Does Accounting Conservatism Improve the Corporate Information Environment?

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Abstract

This study investigates whether and how accounting conservatism improves the corporate information environment. We argue that conservatism facilitates the flow of firm-specific information from corporate insiders to outsiders and leads to a high-quality information environment. Using the Basu (1997) model to capture the extent of accounting conservatism and firm-specific return variation to proxy for the quality of information environment, we find that conservatism is positively associated with the improvement of the corporate information environment in our sample of 43 countries. We also find that such an information role of conservatism is more pronounced in countries with weaker protection of private property rights, suggesting that conservatism substitutes for legal institutions in ensuring the quality of information environment.

JEL classifications: G32; M41

Keywords: Accounting conservatism; corporate information environment; legal institutions; cross-country study

Data availability: The data are available from the public sources identified in this paper.

1. Introduction

Accounting information helps reduce information asymmetry among contracting parties of a firm and plays a crucial role in capital markets. Existing literature posits that earnings, as the most fundamental accounting information, are of higher quality when they are more conservative, implying that accounting conservatism improves a firm's information environment (e.g., Ball, Kothari and Robin 2000; Ball, Robin and Wu 2003; Ball and Shivakumar 2005; Wang 2006). However, empirical evidence is scant on the relationship between the level of accounting conservatism and the quality of corporate information environment across countries. Drawing on a sample from the U.S. market, LaFond and Watts (2008) provide evidence that information asymmetry between corporate insiders and outside equity investors drives managers to adopt conservative accounting, indicating the information role of conservatism.[1] However, they fail to detect that greater conservatism facilitates lowering information asymmetry, and thus do not provide direct evidence to support the information role of conservatism.

We posit that the small variation in accounting conservatism across firms or industries within a given country (i.e., the U.S.) may partially explain why LaFond and Watts (2008) fail to directly detect the information role of conservatism (Bushman, Piotroski and Smith 2011). In response to LaFond and Watts's (2008) argument that conservative financial reports are likely to generate a more informed capital market than the financial reports that include unverifiable information, our cross-country study attempts to fill in this research gap by examining the direct relationship between accounting conservatism and the quality of information environment.[2]

Recent research shows that conservative accounting helps to improve contracting efficiency, and acts as a governance mechanism limiting managerial opportunism (e.g., Watts 2003; Ahmed,

[1] LaFond and Watts (2008) argue that outside equity investors demand more conservative earnings as a means of mitigating agency problems. They show that changes in information asymmetry between insiders and outside investors lead to changes in accounting conservatism.

[2] A growing body of international accounting and finance literature reports that country-level institutions play a first-order role in shaping financial reporting incentives (Ball et al. 2000; Ball et al. 2003; Bushman and Piotroski 2006; Bushman et al. 2011). Therefore, using an international dataset increases the probability of directly detecting the information role of conservatism.

Billings, Morton and Stanford-Harris2002; Holthausen and Watts 2001; Watts and Zimmerman 1986).[3] Building on this stream of research, we contend that conservative accounting, as part of a firm's disclosure policies, facilitates the flow of firm-specific information from corporate insiders to outsiders. Following Basu (1997), accounting conservatism is defined as asymmetric recognition of economic gains and losses into earnings, and thus equals timeliness of loss recognition (TLR hereafter) minus timeliness of gain recognition (TGR hereafter).

Prior studies suggest that TLR is much more important than TGR in determining accounting conservatism and its effects (e.g., Basu 1997; Ball, Kothari and Robin 2000; Francis and Martin 2010; Armstrong, Guay and Weber 2010). It is expected that managers have economic incentives to voluntarily disclose gains (i.e., good news) and to suppress disclosing losses (i.e., bad news). Financial reporting rules such as TLR that commit managers to disclosing bad news in a timely manner result in a more complete disclosure environment that facilitates the flow of firm-specific information from corporate insiders to outsiders (Armstrong et al. 2010), and thus enhance the firm-specific stock return variation our measure of corporate information environment.[4] Therefore, we predict that accounting conservatism is positively associated with the quality of the corporate information environment.

