

THE EFFECT OF CFO MANAGEMENT ON STOCK PRICE CRASH RISK

Giman Nam, Sungkyunkwan University

ABSTRACT

I examine whether CFO management affects stock price crash risk. CFO management, which is known as a tool used to inflate reported CFO, can cause stock price crash risk by promoting the accumulation of bad news. I find that CFO management has no effect on stock price crash risk. But there are some firm characteristics that associated with incentive to inflate reported CFO. I find that the effect of CFO management on stock price crash risk is greater for under the specific firm characteristics. The results highlight the bad side of CFO management by providing evidence that under specific firm characteristics, CFO management can cause stock price crash risk.

Keywords: CFO Management, Firm Characteristics, Stock Price Crash Risk.

INTRODUCTION

Earnings and cash from operations (CFO) are complementary measures of firm performance. But, earnings and CFO have different meaning for future earnings and for investors depending on the firm characteristics. For example, managers, in general, value earnings, but when the firm is near distress, managers consider CFO more important than earnings (Graham et al., 2005). Similarly, DeFond & Hung (2003) provide evidence that a lot of firm's analysts and managers issue cash flow forecasts. It means that not only managers but also investors are interested in CFO. Unlike earnings, it is believed that managers do not exercise discretion over CFO so far. However, many examples of cash flow misreporting have raised concerns that to inflate reported CFO, managers are exercising discretion on financial reporting and in the timing of transactions as well as earnings.

Since the 2008 financial crisis, interest in investors' perceptions of stock price crash risk has been increasing. Prior studies on stock price crash risk often attribute stock price crash risk to managerial ability to hid bad news (Bleck & Liu, 2007; Hutton et al., 2009; Kim et al., 2011). When the bad news hidden by the managers accumulate to a certain threshold, the stock price will plummet (Kim et al., 2016). For example, Hutton et al. (2009) provide evidence that opaque financial reporting is associated with stock price crash risk. Like earnings management, CFO management also can facilitate bad news hoarding activities by exercising discretion in the timing of transactions. Therefore, I believe that it is meaningful to empirically examine the relationship between CFO management and stock price crash risk rather than earnings management. In this studies, I investigate the two questions: (1) Is there an association between CFO management and crash risk? (2) What firm characteristics influence these relationships?

Using 19,376 firm-year observations of firms listed in U.S. stock market for the period of 2002 to 2017, I find that stock price crash risk is not associated with CFO management. However, I find a significant positive relationship between CFO management and stock price crash risk in the four firm characteristics that known to be associated with incentives to inflate reported CFO (Lee, 2012). These results suggested that in general, there is no relationship between CFO management and stock price crash risk. But, under specific circumstances such as higher associations between stock return and CFO, financial distressed firm, credit rating grade cutoff, whether firms meet or beat the analyst cash flow benchmark,

managers can hoard bad news from investors through CFO management. After all, it is followed by a continuous sharp decrease in stock price.

Section 1: reviews relevant literature and develops the hypothesis development. Section 2: describes sample, data and research design. Section 3: reports primary empirical results. Finally, Section 4: offers some concluding remarks.

PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

Generally, earnings are better than CFO as a summary measure of firm performance (Dechow, 1994). Recent studies show that analyst's cash flow forecasts are helpful in alleviating earnings management (DeFond & Hung, 2003; McInnis & Collins, 2011). Although, there is a trend that investors' request for information about cash flow (Wasley & Wu, 2006), cases of misreporting in cash flow have raised concern that managers also exercise discretion on CFO. For example, to masquerade a loan as a cash inflow from operations, Dynegy made a complex transaction using a special purpose entity. This allowed Dynegy to record a \$300 million increase in CFO for the year 2001 without any effect on earnings (Lee, 2012). This anecdote suggest that firms also can manage reported CFO.

Since the 2008 financial crisis, investors regard stock price crash risk as a significant risk factors. For example, Hutton et al. (2009) find that accruals management is one of the determinants of stock price crash risk. Similarly, Kothari et al. (2009) insist that career concerns drive managers to withhold bad news and inflate financial performance.

Like the accruals management, managers can manipulate reported CFO using timing of transactions. However, it becomes too expensive for manager to hoard the bad news using CFO management when it reaches a certain point. Therefore, if CFO management facilitate bad news hoarding and then it is likely to be followed by stock price crash risk. Based on the discussion, I state my first hypothesis as follows:

H1: There is a relationship between CFO management and stock price crash risk.

Lee (2012) identifies four firm characteristics related to incentives to inflate reported CFO: (1) high relevance of stock returns and CFO, (2) whether the firms are in financial distress, (3) credit rating grade cutoff, (4) whether firms meet or beat the analyst cash flow benchmarks.

