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Financial Reporting Quality and Amplification of Financial Crisis: Evidence from Korea

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Abstract: In this study, we examine whether firms experience different stock price crash during financial crisis based on their financial reporting quality. Motivated from the prior research documenting that financial reporting quality implies information asymmetry and macroeconomic event affects heterogeneously across each firm, we investigate whether a firm with low financial reporting quality is more seriously affected by financial crisis. Using Korean firm data, we find that a firm's stock returns decrease more under the financial crisis when it has provided low quality financial information. This relationship is more prominent in firms with high default risk. Our findings indicate that financial reporting quality plays an important role to support stock price under macroeconomic shocks. And our results imply that maintaining high financial reporting quality in ordinary time will reduce a firm's exposure to macroeconomic shock because investors are more likely to hold qualified stocks during the financial crisis.

Keywords: Financial reporting quality; Financial crisis; Stock returns.

JEL Classification: G01, G11, M41.

1. INTRODUCTION

This study focuses on the role of financial reporting quality under macroeconomic shock. Previous study has documented the role of financial reporting quality for mitigating the information asymmetry between managers and investors (Myers and Majluf, 1984). Despite its various applications in the following studies, our knowledge regarding the potential roles of the financial reporting quality during macroeconomic event is insufficient in the literature. In this paper, we fill the void by investigating the implications of financial reporting quality under the financial crisis.

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We anticipate that firms with low financial reporting quality experience more serious drop of the stock price during financial crisis. During financial crisis, stock market is very volatile and firms are highly exposed to bankruptcy risk. Thus, investors are expected to concern about a firm's financial reporting quality because low quality accounting information may conceal a fatal bankruptcy risk. Thus, we expect that investors rebalance their portfolios by decreasing the share of stocks of low quality financial reporting firms relative to the share of stocks of high quality financial reporting firms. This rebalancing will decrease the demand of the stocks of low financial reporting quality firms. Thus, the stock returns of a firm with low financial reporting quality are anticipated to be even lower during financial crisis period.

We estimate a firm's financial reporting quality following Francis, LaFond, Olsson, and Schipper (2005) and find that a firm with low financial reporting quality experiences more serious stock price drop during the financial crisis. Additionally, we also find that this stock price drop is more prominent for a firm with high default risk.

The results provide a useful link between financial reporting quality and macroeconomic event such as the financial crisis. And it emphasizes manager's role to maintain high quality accounting information during ordinary time to avoid additional stock returns decline during financial crisis.

The rest of the paper is organized as follows. In Section 2, we introduce prior literature and derive our hypotheses. Section 3 and 4 explain our model and data respectively. Section 5 represents our empirical results and Section 6 concludes the paper.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Superior internal information accessibility of corporate insiders causes information asymmetry between managers and investors, and leads managers' self-serving behaviors (Myers and Majluf, 1984). Financial reporting quality of a firm has been used to measure this information asymmetry in the previous studies. Estimating financial reporting quality as accruals quality, Francis, LaFond, Olsson, and Schipper (2005) regard the accruals quality as a measure of information risk and find that firms with poor accruals quality have large cost of debt and equity. Following studies also relate accruals quality to information asymmetry between managers and investors. Doyle, Ge, and McVay (2007) show that internal control weakness may influence accruals quality, by exacerbating the information asymmetry between insider and outsider. Similarly, high financial reporting quality improves a firms' investment efficiency by helping investors digest the net present value of the project (Biddle and Hilary, 2006; Biddle, Hilary, and Verdi, 2009). More recently, Lobo, Song, and Stanford (2012) demonstrate that analysts are more likely to follow the firms with low accruals quality because low accruals quality intensifies the information asymmetry and hence, stimulates demands for private information. Jung, Lee, and Weber (2014) document that financial reporting quality help efficient labor investment by reducing market frictions originating from information asymmetry between managers and investors.

Another line of research has documented that economic wide shock heterogeneously spreads to business entities based on the firm specific characteristics. Cella, Ellul, and Giannetti (2013) show that when short horizon investors take up a large share of a firm, its stock price drops more under macroeconomic shock because short horizon investors are forced to take short positions to avoid selling the stocks at even lower price. Mclean and Zhao (2014) demonstrate that firms' investment and employment sensitivity to

cash flow become more serious during economic recession, implying that firms' real activities can be influenced by their cash flow level. Carvalho (2015) demonstrates that peer effect may amplify the macroeconomic shock by documenting that firms' value drop during economic downturn is higher if their peer firms' debt is maturing near to the downturns.