Drawing on 130,869 firm-year observations from 43 economies for the 1998–2008 period, our results show that accounting conservatism is positively associated with the corporate information environment. More importantly, the association between TLR and the corporate information environment is significantly positive, while results on the association between TGR and the

[3] Watts (2003) and Holthausen and Watts (2001) argue that conservatism helps to address agency problems. Zhang (2008) documents that firms that apply more accounting conservatism experience faster debt covenant violations, thus "triggering the alarm" for borrowers earlier. Moerman (2008) shows that more conditionally conservative firms enjoy lower bid-ask spreads on the secondary loan markets. Ahmed et al. (2002) show that debt-holders view conservatism as a means of minimizing agency problems between debt-holders and shareholders, and thus accounting conservatism is negatively related to cost of debt. Ball, Bushman and Vasvari (2008) show that conservatism leads underwriters to hold a lower stake in issued loans. Altogether, these studies provide evidence suggesting that conservatism is an effective tool in reducing information asymmetry and monitoring managers' behavior.

[4] Following Fernandes and Ferreira (2008) and others, we use firm-specific return variation to proxy for a firm's information environment. Greater firm-specific return variation indicates more firm-specific information being impounded in stock prices, higher price informativeness, and thus a better information environment (Morck, Yeung and Yu 2000; Jin and Myers 2006).

corporate information environment are mixed, indicating that the TLR aspect of accounting conservatism is more important than TGR in facilitating the flow of firm-specific information from insiders to outside investors. Furthermore, we provide evidence that the positive relation between accounting conservatism and corporate information environment is significantly more pronounced in countries with weaker protection of private property rights. Our findings highlight the effective role of conservative accounting as a governance mechanism in enhancing the quality of a corporate information environment. Our results are robust to a battery of sensitivity tests, including alternative models for measuring conservatism, different measures for corporate information environment, and various proxies of investor protection.

This study contributes to the literature in a number of ways. First, accounting conservatism is an important dimension of the quality of corporate information environment (e.g., Ball et al. 2000; Ball et al. 2003; Ball and Shivakumar 2005; Wang 2006). However, to the best of our knowledge, there is no direct evidence to substantiate the information role of accounting conservatism. By documenting a positive association between accounting conservatism and the quality of information environment, our study lends support to the information role of accounting conservatism, and sheds light on recent accounting literature examining the consequences of conservatism.

Second, our study employs an international dataset to explore the effects of accounting conservatism on information environment, an association that is difficult detect in a single-country setting. LaFond and Watts (2008) document that information asymmetry leads to more conservative financial reporting. However, probably due to the small variations of conservatism within a given country (Bushman et al. 2011; Bushman and Piotroski 2006), they fail to detect the effect of accounting conservatism on information asymmetry. Our study extends LaFond and Watts (2008) by demonstrating that accounting conservatism does improve a firm's information environment, and thus helps to explain why information asymmetry could pressure managers to use accounting conservatism.

Third, our study stresses the important governance role of conservatism as a substitute for country-level legal institutions in efforts to ensure a high-quality information environment. Thus, in order to provide a better corporate information environment, managers can adopt conservative accounting—especially in countries where good property protection institutions are unavailable.The remainder of this paper is organized as follows. Section 2 develops the research hypotheses, and Section 3 specifies the research design. Section 4 describes data and presents descriptive statistics. Our main empirical results are detailed in Section 5, and Section 6 reports the results of further tests. Section 7 presents robustness checks. Section 8 discusses research implications and limitations, with conclusions provided in Section 9.

2. Hypothesis Development

Accounting conservatism triggers the recognition of losses (i.e., bad news) in earnings when they are probable, but defers the recognition of gains (i.e., good news) until they are verifiable. Managers are expected to have economic incentives for voluntarily disclosing gains and suppressing losses for their own interests. Financial reporting rules such as TLR that commit managers to disclosing bad news in a timely manner result in a more complete disclosure environment that facilitates the flow of firm-specific information from corporate insiders to outsiders. We therefore predict that accounting conservatism and TLR are positively associated with the quality of information environment. Accounting conservatism is measured as the asymmetric timeliness of bad news versus good news recognition (Basu, 1997), and hence both TLR and TGR are reflected in our measure of conservatism.