First, Earnings and CFO are two complementary summary measure of firm performance, therefore, they have different meanings for future earnings and, depending on the firm characteristics. For example, if firms have analyst cash flow forecasts, the ability of current CFO to predict future CFO is higher (Call, 2007). Dechow & Ge (2006) find that, on average, CFO is less useful than earnings with respect to predict future earnings. But CFO can be more useful than earnings when firms have a lot of negative accruals.

Therefore, when investors place more meaning on CFO, CFO is additional metric to evaluate managers. Using the association between stock returns and CFO, I expect the relationship between crash risk and CFO management is more pronounced in this measure.

H2-a: The association between CFO management and stock price crash risk is more pronounced for firm with higher associations between stock returns and CFO.

Second, prior research provides mixed results of whether information of cash flow is related to financial distressed firm. Casey & Bartczak (1985) provide evidence that cash flows do not plays a role in distinguishing between bankrupt and non-bankrupt firms. But Sharma (2001) finds that cash flows provide additional information in distinctive between bankrupt and non-bankrupt firms Furthermore, Gombola et al. (1987) and Gentry et al. (1985)

provide evidence that cash flows do not have ability to predict firm failure. However, Graham et al. (2005) find that managers consider cash flow information more important to evaluate firms that are near financial distress or highly leveraged. This is consistent with the view that information of cash flow is a measure of evaluating credit and bankruptcy risk (DeFond & Hung, 2003). Thus, I expect the relationship between CFO management and stock price crash risk is stronger when the firm is near financial distress.

H2-b: The positive association between crash risk and CFO management is stronger when firm is near financial distress.

When rating agencies give credit rating to firms, information about the cash flow is important (Standard & Poor's, 2008). For example, Backer & Gosman (1980) find that CFO-to-long-term-debt ratio is an important variable when senior executives at bond-rating agencies make a decision about the credit rating. Also, the grade boundary of investment/non-investment is important point in the distribution of ratings (Beaver et al., 2006). Thus, there are incentives to inflate reported CFO to avoid downgrades, especially when firms are in grade boundary of investment and non-investment. Therefore, I expect the relationship between CFO management and stock price crash risk to be stronger when firm are in this boundary.

H2-c: The positive association between crash risk and CFO management is stronger when firm is near the investment/non-investment grade cutoff.

Several studies related to earnings management interpret a discontinuity in earnings distribution around the zero as evidence of earnings management. For example, Zhang (2008) suggest that firms manipulate CFO to meet/beat cash flow forecast by documenting a discontinuity in cash flow distribution. Following this stream of literature, I argue that the relationship between crash risk and CFO management is more pronounced for firms that just meet or beat the analyst cash flow forecast.

H1-d: The positive association between crash risk and CFO management is more pronounced for firms that just meet/beat analyst cash flow forecasts.

SAMPLE, DATA, AND RESEARCH DESIGN

Sample

I obtain annual financial data and quarterly data from Compustat, equity return data from Center for Research in Security Prices (CRSP). The sample spans 2002 to 2014. The sample period begins in 2002 because of the Sarbanes-Oxley Act (SOX). I exclude regulated industries (SIC codes 4400 to 5000) and banks and financial institutions (SIC codes 6000 to 6500) because the financial information differs from that in other industries. And I exclude firm-year observations that have non-positive book values, fiscal year-end stock prices of less than \$1, and observations that have fewer than 26 weeks of stock return data. To mitigate the effects of outliers, all variables are winsorized at the extreme 1st and 99th percentiles. Finally, I use 19,376 firm-year observations.

Design

Unexpected cash flow from operation

I calculate predicted *CFO* using the equation (1) over the prior 10 years based on

(Dechow et al., 1998). The interest variable is the absolute value of unexpected CFO(*ABSUCFO*). To obtain the *ABSUCFO*, I deduct the actual CFO from predicted CFO.

$$CFO_{i,t}/TA_{i,t-1} = \alpha_0 + \alpha_1(1/TA_{i,t-1}) + \alpha_2(SALE_{i,t}/TA_{i,t-1}) + \alpha_3(\Delta SALE_{i,t}/TA_{i,t-1}) + \varepsilon_{i,t} \quad (1)$$

Where $CFO_{i,t}$ is the operating cash flows (annual Compustat data item “*oancf*” - annual Compustat data item “*xidoc*”). TA is total assets (annual Compustat data item “*at*”). $SALES$ is total sales (annual Compustat data item “*sales*”). $\Delta SALE_i$ is change in sales from the preceding year.