As aligning with two lines of prior researches, we examine whether a firm's financial reporting quality also play a significant role for amplifying or mitigating macroeconomic event such as the financial crisis. If a firm's financial reporting quality is low and the accounting information does not fully reflect its actual performance, investor may possess a doubt about the credibility of the firm's accounting information. During normal economic conditions, overestimation of a firm's actual performance owing to low quality accounting information may only leads a slight drop of future stock returns. On the other hand, during the financial crisis when stock market is volatile and slight loss can cause bankruptcy, misunderstanding of a firm's actual performance can expose the investors to bankruptcy risk which is fatal to them. Thus, investors may pay more attention to the quality of accounting information during the financial crisis. Thus, we anticipate that investors are expected to take short positions to the firms' stocks with low financial reporting quality and move toward firms that provide high quality accounting information to avoid the information risk. If investors rebalance their portfolios based on the financial reporting quality during the financial crisis, demand for the stocks of low accounting quality firms may decrease. Thus, we expect that stock returns of a firm with low financial reporting quality may be even lower during the crisis. Based on the discussions above, we posit that a firm with low financial reporting quality may experience high stock price drop during financial crisis.

H1: Firms with low financial reporting quality experience more serious stock price drop during financial crisis.

In H1, we predict that firms with low financial reporting quality experience serious stock price drop because investors may fear the potential bankruptcy risk concealed by low quality accounting information. Thus, the relationship is expected to vary depending on firm-specific variations in bankruptcy risk. If a firm's intrinsic bankruptcy risk is low, low financial reporting quality is less likely to lead to bankruptcy directly. Thus, if a firm's bankruptcy risk is low, investors are less likely to concern about financial reporting quality despite its low financial reporting quality. Based on the cross-sectional variations of a firm's bankruptcy risk, we establish the second hypothesis.

H2: The relationship between financial reporting quality and stock price drop during financial crisis become more significant for the firms with higher bankruptcy risk.

3. MODEL SPECIFICATION

Financial reporting quality is the main independent variable of this study. Following Francis et al. (2005), we use accruals quality as the proxy of a firm's financial reporting quality. Accruals quality is estimated with the following steps. By regressing a firm's total current accruals on the accruals determinants, we estimate abnormal accruals which appear in error term in the model. As the abnormal accruals may be less volatile if financial reporting quality is high, we define financial reporting quality as the variation of these abnormal accruals of a firm. Specifically, we establish the following equation by regressing total current accruals (*ACC*) which are defined as the net income less operating cash flow on the operating cash flow (*CFO*), sales increase (*dRev*), and tangible assets (*PPE*). Each variable is denominated with average total assets, consistent to prior research.

$$ACC_{i,t} = \alpha_0 + \alpha_1 CFO_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 CFO_{i,t+1} + \alpha_4 dRev_{i,t} + \alpha_5 PPE_{i,t} + v_{i,t}$$

Accruals quality is defined as the standard deviation of the residual term ($v_{i,t}$) over the last five years because the larger the standard deviation, the greater the volatility of the abnormal accruals which is not explained by the normal factors. Therefore, the financial reporting quality is defined as the standard deviation (*STD*) of the abnormal accruals as follows. Since *FRQ* is defined as the standard deviation of the abnormal accruals, the lower financial reporting quality, the greater the value of *FRQ*.

$$FRQ_{i,t} = STD(v_{i,t-4}, v_{i,t-3}, v_{i,t-2}, v_{i,t-1}, v_{i,t})$$

We use a firm's stock return as the dependent variable. If investors take a short position to firms with low quality accounting information during financial crisis, firms with low financial reporting quality are more likely to experience serious stock price crash. Thus, we use a firm's stock return less market index as the dependent variable. In the equation, *ExRet* is defined as the difference between a firm's return less Korean stock index returns such as KOSPI and KOSDAQ. By excluding market index, this measure removes the effect of overall stock market fluctuation.