The effect of TGR on price informativeness is expected to be relatively weak Under conservatism, the requirements for verifiability of gain recognition can have two opposing effects on a firm's information environment. On one hand, highly verifiable gain information—the untimely recognition of gains (i.e., lower TGR)—constrains managers' ability to overstate performance, and thus improves the information quality of gains. It can also discipline other sources

of information, especially when information is firm-specific, that are useful for investors' decision-making (Ball 2001; LaFond and Watts 2008). From this perspective, for the firms with lower TGR, investors have a greater ability to obtain more precise firm-specific information and to incorporate such information into stock prices, resulting in a more informative information environment. On the other hand, however, higher requirements for verifiability of gain recognition (lower TGR) may limit the flow of firm-specific earnings information from well-motivated insiders on gains that, though not yet fully realized, is valuable to outsiders. This is especially true for firms with substantial investment opportunities (Armstrong et al. 2010). From this perspective, lower TGR might cloud a firm's information environment. Essentially, given the two opposing effects of TGR on stock price informativeness, the net effect presents an empirical question.[5]

Combining the TLR and TGR aspects of conservatism, we predict that accounting conservatism is positively associated with stock price informativeness. Our analysis leads to the following hypotheses:

H1: *The quality of corporate information environment increases with accounting conservatism.*

H1a: *The quality of corporate information environment increases with TLR.*

H1b: *The quality of corporate information environment increases/decreases with TGR.*

Well-functioning legal institutions constrain insiders' private control benefits by making wealth expropriation legally riskier and more expensive (La Porta, Lopez-de-Silanes et al. 2000; Nenova 2003; Leuz et al. 2003). Accordingly, in countries with strong legal institutions, insiders have limited economic incentive to overstate firm performance. This could weaken the role that accounting conservatism plays in constraining managers from suppressing realized losses and recognizing unrealized gains. Alternatively, in countries with weak protection of legal institutions where alternative sources of information (such as voluntary disclosure) are limited (Bushman et al.

[5] In this study, the intent of our tests is solely to capture the *net* effect of TGR on price informativeness. Because the two opposing effects of TGR are entangled, we are unable to make a distinction between them. Determining how to separate the two different effects of TGR is beyond the scope of this study.

2004; Jin and Myers 2006), a more important role in facilitating the flow of firm-specific information from corporate insiders to outsiders is likely played by the provision of more useful (less exaggerated and timelier) accounting information through conservatism Therefore, the marginal effects of accounting conservatism on information environment are expected to be stronger in countries with poorly functioning legal institutions.[6]

We focus on the legal institution of investors' property rights. Morck et al. (2000) show that strong protection of property rights promotes informed arbitrage and affects the extent to which information is capitalized into stock prices. Prior studies suggest that to prevent outside investors' interests from being expropriated, firm-level corporate governance mechanisms could substitute for country-level institutions (e.g., Durnev and Kim 2005; Fan and Wong 2005). Therefore, the role of accounting conservatism can be more important in eliciting informed stock trading, and in improving the corporate information environment in countries without strong property rights protection in place.

The overall discussions as outlined above lead us to predict a stronger effect of accounting conservatism on the quality of information environment when legal institutions are weak. Therefore, our second hypothesis is stated as below:

H2: *The positive association between accounting conservatism and the quality of corporate information environment is more pronounced in countries with weaker protections of private property rights.*

H2a: *The positive association between TLR and the quality of corporate information environment is more pronounced in countries with weaker protection of private property rights.*

[6] In countries with weak protection for legal institutions, however, firms rely less on public financing and, hence, rely less on accounting conservatism (Ball et al. 2000; Ball and Shivakumar 2005). To the extent that weak protection reduces outside investor demand for conservatism, it provides bias against finding our hypothesized results.

H2b: *The positive/negative association between TGR and the quality of corporate information environment is more pronounced in countries with weaker protection of private property rights.*

3. Research Design

3.1. *Measuring information environment quality*

Following prior studies, our primary proxy of information environment is relative firm-specific stock return variation—that is, *FRV*, which is calculated using weekly stock trading data based on an expanded market model, as in Jin and Myers (2006). As shown below, the model regresses stock returns of firms on the local and U.S. market index returns of five periods (from week t-2 to t+2):[7]

$$\begin{aligned} r_{j,t} = {} & \alpha_j + \beta_{1,j} r_{m,t} + \beta_{2,j} [r_{US,t} + e_{m,t}] \\ & + \beta_{3,j} r_{m,t-1} + \beta_{4,j} [r_{US,t-1} + e_{m,t-1}] + \beta_{5,j} r_{m,t-2} + \beta_{6,j} [r_{US,t-2} + e_{m,t-2}] \\ & + \beta_{7,j} r_{m,t+1} + \beta_{8,j} [r_{US,t+1} + e_{m,t+1}] + \beta_{9,j} r_{m,t+2} + \beta_{10,j} [r_{US,t+2} + e_{m,t+2}] + \xi_{j,t} . \end{aligned} \quad (1)$$