Measuring firm-specific crash risk

To calculate the measures stock price crash risk, I use equation (2) for each firm and year. Specifically, the firm-specific weekly stock return is defined as the natural log of one plus the residual return from the equation (2).

$$r_{j,\tau} = \alpha_j + \beta_{1,j}r_{m,\tau-2} + \beta_{2,j}r_{m,\tau-1} + \beta_{3,j}r_{m,\tau} + \beta_{4,j}r_{m,\tau+1} + \beta_{5,j}r_{m,\tau+2} + \varepsilon_{j,\tau}, \quad (2)$$

Where $r_{j,\tau}$ is the return on stock j in week τ and $r_{m,\tau}$ is the return on the CRSP value-weighted market index in week τ . I include the lead lag terms for the market index return to allow for nonsynchronous trading (Dimson, 1979).

Based on prior studies, the first measure of stock price crash risk is an indicator variable (*CRASH*) that equals one if there are one or more crash weeks during the fiscal year. Note that I define crash weeks as those weeks during which firm-specific weekly returns 3.2 standard deviations below the mean firm-specific weekly return over the fiscal year.

Second measure of stock price crash risk is the negative stock return skewness (*NCSKEW*). Specifically, I calculate *NCSKEW* by taking the negative of the third moment of firm-specific weekly returns for each year and dividing it by the standard deviation of firm-specific weekly returns raised to the third power. A higher value of *NCSKEW* indicates that it is more likely to experience stock price crash risk.

$$NCSKEW_{j,t} = - [n(n-1)^{3/2} \sum W_{j,\tau}^3] / [(n-1)(n-2)(\sum W_{j,\tau}^2)^{3/2}] \quad (3)$$

Third measure of stock price crash risk is the down-to-up volatility (*DUVOL*), which is computed as equation (4). I divide all the weeks by firm-specific weekly returns below the annual mean (“*down*” weeks) and those firm-specific returns above the annual mean (“*up*” weeks) and calculate the standard deviation for each of these subsamples separately. Then, the *DUVOL* measure is the log of the ratio of the standard deviation on the down weeks to the standard deviation on the up week.

$$DUVOL_{j,t} = \log [(n_u - 1) \sum_{DOWN} W_{j,\tau}^2 / (n_d - 1) \sum_{UP} W_{j,\tau}^2], \quad (4)$$

Research Model

To test whether CFO management is associated with stock price crash risk, I use the following model proposed by (Kim et al., 2009).

$$Crash Risk_{i,t+1} = \alpha_0 + \alpha_1 ABSUCFO_{i,t} + Controls_{i,t} + Fixed Effects + \varepsilon_{i,t} \quad (5)$$

Where, for firm i in year t , $Crash Risk_{i,t+1}$ are dependent variables that discussed above. I impose a one-year lag between dependent variables and independent variables. A

positive coefficient on *ABSUCFO* would indicate that CFO management increase the likelihood of stock price crash risk. Following Kim et al.(2009), I control for the effect of past return(*RET*), stock volatility(*SIGMA*), firm size(*SIZE*), market-to-book ratio(*MB*), leverage(*LEV*), lag value of stock price crash risk(*NCSKEW*), change in trading volume(*DTRUN*), and abnormal accruals(*DA*).

To test the effect of firm characteristics on the relationship between CFO management and stock price crash risk, I estimate the following regression.

$$\text{Crash Risk}_{i,t+j} = \alpha_0 + \alpha_1 \text{ABSUCFO}_{i,t} + \alpha_2 \text{Firm Characteristics}_{i,t} + \alpha_3 \text{ABUCFO} * \text{Firm Characteristics}_{i,t} + \text{Controls}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t} \quad (6)$$

Where, for firm *i* in year *t*, *Firm Characteristics*_{*i,t*} are (1) high relevance of stock returns and CFO, (2) whether the firms are in financial distress, (3) credit rating grade cutoff, (4) whether firms meet or beat the analyst cash flow benchmarks. Other variables are same as defined above. A positive coefficient on *ABUCFO***Firm Characteristics* in equation (6) would indicate that the relationship between CFO management and stock price crash risk is more pronounce in firms that have this kind of characteristics.

Descriptive Statistics

Table 1 presents the descriptive statistics of the variables used for the regression analysis, based on the sample of firm-years with non-missing data. The mean value of *CRASH* is 0.241, indicating that about 24% of firm-years have experience at least one stock price crash risk. And the mean values of *NCSKEW* and *DUVOL* are 0.014 and, 0.049, respectively. The mean value of *ABSUCFO* is 0.039. The descriptive statistics of other variables are similar to the previous studies.