$$ExRet_{i,q} = Ret_{i,q} - Index\ Ret_q$$

We also control for various corporate characteristics that may affect stock returns during the financial crisis periods. Economic downturn may affect small firms more strongly as they lack collaterals (Bernanke and Gertler, 1989; Perez-Quiros and Timmermann, 2000). Thus, we control for the firm size (*size*). Macroeconomic shock is expected to have a greater effect on firms with high default risk. Thus, we control for Altman's Z-Score (*Zscore*) which represents the firm's default risk (Altman, 1968). Tangible assets a firm possesses may act as a collateral which absorbs financial shock. Thus, we also include the proportion of tangible assets to total assets (*PPE*). In addition, leverage (*Lev*) and return on assets (*ROA*) are included in the model to control for a firm's financial constraint and profitability. Following the result of Sloan (1996), we additionally control for a firm's accruals because a firm's stock price tends to decrease if it has high accruals in prior period. Table 1 provides definitions and estimation methods of each variable.

Table 1
Definitions of variables

Variables	*Descriptions*
$ExRet_{i,q}$	Excess returns defined as a firm's stock returns less Korean stock market index returns during quarter *q*;
$FRQ_{i,t}$	Financial reporting quality, estimated following Francis et al. (2005) at the end of year of *t*;
$Crisis_{i,q}$	An indicator variable, measured as one if quarter *q* fall in financial crisis and zero otherwise;
$Size_{i,t}$	Firm size, measured as natural logarithm of total assets at the end of year of *t*;
$Zscore_{i,t}$	Altman's Z-score, defined as 0.012 * ((current assets - current liabilities) / assets) + 0.014 * (retained earnings / total assets) + 0.033 * (net income / total assets) + 0.006 * (market capitalization / total liabilities) + 0.999 * (sales / total assets) at the end of year of *t*;
$PPE_{i,t}$	Tangible assets to total assets ratio, defined as tangible assets to total assets at the end of year *t*;
$Lev_{i,t}$	Leverage, measured as liability to equity ratio at the end of year of *t;*
$ROA_{i,t}$	Return on assets, measured as net income to average total assets at the end of year *t*;
$Acc_{i,t}$	Accruals, defined as net income less operating cash flow dividied by net income at the end of year *t*

To examine the effect of financial reporting quality on stock returns during financial crisis, the financial crisis periods need to be defined. During financial crisis, investor's preference for safe asset increases and the spread between safe and risky assets diverges. Thus, we track the financial crisis period by observing Korean bond market. As indicated in Figure 1, the bond spread between the government bond (3-year) and AA-grade corporate bond (3-year) jumps up during the 1997 Asian financial crisis and the 2008 global financial crisis while the spread stays between 0.0%p and 1.0%p during normal time. Based on this observation, the fourth quarter of 1997, the first quarter of 1998, the fourth quarter of 2008, and the first quarter of 2009 are defined as financial crisis periods.