In the above equation, $r_{j,t}$ is the return on stock j in week t (in market m), $r_{m,t}$ and $r_{US,t}$ are the primary local and U.S. market index returns, and $e_{m,t}$ is the change in exchange rate against the U.S. dollar. Following Jin and Myers (2006), we add two lag and lead terms of market returns in the model to control any potential nonsynchronous trading problem. Stocks that trade for less than 30 weeks during a particular year are excluded. Again following Jin and Myers (2006), if a country has fewer than 25 stocks with valid data in a year, we exclude the country for that year. The firm-specific return variation is estimated as the ratio of idiosyncratic volatility to total volatility. Given the bounded nature of R^2, we conduct our tests using a logistic transformation of $1\text{-}R^2$:

$$FRV_j = \log\left(\frac{1-R_j^2}{R_j^2}\right) = \log\left(\frac{\sigma_{je}^2}{\sigma_j^2 - \sigma_{je}^2}\right). \quad (2)$$

[7] Our results are qualitatively the same if we alternatively use the two-factor model of Morck et al. (2000) that regresses firm stock returns on the contemporary local and U.S. market index returns. As mentioned, we prefer the expanded market model of Jin and Myers (2006) because the model includes two lag and lead terms of market returns to control for the potential nonsynchronous trading problem.

FRV measures firm-specific stock return variation relative to market-wide variation, or a lack of synchronicity with the market. A higher value of *FRV* indicates more firm-specific information impounded into the stock prices via trading by investors, and thus a more informative corporate environment (French and Roll 1986; Roll 1988; Morck et al. 2000; Jin and Myers 2006). Considering that firms in some countries are subject to more country-wide shocks than is the case for other countries (Fernandes and Ferreira 2009), we scale firm-specific stock return variation by the total variation in returns. Using the method proposed by Fernandes and Ferreira (2009), we also construct two variables, namely *AFRV* and *ASRV*, to measure the absolute firm-specific stock return variation and absolute systematic stock return variation, respectively. *AFRV* and *ASRV* are calculated as the natural logarithms of idiosyncratic volatility ($\sigma 2$) and systematic volatility (R^2) of Eq. (2).

3.2. Model specification

In this paper, accounting conservatism is measured as the incremental timeliness of bad news recognition over good news recognition (Basu, 1997). Following Bushman et al. (2011),[8] we use the model below to capture the timeliness of good news recognition versus bad news recognition:

$$NI_{it}=b_0+b_1D_{it}+b_2R_{it}+b_3D_{it}*R_{it}+\xi_{it} \quad (3)$$

where *NI* is net income before extraordinary items, deflated by the beginning period of market capitalization. R_{it} is firm *i*'s annual stock returns for the year ending three months after year *t*. *D* is an indicator variable equal to one if *R* is less than zero, and zero otherwise.

The estimate b_2 of the above regression measures TGR, and b_3 measures the incremental timeliness of bad news recognition over good news recognition. The asymmetric timeliness coefficient b_3 is used to measure the degree of accounting conservatism, which is of primary

[8] Using firm-level investment decisions spanning 25 countries, Bushman et al. (2011) provide an established model for examining the consequences of accounting conservatism across countries.

interest in this study. TLR is measured by $b_2 + b_3$.

To test **H1**, following a number of models, specifically those proposed by Bushman and Piotroski (2006) and Francis and Martin (2010), we expand the baseline Basu (1997) model in Eq. (3) by including the information environment variable (*FRV*) along with additional firm-level controls:

$$\begin{aligned} NI_{j,t} = {} & \beta_1 + \beta_2 D_{j,t} + \beta_3 R_{j,t} + \beta_4 D_{j,t}*R_{j,t} \\ & + \beta_5 FRV_{j,t+1} + \beta_6 D_{j,t}*FRV_{j,t+1} + \beta_7 R_{j,t}*FRV_{j,t+1} + \beta_8 D_{j,t}*R_{j,t}*FRV_{j,t+1} \\ & + \beta_9 SIZE_{j,t} + \beta_{10} D_{j,t}*SIZE_{j,t} + \beta_{11} R_{j,t}*SIZE_{j,t} + \beta_{12} D_{j,t}*R_{j,t}*SIZE_{j,t} \\ & + \beta_{13} LEV_{j,t} + \beta_{14} D_{j,t}*LEV_{j,t} + \beta_{15} R*LEV_{j,t} + \beta_{16} D_{j,t}*R_{j,t}*LEV_{j,t} \\ & + \beta_{17} MB_{j,t} + \beta_{18} D_{j,t}*MB_{j,t} + \beta_{19} R_{j,t}*MB_{j,t} + \beta_{20} D_{j,t}*R_{j,t}*MB_{j,t} \\ & + \beta_{21} LIT_{j,t} + \beta_{22} D_{j,t}*LIT_{j,t} + \beta_{23} R_{j,t}*LIT_{j,t} + \beta_{24} D_{j,t}*R_{j,t}*LIT_{j,t} \\ & + \textit{Industry, Country and Year Fixed Effects} + \omega_{j,t} \end{aligned} \quad (4)$$