Variables	N	Mean	Std	Min	Median	Max
<i>CRASH</i> _{<i>i,t</i>}	19,376	0.241	0.428	0.000	0.00	1.000
<i>NCSKEW</i> _{<i>i,t</i>}	19,376	0.014	0.822	-2.404	-0.015	2.990
<i>DUVOL</i> _{<i>i,t</i>}	19,376	-0.049	0.373	-0.990	-0.058	1.088
<i>ABSUCFO</i> _{<i>i,t</i>}	19,376	0.039	0.051	0.000	0.022	0.357
<i>RET</i> _{<i>i,t</i>}	19,376	-0.002	0.003	-0.027	-0.001	0.000
<i>SIGMA</i> _{<i>i,t</i>}	19,376	0.055	0.030	0.013	0.047	0.225
<i>SIZE</i> _{<i>i,t</i>}	19,376	6.326	2.203	1.029	6.300	11.840
<i>MB</i> _{<i>i,t</i>}	19,376	2.730	3.719	-18.129	1.968	33.270
<i>LEV</i> _{<i>i,t</i>}	19,376	0.189	0.192	0.00	0.154	0.968
<i>NCSKEW</i> _{<i>i,t</i>}	19,376	0.027	0.804	-2.306	-0.005	2.926
<i>TURNOVER</i> _{<i>i,t</i>}	19,376	1.751	1.622	0.035	1.303	10.425
<i>DA</i> _{<i>i,t</i>}	19,376	0.178	3.127	-30.199	0.040	32.506
<i>CFO_WEIGHT</i> _{<i>i,t</i>}	19,376	1.189	5.169	-19.828	0.838	24.785
<i>DISTRESS</i> _{<i>i,t</i>}	19,376	0.110	0.189	0.000	0.031	0.960
<i>NON_IGRADE</i> _{<i>i,t</i>}	19,376	0.487	0.499	0	0	1
<i>MEET_BEAT_CFO</i> _{<i>i,t</i>}	19,376	0.022	0.149	0	0	1

Table 2 shows the Pearson correlation metrics for the variables used in the regression analysis. The three measures of stock price crash risk (*CRASH*, *NCSKEW*, *DUVOL*) are highly correlated each other. More importantly, the correlation between two of three measures of stock price crash risk and *ABSUCFO* is positive, suggesting that CFO management is likely to lead stock price crash risk.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
CRASH_{it}	1	1	0.6	0.535	0.004	0.012	-0.01	-0	0	-0.02	0.04	-0	0.02	0.02	0.01	-0.01	0.01
			<.0001	<.0001	0.827	0.519	0.47	0.81	0.9	0.22	0.03	0.45	0.23	0.4	0.58	0.76	0.572
NCSKEW_{it}	2	1	0.956	0.033	0.034	-0.03	0.04	0	-0.03	0.03	0	0.02	0	-0	-0	0.006	
			<.0001	0.068	0.056	0.165	0.02	0	0.1	0.17	0.85	0.18	0.89	0.24	0.91	0.75	
DUVOL_{it}	3	1	0.029	0.068	-0.06	0.07	0	-0.05	0.02	-0	0.02	-0	-0.1	0	0.004		
			0.1	0	0.001	0	0	0.01	0.28	0.74	0.36	0.83	0.01	0.91	0.826		
ABSUCFO_{it}	4	1	-0.113	0.163	-0.2	0	0.01	0.01	0.16	0.02	-0	0.1	0.04	-0.01			
			<.0001	<.0001	<.0001	0.3	0.43	0.6	<.0001	0.37	0.16	<.0001	0.04	0.565			
RET_{it}	5	1	-0.93	0.43	0.1	-0.25	-0.1	-0.4	-0	-0	-0.4	0.03	0.041				
			<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.68	0.02	0.1	<.0001	0.12	0.024			
SIGMA_{it}	6	1	-0.5	-0.2	0.25	0.11	0.51	0.02	0.03	0.45	0.03	-0.044					
			<.0001	<.0001	<.0001	<.0001	<.0001	0.41	0.07	<.0001	0.06	0.014					
SIZE_{it}	7	1	0.2	-0.35	-0	-0.2	0.03	-0	-0.5	-0.28	0.057						
			<.0001	<.0001	0.02	<.0001	0.17	0.21	<.0001	<.0001	0.002						
MB_{it}	8	1	-0.03	-0	-0.1	-0	0.02	-0.1	-0.11	0.031							
			0.07	0.01	<.0001	0.23	0.26	<.0001	<.0001	0.084							
LEV_{it}	9	1	-0	0.06	-0	0.01	0.42	0	-0.026								
			0.71	0	0.72	0.72	<.0001	0.87	0.149								
NCSKEW_{it}	10	1	0.04	0.02	0.08	0.02	0.024										
			0.03	0.66	0.35	<.0001	0.29	0.179									
TURNOVER_{it}	11	1	0	0	0.2	0.09	-0.018										
			0.91	0.98	<.0001	<.0001	0.324										
DA_{it}	12	1	-0	-0	-0.02	0.011											
			0.08	0.23	0.29	0.542											
CFO_WEIGHT_{it}	13	1	0.01	-0.01	0.012												
			0.43	0.75	0.496												
DISTRESS_{it}	14	1	-0.04	0.031													
			0.01	0.084													
NON_IGRADE_{it}	15	1	-0.034														
			0.058														
MEET_BEAT_CFO_{it}	16	1	1														