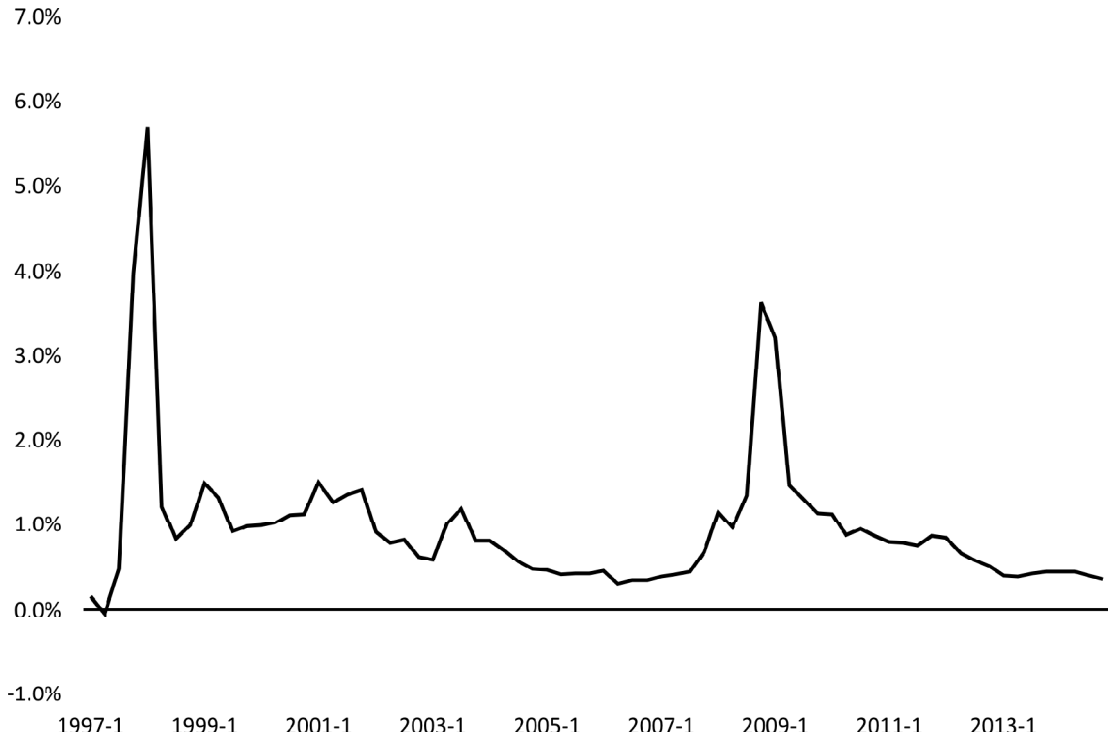

Figure 1: Korean bond spread between the government bond (3-year) and AA-grade corporate bond (3-year)

Our main regression model is as follows.

$$ExRet_{i,q} = \beta_0 + \beta_1 FRQ_{i,t} + \beta_2 FRQ_{i,t} \times Crisis_{i,q} + \beta_3 Crisis_{i,q} + \beta_4 Size_{i,t} + \beta_5 Zscore_{i,t} + \beta_6 PPE_{i,t} + \beta_7 Lev_{i,t} + \beta_8 ROA_{i,t} + \beta_9 Acc_{i,t} + \varepsilon_{i,t}$$

The "*q*" in the model that has value from 1 to 4 indicates the quarters between year *t* and year *t+1*. Crisis is an indicator which is one when the quarter falls within financial crisis period. We expect β_2 to have significantly negative sign because a firm with low financial reporting quality (High *FRQ*) is expected to have lower returns during the financial crisis period.

4. DATA AND DESCRIPTIVE STATISTICS

We construct the sample from Fnguide, a database of Korean listed companies over the period ranging from 1997 to 2014.[1] We collect the firm data whose fiscal year end is December and delete duplicate observations. 3-year government bond interest rate and 3-year AA-grade corporate bond interest rate are

collected from the Bank of Korea's Economic Statistics System (ECOS). Merging the dataset remains 22,352 firm-quarter observations.

Table 2 represents the descriptive statistics. To exclude the outlier effect, we winsorize all continuous variables by assigning the 1st percentile value to below the 1st percentile and by assigning the 99th percentile value to above the 99th percentile. In Table 2, 50% of values of *ExRet* are located within the range from–11.70% to 14.19%. Mean of *ExRet* is 3.25%, implying that the average stock returns of the firms included in our sample are higher than the stock index returns.[2] Mean and median values of *FRQ*, measured by standard deviation of abnormal accruals, are 0.0935 and 0.0683, higher than Francis *at al.* (2005) (Mean: 0.0442, Median: 0.0313, respectively). The distribution implies that the financial reporting quality of Korean firms may be lower than the one of U.S. firms.

Table 2
Descriptive Statistics

Variables	*N of Obs.*	*Mean*	*Std. Dev.*	*25%*	*50% (Median)*	*75%*
ExRet	22,352	0.0325	0.2587	–0.1170	0.0031	0.1419
FRQ	22,352	0.0935	0.0822	0.0432	0.0683	0.1122
Crisis	22,352	0.0393	0.1943	0.0000	0.0000	0.0000
Size	22,352	18.8890	1.4684	17.8890	18.5879	19.4924
Zscore	22,352	0.9710	0.5315	0.6288	0.8940	1.1926
PPE	22,352	0.3055	0.1897	0.1621	0.2898	0.4291
Lev	22,352	1.1615	1.3735	0.3862	0.7621	1.3845
ROA	22,352	0.0167	0.1130	0.0017	0.0320	0.0716
Acc	22,352	-4.6367	47.6754	–0.9203	0.8631	1.4086

The table presents descriptive statistics of our key variables. For definitions, see Table 1. All continuous variables are winsorized at top and bottom 1%.