where FRV_{t+1} is firm-specific stock return variation of year $t+1$ estimated from the international expended model that includes local and U.S. market index returns. We use four control variables, namely, firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), and litigation risk (*LIT*), plus their interactions with the three terms in the baseline Basu (1997) model. These control variables have been shown to be related to timely loss/gain recognition and conservatism (e.g., Basu, 1997; Watts, 2003; LaFond and Watts, 2008; Francis and Martin, 2010). *SIZE* is the natural log of total assets in million US dollars at the fiscal year end. *LEV* is the financial leverage measured as the sum of short- and long-term debts to total assets. *MB* is the market-to-book ratio. *LIT* is coded as one if a firm is in a litigious industry (SIC code: 2833-2836, 3570-3577, 3600-3674, 5200-5961, and 7370), and zero otherwise.

H1 predicts β_8 to be significantly positive, and **H1a** predicts the sum of β_7 and β_8 to be significantly positive. **H1b** has no prediction on the sign of β_7.

To test **H2**, we regress the following model to detect the effects of private property rights on the association between accounting conservatism and firm-specific return variation:

$$NI_{j,t} = \beta_1 + \beta_2 D_{j,t} + \beta_3 R_{j,t} + \beta_4 D_{j,t}*R_{j,t} + \beta_5 FRV_{j,t+1} + \beta_6 D_{j,t}*FRV_{j,t+1}$$

$$
\begin{aligned}
&+ \beta_7 R_{j,t}*FRV_{j,t+1} + \beta_8 D_{j,t}*R_{j,t}*FRV_{j,t+1} + \beta_9 GGI + \beta_{10} D_{j,t}*GGI \\
&+\beta_{11} R_{j,t}*GGI + \beta_{12} D_{j,t}*R_{j,t}*GGI + \beta_{13} FRV_{j,t+1}*GGI + \beta_{14} D_{j,t}*FRV_{j,t+1}*GGI \\
&+ \beta_{15} R_{j,t}*FRV_{j,t+1}*GGI + \beta_{16} D_{j,t}*R_{j,t}*FRV_{j,t+1}*GGI + \beta_{17} SIZE_{j,t} \\
&+ \beta_{18} D_{j,t}*SIZE_{j,t} + \beta_{19} R_{j,t}*SIZE_{j,t} + \beta_{20} D_{j,t}*R_{j,t}*SIZE_{j,t} + \beta_{21} LEV_{j,t} \\
&+ \beta_{22} D_{j,t}*LEV_{j,t} + \beta_{23} R*LEV_{j,t} + \beta_{24} D_{j,t}*R_{j,t}*LEV_{j,t} + \beta_{25} MB_{j,t} \\
&+ \beta_{26} D_{j,t}*MB_{j,t} + \beta_{27} R_{j,t}*MB_{j,t} + \beta_{28} D_{j,t}*R_{j,t}*MB_{j,t} + \beta_{29} LIT_{j,t} + \beta_{30} D_{j,t}*LIT_{j,t} \\
&+ \beta_{31} R_{j,t}*LIT_{j,t} + \beta_{32} D_{j,t}*R_{j,t}*LIT_{j,t} \\
&+ \textit{Industry and Year Fixed Effects} + \omega_{j,t} \qquad (5)
\end{aligned}
$$

where *GGI* is the good government index, a proxy for private property rights protection (as in Morck et al. (2002)). *GGI* is constructed as the sum of three indexes from La Porta et al. (1998): (1) government corruption; (2) the risk of expropriation of private property by the government; and (3) the risk of the government repudiating contracts (Morck et al. 2000). Such an approach of measurement causes the original values of *GGI* to be negatively skewed and highly concentrated within the range of 20–30, as shown in Table 1. Therefore, we transform the original *GGI* into a rank variable *RKGGI*.[9] A higher rank value of *RKGGI*, therefore, indicates stronger property rights protection.