Variable Definitions

CRASH/NCSKEW/DUVOL: proxies for stock price crash risk calculated by equation (2), (3), (4); **ABSUCFO:** absolute value of unexpected cash from operation, calculated by equation (1); **SIZE:** the log value of the market value of equity; **MB:** the market value of equity divided by the book value of equity; **LEV:** the ratio of total liabilities to total assets; **SIGMA:** the standard deviation of the firm-specific weekly returns; **TURNOVER:** the difference of the average monthly share turnover and the average monthly share turnover in previous year; **RET:** the mean of the firm-specific weekly returns; **DA:** prior three years' moving sum of absolute value of discretionary accruals, where discretionary accruals are calculated from the modified Jones model; **W_CFO:** weight on CFO given by λ_2 from the following regression over 10 years: $RETURN_t = \lambda_0 + \lambda_1 EARN_t / TA_{t-1} + \lambda_2 CFO_t /$

$TA_{t-1} + \varepsilon_t$; *DISTRESS*: natural log of the probability of bankruptcy measure based on Shumway (2001) in t ; *NON_IGRADE*: indicator variable equal 1 if the Standard & Poor's long-term domestic issuer credit rating are BBB+, BBB, BBB-, BB+, BB, or BB-, and 0 otherwise; *MEAT_BEAT_CFO*: indicator variable equal 1 if the firm meet or beats analyst cash flow forecast by zero or one cent, and 0 otherwise.

EMPIRICAL ANALYSIS

Table 3 presents the empirical results of estimation equation (5) to test the first hypothesis. Note that the first hypothesis is that there is a relationship between CFO management and stock price crash risk. I report t-values based on standard errors clustered at the firm levels to control for cross-sectional correlations (Petersen, 20009). Column (1) shows the results of using *CRASH* as the dependent variable. And Column (2), (3) show the results of using *NCSKEW* and *DUVOL* as the dependent variables. The coefficient on *ABSUCFO*, which indicate the effect of CFO management on stock price crash risk, are positive (0.485, 0.134, 0.043) but insignificant in column (1), (2), (3). This results indicates that in general, CFO management has no effect on stock price crash risk.

The coefficients of control variables are generally consistent with prior studies. The coefficients of *SIZE*, *MB*, *NCSKEW*, *TURNOVER* are positive and significant.

Crash Risk_{i,t+1} = $\alpha_0 + \alpha_1 \text{ABSUCFO}_{i,t} + \text{Controls}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t}$			
Dependent variables	CRASH_{i,t+1}	NCSKEW_{i,t+1}	DUVOL_{i,t+1}
Intercept	-1.543*** (-10.04)	-0.209*** (-3.17)	-0.121*** (-4.010)
ABSUCFO_{i,t}	0.485 (1.21)	0.134 (1.18)	0.043 (0.66)
RET_{i,t}	42.094 (1.38)	14.874* (1.74)	5.048 (1.30)
SIGMA_{i,t}	-0.920 (-0.34)	0.444 (0.55)	-0.387 (-1.05)
SIZE_{i,t}	0.027** (2.00)	0.036*** (8.31)	0.019*** (9.78)
MB_{i,t}	0.005* (1.65)	0.005*** (2.59)	0.002*** (2.76)
LEV_{i,t}	0.082 (0.79)	-0.013 (-0.36)	-0.022 (-1.39)
NCSKEW_{i,t}	0.045* (1.94)	0.021*** (2.56)	0.010*** (2.58)
TURNOVER_{i,t}	0.087*** (6.45)	0.026*** (5.63)	0.012*** (5.732)
DA_{i,t}	0.002 (0.40)	0.002 (0.77)	0.001 (0.59)
Industry/year fixed effects	Included	Included	Included
Adj R²	0.043	0.045	0.044
N	19,376	19,376	19,376