Table 3 presents correlation matrix. The significantly negative correlation between *FRQ* and *ExRet* implies that the greater the volatility of abnormal accruals, the less investors value the stock. The negative relationship between *ExRet* and firm size (*size*) indicates that large firms have lower stock returns (Fama and Frence, 1992). Profitable firms with high *ROA* are more likely to have higher excessive returns. Table 3 also provides useful implications about the determinants of *FRQ*. The significantly negative relationship between *FRQ* and *size* indicates that the larger the firm, the higher financial reporting quality. And the negative association between *FRQ* and *ROA* implies that profitable firms are more likely to provide high quality accounting information. While the correlations among the variables are significant in most cases, the correlation coefficients are mostly staying between -0.3 and 0.3, which is not generally high. Thus, the multi-collinearity problem may not be serious.[3]

5. EMPIRICAL RESULTS

Table 4 presents regression results regarding the effect of financial reporting quality on stock returns during financial crisis period. The significant negative signs of interaction term between *FRQ* and *Crisis* (*FRQ* × *Crisis*) imply that the firm's stock returns are more likely to be lower during financial crisis, when

Table 3
Correlation matrix

	ExRet	*FRQ*	*Crisis*	*Size*	*Zscore*	*PPE*	*Lev*	*ROA*	*Acc*
ExRet		–0.0306*	0.0237*	–0.0269*	0.0082	0.0014	–0.0028	0.0291*	–0.0029
FRQ	–0.0344*		–0.0140*	–0.2409*	–0.0039	–0.1923*	0.0884*	–0.3271*	–0.0038
Crisis	0.0200*	–0.0252*		–0.0034	0.0103	–0.0174*	0.0289*	–0.0120	0.0062
Size	0.0012	–0.2802*	–0.0063		0.0162*	0.1463*	0.2085*	0.1535*	0.0595*
Zscore	0.0247*	–0.0316*	0.0050	0.0018		–0.0985*	0.0517*	0.2044*	0.0064
PPE	0.0068	–0.2441*	–0.0151*	0.1404*	–0.0336*		0.1326*	–0.0039	–0.0052
Lev	–0.0191*	–0.0327*	0.0191*	0.2256*	0.1427*	0.2181*		–0.2647*	0.0272*
ROA	0.0451*	–0.1178*	–0.0129	0.0838*	0.2828*	–0.0776*	–0.3218*		–0.0219*
Acc	–0.0085	0.0437*	0.0111	0.0435*	–0.0818*	–0.0116	0.0756*	–0.1829*	

This table shows the Pearson correlation (above diagonal) and Spearman correlation (below diagonal) among the key variables. * denotes significance at the 5% level or lower. See Table 1 for variable definitions.

a firm's financial reporting quality is low (high *FRQ*). Our results are robust to including time, industry, and firm fixed effects. Among control variables, the coefficient of *size* shows significant negative sign, indicating that the larger the firm, the lower the stock returns. In the table, highly leveraged firms (*Lev*) have higher stock returns. These results are consistent with the previous studies (Bhandari, 1988; Fama and French, 1992). And highly profitable firms are more likely to have high stock returns. The main results show that firms with low quality accounting information are more vulnerable to the financial crisis.

In H2, we posit that the effect of financial reporting quality on stock returns during the financial crisis become more significant for firms with higher bankruptcy risk. To test H2, we divide our sample into two sets based on the default risk. First, we adopt Altman's Z-score as a proxy of bankruptcy risk (Altman, 1968). As low Z-score indicate high default risk in previous study, we assign the firms with lower (higher) Z-score than median value to "high (low) default risk" sample in Table 5. As we expected, the signs of the interaction terms between *FRQ* and *Crisis* (*FRQ* x *Crisis*) are significantly negative for high default risk firms while the results are insignificant for low default risk firms. These empirical results support our H2.

Then, we adopt the firm size as an additional indicator of bankruptcy risk because small firms lack collaterals and may be more seriously affected by the financial crisis (Bernanke and Gertler, 1989; Perez-Quiros and Timmermann, 2000). We divide our sample into two sets based on the firm size in Table 6. As expected, small firms are more significantly affected by financial crisis if their financial reporting quality is low. These results indicate that low financial reporting quality may play more significant role under the financial crisis when a firm's default risk is high, by amplifying the financial crisis shock level.

