the next trading day. The unconfounded sample includes the interviews that are not confounded by major corporate events by +/- 10 calendar days. The major corporate events are (1) merger announcements/effective as an acquirer or a target; (2) repurchases; (3) joint ventures from SDC Platinum; (4) CEO appointments by Execucomp; (5) general meetings of shareholders by the IRRC; (6) quarterly or annual earnings announcements by I/B/E/S; and (7) accounting restatements by the GAO. The Cleanest Sample is the unconfounded CEO interviews that do not even have any news articles over the calendar days of +/-7 days of the interview.

Appendix III-I: Variable Definition for Chapter III.

Old Mgr. CPA (MBA): dummy variable that is one if the departing CFO is a CPA (has MBA).
OIBD: Operating Income before Depreciation and Amortization
Past N month Performance: buy and hold return of the stock over the N month prior to CFO departure
Idiosyncratic volatility (RMSE): the standard deviation of the residuals over the 36 months of the monthly Carhart 4 factor model of each firm
Idiosyncratic volatility (EGARCH): the conditional volatility of the residuals over the 36 months of the monthly Carhart 4 factor model of each firm following Fu (2009)
Average of Avg. Relative spread $[t_b, t_e]$: for each stock in TAQ data, we compute the relative spread of the stock for each transaction over the time window of 10 am ~ 3: 30 pm. We compute the average of the relative spread over the trading day, and compute the average of the average over the estimation window of $[t_b, t_e]$ trading days. t_b and t_e are the beginning and ending day of the estimation, respectively.