This table 3 presents regression results of equation (5). The sample consists of 19,376 firm-year observations for the 2002-2014 period. All T-statistics in parentheses are based on standard errors clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

According to Lee (2012), specific firm characteristics are associated with managerial incentive to inflate reported CFO. This means that CFO management is likely to happen under such firm characteristics. Therefore, it needs to examine the relationship between crash risk and *ABSUCFO* under the four firm characteristics mentioned by (Lee, 2012). That is, I

examine how the association between CFO management and stock price crash risk varies conditional on firm characteristics. As empirical proxies for firm characteristics, I use four variables: (1) *CFO_WEIGHT*, (2) *DISTRESS*, (3) *NON_IGRADE* and (4) *MEET/BEAT_CFO*.

Table 4(Panel A, Panel B, Panel C), shows the results of the effects of ABSUCFO on the crash risk under the four firm characteristics. Panel A of Table 4 shows the result when CRASH is used as the dependent variable. The coefficient on ABSUCFO is still positive but insignificant, suggesting that CFO management do not significantly affect the stock price crash risk. However, the coefficients on $ABSUCFO_{i,t} * Firm Char$ is positive and significant under four firm characteristics. Panel B and C also report similar results to Panel A. To summarize, the impact of ABSUCF on stock price crash risk is statistically highly significant under specific firm characteristics that associated with managerial incentive to inflate reported CFO.

Panel A: OLS regression of CRASH on ABSUCFO and FIRM CHARACTERISTIC				
$CRASH_{i,t+l} = \alpha_0 + \alpha_1 ABSUCFO_{i,t} + \alpha_2 Firm\ Characteristics_{i,t} + \alpha_3 ABSUCFO * Firm\ Characteristics_{i,t} + Controls_{i,t} + Fixed\ Effects + \varepsilon_{i,t}$				
	CFO_WEIGHT	DISTRESS	NON_IGRADE	MEAT/BEAT_CFO
Intercept	-1.471*** (8.92)	-1.771*** (10.01)	-0.485 (1.36)	-0.988*** (3.29)
ABSUCFO_{i,t}	0.436 (1.23)	0.156 (0.96)	-1.805 (1.07)	2.342** (1.02)
Firm Char_{i,t}	-0.004 (0.005)	-0.206 (0.205)	-0.100 (0.093)	-0.126 (0.269)
ABSUCFO_{i,t}*Firm Char	0.214** (2.12)	0.841* (1.74)	6.556*** (2.63)	2.582** (2.22)
RET_{i,t}	29.846 (0.84)	39.043 (1.08)	39.704 (0.72)	-33.541 (0.54)
SIGMA_{i,t}	-2.683 (0.89)	-2.010 (0.65)	-1.080 (0.23)	-6.523 (1.29)
SIZE_{i,t}	0.023* (1.64)	0.002 (0.125)	0.086*** (2.86)	0.033 (1.32)
MB_{i,t}	0.005 (1.05)	0.007 (1.06)	0.017** (2.43)	0.013* (1.62)
LEV_{i,t}	0.140 (1.21)	0.127 (0.94)	-0.161 (0.71)	0.111 (0.62)
NCSKEW_{i,t}	0.062** (2.38)	0.056** (2.07)	0.011 (0.25)	0.056 (1.40)
TURNOVER_{i,t}	0.085*** (5.67)	0.103*** (6.86)	0.032 (1.39)	0.036* (1.89)
DA_{i,t}	0.000 (0.67)	-0.004 (0.71)	-0.002 (0.12)	0.007 (0.91)
Industry/year fixed effects	Included	Included	Included	Included
Adj R²	0.047	0.065	0.057	0.054
N	19,376	19,376	19,376	19,376

Panel B: OLS regression of NCSKEW on ABSUCFO and FIRM CHARACTERISTIC
 $NCSKEW_{i,t+1} = \alpha_0 + \alpha_1 ABSUCFO_{i,t} + \alpha_2 Firm\ Characteristics_{i,t} + \alpha_3 ABSUCFO * Firm\ Characteristics_{i,t} + Controls_{i,t} + Fixed\ Effects + \varepsilon_{i,t}$