Table 4
The relationship between financial reporting quality and stock returns under financial crisis

FRQ	–0.085***	–0.098***	–0.065*	–0.092***	–0.106***	–0.127***
	(–3.949)	(–4.226)	(–1.830)	(–3.930)	(–4.258)	(–3.463)
FRQ x Crisis	–0.272**	–0.238**	–0.255**	–0.257**	–0.226**	–0.227**
	(–2.494)	(–2.169)	(–2.285)	(–2.354)	(–2.063)	(–2.036)
Crisis	0.055***	0.039***	0.040***	0.053***	0.038***	0.037***
	(4.198)	(2.882)	(2.945)	(4.064)	(2.805)	(2.691)
Size				–0.007***	–0.008***	–0.055***
				(–5.886)	(–5.446)	(–9.815)
Zscore				0.001	0.005	–0.023***
				(0.274)	(1.265)	(–3.048)
PPE				0.000	0.010	0.025
				(0.001)	(0.901)	(1.202)
Lev				0.003**	0.004***	0.005**
				(2.078)	(2.818)	(2.500)
ROA				0.065***	0.054***	0.044**
				(3.725)	(3.055)	(1.987)
Acc				–0.000	–0.000	0.000
				(–0.079)	(–0.027)	(0.206)
Con.	0.039***	0.040***	0.024***	0.176***	0.172***	1.085***
	(14.661)	(3.263)	(4.732)	(7.189)	(5.894)	(9.918)
N. of Obs,	22,352	22,352	22,352	22,352	22,352	22,352
R-sq	0.002	0.013	0.010	0.004	0.014	0.014
Year-quarter fixed effect	No	Yes	Yes	No	Yes	Yes
Industry fixed effect	No	Yes	No	No	Yes	No
Firm fixed effect	No	No	Yes	No	No	Yes

t-statistics are presented in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively. See Table 1 for variable definitions.

6. CONCLUSIONS

In this paper, we investigate the role of financial reporting quality on stock returns during financial crisis. As the financial reporting quality reflects the information asymmetry between insiders and outsiders, we expect that a firm with low financial reporting quality may experience a serious stock price drop during the financial crisis because investors move to firms with the high financial reporting quality to avoid default risk concealed by accounting information. The empirical results support our expectations. We also observe that this effect become more serious if a firm is exposed to a high default risk.

Table 5
The effect of default risk on the relationship between financial reporting quality and stock returns under financial crisis

	High default risk			*Low default risk*		
FRQ	–0.059*	–0.074**	–0.078	–0.148***	–0.163***	–0.201***
	(–1.775)	(–2.091)	(–1.437)	(–4.297)	(–4.396)	(–3.496)
FRQ x Crisis	–0.498***	–0.450***	–0.484***	0.105	0.116	0.159
	(–3.409)	(–3.075)	(–3.242)	(0.628)	(0.688)	(0.917)
Crisis	0.077***	0.057***	0.062***	0.022	0.011	0.003
	(4.020)	(2.883)	(3.067)	(1.215)	(0.584)	(0.140)
Size	–0.009***	–0.007***	–0.054***	–0.006***	–0.008***	–0.062***
	(–4.606)	(–3.079)	(–5.808)	(–3.496)	(–3.984)	(–7.418)
Zscore	–0.029**	–0.015	–0.050**	0.001	0.002	–0.036***
	(–2.330)	(–1.107)	(–2.260)	(0.170)	(0.414)	(–3.152)
PPE	0.012	0.030**	0.044	–0.020	–0.013	–0.016
	(0.981)	(1.988)	(1.481)	(–1.361)	(–0.785)	(–0.434)
Lev	0.003	0.004*	0.004	0.003	0.004*	0.007**
	(1.509)	(1.888)	(1.585)	(1.293)	(1.826)	(2.032)
ROA	0.109***	0.090***	0.064**	0.005	0.008	0.023
	(4.689)	(3.756)	(2.048)	(0.196)	(0.294)	(0.607)
Acc	0.000	0.000	0.000	–0.000	–0.000	–0.000
	(0.393)	(0.279)	(0.490)	(–0.475)	(–0.523)	(–0.713)
Con.	0.205***	0.173***	1.057***	0.165***	0.176***	1.270***
	(5.636)	(3.707)	(5.840)	(4.938)	(4.420)	(7.703)
N. of Obs,	11,176	11,176	11,176	11,176	11,176	11,176
R–sq	0.006	0.020	0.016	0.003	0.014	0.015
Year–quarter fixed effect	No	Yes	Yes	No	Yes	Yes
Industry fixed effect	No	Yes	No	No	Yes	No
Firm fixed effect	No	No	Yes	No	No	Yes