	CFO_WEIGHT	DISTRESS	NON_IGRADE	MEAT/BEAT_CFO
Intercept	-0.379*** (5.19)	-0.408*** (4.91)	0.001 (0.12)	-0.184* (1.64)
ABSUCFO_{i,t}	0.089 (1.17)	0.486 (1.27)	1.105* (1.65)	1.137 (1.38)
Firm Char_{i,t}	-0.002 (0.78)	-0.163 (0.62)	-0.003 (0.27)	-0.154 (1.83)
ABSUCFO_{i,t}*Firm Char	0.101*** (3.15)	1.086* (1.95)	0.237** (2.12)	0.432** (2.23)
RET_{i,t}	12.680 (1.31)	23.128** (2.40)	10.121 (0.65)	1.278 (0.06)
SIGMA_{i,t}	0.139 (0.15)	1.131 (1.26)	-0.511 (0.35)	-1.608 (0.99)
SIZE_{i,t}	0.035*** (7.01)	0.030*** (6.05)	0.002* (1.67)	0.009* (1.75)
MB_{i,t}	0.003 (1.50)	0.003* (1.67)	0.006** (2.003)	0.009*** (0.003)
LEV_{i,t}	0.016 (0.41)	0.048 (1.09)	-0.022 (0.29)	-0.025 (0.41)
NCSKEW_{i,t}	0.017* (1.89)	0.025*** (2.77)	0.002 (0.14)	0.012 (0.85)
TURNOVER_{i,t}	0.027*** (5.40)	0.030*** (6.00)	0.006 (0.85)	0.018*** (3.06)
DA_{i,t}	0.001 (0.50)	0.003 (1.03)	0.006 (1.54)	0.003 (0.75)
Industry/year fixed effects	Included	Included	Included	Included
Adj R²	0.047	0.055	0.034	0.037
N	19,376	19,376	19,376	19,376

Panel C: OLS regression of DUVOL on ABSUCFO and FIRM CHARACTERISTIC
 $DUVOL_{i,t+1} = \alpha_0 + \alpha_1 ABSUCFO_{i,t} + \alpha_2 Firm\ Characteristics_{i,t} + \alpha_3 ABSUCFO * Firm\ Characteristics_{i,t} + Controls_{i,t} + Fixed\ Effects + \varepsilon_{i,t}$

	CFO_WEIGHT	DISTRESS	NON_IGRADE	MEAT/BEAT_CFO
Intercept	-0.197*** (6.35)	-0.204*** (5.67)	-0.038 (0.69)	-0.118** (2.36)
ABSUCFO_{i,t}	0.032 (0.41)	0.240 (1.35)	0.616 (1.27)	0.552 (0.96)
Firm Char_{i,t}	-0.001 (1.01)	0.083 (0.28)	0.006 (0.82)	0.068 (1.35)
ABSUCFO_{i,t}*Firm Char	0.044*** (2.98)	0.525** (2.24)	0.213** (2.38)	0.184* (1.85)
RET_{i,t}	4.637 (1.10)	9.422** (2.20)	2.549** (2.16)	2.508* (1.76)
SIGMA_{i,t}	-0.461 (1.16)	-0.060 (0.15)	-0.827 (1.19)	-1.350* (1.81)
SIZE_{i,t}	0.018*** (9.02)	0.016*** (8.03)	0.002 (0.54)	0.008** (2.66)
MB_{i,t}	0.002** (2.01)	0.002** (2.21)	0.002* (1.92)	0.004*** (2.78)
LEV_{i,t}	-0.011 (0.61)	0.008 (0.02)	-0.039 (0.35)	-0.037 (0.28)
NCSKEW_{i,t}	0.008** (2.04)	0.012*** (3.04)	0.002 (0.33)	0.002 (0.036)

TURNOVER_{i,t}	0.012*** (6.02)	0.014*** (8.82)	0.002 (1.03)	0.010*** (5.33)
DA_{i,t}	0.001 (0.79)	0.001 (0.90)	0.002 (0.02)	0.001 (0.94)
Industry/year fixed effects	Included	Included	Included	Included
Adj R²	0.023	0.040	0.041	0.037
N	19,376	19,376	19,376	19,376

This table presents regression results of equation (6). The sample consists of 19,376 firm-year observations for the 2002-2014 period. All T-statistics in parentheses are based on standard errors clustered by firm and year. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

CONCLUSION

Earnings and cash from operations (CFO) are complementary measures of firm performance. But, earnings and CFO have different meaning for future earnings and for investors depending on the firm characteristics. Also, cases of misreporting in cash flow have raised concern that managers also exercise discretion on CFO. Therefore, I investigate whether CFO management is associated with stock price crash risk because managers can hide bad news from investors through CFO management. The results are not supports hypothesis that there is a relationship between CFO management and stock price crash risk. But according to prior studies, there are four firm characteristics that associated with incentive to inflate reported CFO. Therefore, I examine the relationship between CFO management and stock price crash risk under the four firm characteristics. I find that the effect of CFO management on stock price crash risk is greater for under the four firm characteristics.