t-statistics are presented in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively. See Table 1 for variable definitions.

This study has the following managerial implications. First, this study provides a useful link between the macroeconomic condition and firm-specific property such as financial reporting quality by showing that the macroeconomic shock is not uniformly distributed to all firms. Second, our results provide a useful insight for the managers' disclosure practice. If managers do not care about the quality of financial reporting, investors may punish the firm by moving to high quality firms under the financial crisis, causing additional stock price drop. Thus, our study implies that it is important to maintain high quality accounting information during ordinary time. Additionally, empirical results demonstrate that maintaining high quality accounting information may be more important for small firms with high default risk which are vulnerable to external shock.

Table 6
The effect of firm size on the relationship between financial reporting quality and stock returns under financial crisis

	Small Size			*Large Size*		
FRQ	–0.112***	–0.134***	–0.129**	–0.101***	–0.099***	–0.098*
	(–3.392)	(–3.839)	(–2.485)	(–2.894)	(–2.636)	(–1.778)
FRQ × Crisis	–0.245*	–0.255*	–0.242*	–0.193	–0.068	–0.141
	(–1.765)	(–1.833)	(–1.705)	(–0.908)	(–0.319)	(–0.641)
Crisis	0.044**	0.036*	0.037*	0.058***	0.033*	0.034*
	(2.225)	(1.760)	(1.773)	(3.130)	(1.701)	(1.741)
Size	–0.022***	–0.025***	–0.047***	–0.006***	–0.007***	–0.070***
	(–4.246)	(–4.658)	(–4.612)	(–3.530)	(–3.518)	(–7.921)
Zscore	0.002	0.006	–0.019*	–0.000	0.001	–0.026**
	(0.423)	(0.994)	(–1.680)	(–0.089)	(0.160)	(–2.457)
PPE	–0.005	0.011	0.064*	0.010	0.020	0.007
	(–0.347)	(0.647)	(1.908)	(0.786)	(1.319)	(0.246)
Lev	–0.001	–0.000	–0.001	0.005***	0.006***	0.009***
	(–0.222)	(–0.147)	(–0.253)	(3.336)	(3.419)	(3.493)
ROA	0.052**	0.037	0.020	0.116***	0.081***	0.031
	(2.252)	(1.543)	(0.675)	(3.825)	(2.610)	(0.835)
Acc	0.000	–0.000	–0.000	–0.000	–0.000	0.000
	(0.122)	(–0.230)	(–0.068)	(–0.253)	(–0.385)	(0.247)
Con.	0.443***	0.493***	0.881***	0.148***	0.150***	1.439***
	(4.705)	(4.950)	(4.724)	(4.100)	(3.535)	(7.933)
N. of Obs,	11,176	11,176	11,176	11,176	11,176	11,176
R-sq	0.004	0.015	0.011	0.005	0.024	0.024
Year–quarter fixed effect	No	Yes	Yes	No	Yes	Yes
Industry fixed effect	No	Yes	No	No	Yes	No
Firm fixed effect	No	No	Yes	No	No	Yes

t-statistics are presented in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively. See Table 1 for variable definitions.

NOTES

1. Estimating financial reporting quality (FRQ) requires past 5 years financial data. Thus, even if our final dataset starts from 1997, I use the financial data from 1993.
2. However, this skewedness is not related to our conclusion because it is captured by intercept in the model.
3. We also check VIF (Variance Inflation Factor) of each coefficient in the regression model. If the VIF is close to 1, the multi-collinearity problem is small but if it is 5 or more, the multi-collinearity problem is decided to be serious. But in this study, the values are 1.0 to 1.7. Therefore, multi-collinearity among variables is not serious.

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