This study contributes to the literature on CFO management by providing evidence that CFO management can cause stock price crash risk under specific firm characteristics by being used by opportunistic managers. Thus, results of this studies are relevant to standard setters and regulators who underscore the importance of understanding CFO management

REFERENCES

- Backer, M., & Martin, L.G. (1989). The use of financial ratios in credit downgrade decisions. *Financial Management*, 53-56.
- Beaver, W., Shakespeare, C., & Soliman, M. (2006). Differential properties in the ratings of certified versus non-certified bond-rating agencies. *Journal of Accounting and Economics*, 42(3), 303-334.
- Bleck, A., & Liu, X. (2007). Market transparency and the accounting regime. *Journal of Accounting Research*, 45(2), 229-256.
- Call, A. C. (2007). *The implications of cash flow forecasts for investors' pricing and managers' reporting of earnings* (Doctoral dissertation, University of Washington).
- Casey, C., & Norman, B. (1985). Using operating cash flow data to predict financial distress: Some extensions. *Journal of Accounting Research*, 11(2), 384-401.
- Chen, J., Hong, H., & Stein, J. C. (2001). Forecasting crashes: Trading volume, past returns, and conditional skewness in stock prices. *Journal of financial Economics*, 61(3), 345-381.
- Cohen, D.A., Dey, A., & Lys, T.Z. (2008). Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods. *The Accounting Review*, 83(3), 757-787.
- Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics*, 18(1), 3-42.
- Dechow, P.M., & Weili, G. (2006). The persistence of earnings and cash flows and the role of special items: Implications for the accrual anomaly. *Review of Accounting Studies*, 11(2), 253-296.
- Dechow, P.M., Kothari, S.P., & Watts, R.L. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, 25(2), 133-168.
- DeFond, M.L., & Hung, M. (2003). An empirical analysis of analysts' cash flow forecasts. *Journal of*

- Accounting and Economics*, 35(1), 73-100.
- DeFond, M.L., Hung, M., Li, S., & Li, Y. (2015). Does mandatory IFRS adoption affect crash risk?. *The Accounting Review*, 90(1), 265-299.
- Gentry, J., Newbold, P., & Whitford, D. (1985). Classifying bankrupt firms with funds flow components. *Journal of Accounting Research*, 23(1), 146-161.
- Gombola, M., Haskins, M., Ketz, J., & Williams, D. (1987). Cash flow in bankruptcy prediction. *Financial Management*, 16(4), 55-65.
- Graham, J.R., Harvey, C.R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1-3), 3-73.
- Hutton, A.P., Marcus, A.J., & Tehranian, H. (2009). Opaque financial reports, R2, and crash risk. *Journal of Financial Economics*, 94(1), 67-86.
- Jin, L., & Myers, S.C. (2006). R2 around the world: New theory and new tests. *Journal of Financial Economics*, 79(2), 257-292.
- Kim, J.B., Li, L., Lu, L.Y., & Yu, Y. (2016). Financial statement comparability and expected crash risk. *Journal of Accounting and Economics*, 61(2-3), 294-312.
- Kim, J.B., Li, Y., & Zhang, L. (2011). CFOs versus CEOs: Equity incentives and crashes. *Journal of Financial Economics*, 101(3), 713-730.
- Kim, J.B., Li, Y., & Zhang, L. (2011). Corporate tax avoidance and stock price crash risk: Firm-level analysis. *Journal of Financial Economics*, 100(3), 639-662.
- Kothari, S.P., Susan, S., & Peter, D.W. (2009). Do managers withhold bad news?. *Journal of Accounting Research* 47(1), 241-276.
- Lee, L.F. (2012). Incentives to inflate reported cash from operations using classification and timing. *The Accounting Review*, 87(1), 1-33.
- McInnis, J., & Collins, D.W. (2011). The effect of cash flow forecasts on accrual quality and benchmark beating. *Journal of Accounting and Economics*, 51(3), 219-239.
- Sharma, D. (2001). The role of cash flow information in predicting corporate failure: The state of the literature. *Managerial Finance*, 27(4), 3-28.
- Wasley, C.E., & Wu, J.S. (2006). Why do managers voluntarily issue cash flow forecasts?. *Journal of Accounting Research*, 44(2), 389-429.
- Zhang, W. (2008). "Real activity manipulation to meet analyst cash flow forecasts". Working paper, National University of Singapore.