4. Sample Selection and Descriptive Statistics

Our sample consists of listed companies from 43 countries outside the U.S. Financial data and stock data are collected from *Worldscope* and *Datastream*, respectively. After eliminating country-years with fewer than 30 initial observations, and deleting firm-years with outliers, the final sample consists of 130,869 firm-year observations (24,235 firms) from 43 countries for the period of 1998–2008.

Table 1 summarizes the descriptive statistics by country. As shown in the second and third columns, the size of the country samples range from 58 firm-years (14 firms) for Luxembourg to 30,684 firm-years (4,334 firms) for Japan. Similar to the previous studies (e.g., Jin and Myer 2006),

[9] The results are quite similar when GGI is measured as a dummy variable indicating the strength of private property rights protection.

R^2 is highest in China (0.44) and lowest in Australia (0.263), with a mean (median) of 0.327 (0.326) across our sample countries. As can be seen from the last column of Table 1, *GGI* shows certain variations across countries: Switzerland has the highest level of *GGI* (29.96), while Pakistan has the lowest (13.47).

[Insert Table 1 about here]

Table 2 summarizes the descriptive statistics on the firm level, and provides the correlation matrix. Panel A of Table 2 reports the mean values of each variable, revealing the mean and median of R^2 as 0.321 and 0.302, respectively. With respect to our main variable of interest, the mean (median) of *FRV* is 0.827 (0.839). Consistent with prior literature (e.g., Bushman and Piotroski 2006), accounting earnings are negatively skewed and stock returns are positively skewed. Moreover, stock returns display greater volatility than accounting income, indicating that managers tend to smooth earnings. The mean (median) of *SIZE* is 5.320 (5.194). The average sample firm has a market-to-book ratio of 2.04 and leverage of 0.81.

Panel B of Table 2 reports the correlation matrix among the firm-level variables. Net income (*NI*) is positively correlated with stock returns (*R*), providing the preliminary univariate evidence of timeliness of bad news recognition. Many other correlations are significant at the 1% level, and the signs of correlation coefficients are consistent with prior research. For example, firm-specific stock return variation (*FRV*) is negatively correlated with firm size (*SIZE*) and market-to-book ratio (*MB*), which is consistent with prior studies such as Ferreira and Laux (2007) and Fernandes and Ferreira (2008).

[Insert Table 2 about here]

5. Primary Empirical Results

Our multivariate tests are estimated using an ordinary regression model. In all regressions, we report robust *t*-statistics after correcting for firm-clustered standard errors that are likely to be present in the panel data (Petersen 2009).[10]

5.1 Empirical evidence of the association between accounting conservatism and information environment

Table 3 summarizes the basic regression results that test the impact of accounting conservatism on corporate information environment (**H1**). We include the measure of information environment quality and firm-level control variables (firm size, leverage, market-to-book ratio, and litigation risk) identified in prior studies. Main regression results with and without control variables are reported in columns (2) and (3), respectively.

As shown in column (1) of Table 3, the coefficient on *D*R* is significantly positive, indicating, in the overall, the existence of accounting conservatism in our 43 sample countries. More importantly, the coefficient for $D*R*FRV_{t+1}$ interaction term is significantly positive (0.092, with $p<0.01$ in column (2); 0.053, with $p<0.01$ in column (3)), thus indicating that accounting conservatism is positively associated with firm-specific return variation, which is our key measure of information environment. The results are consistent with H1. However, the coefficient for $R*FRV_{t+1}$ is significantly negative (-0.017) in column (2) but insignificant (-0.002) in column (3), suggesting mixed results of the relation between TGR and information environment. Furthermore, the *F*-tests show that the sum of the coefficients for $R*FRV_{t+1}$ and $D*R*FRV_{t+1}$ is significantly positive (0.075, with $p<0.01$ in column (2); 0.052, with $p<0.01$ in column (3)), supporting **H1a**.

[10] We also tried correcting for country or country-industry clustered standard errors. The results (untabulated) are qualitatively similar to those reported in the main tables.

Taken together, the empirical results in Table 3 show positive association between asymmetric timeliness of loss recognition and information environment, suggesting that accounting conservatism facilitates the incorporation of firm-specific information into stock prices and, hence, improves the corporate information environment. Moreover, the TLR aspect of accounting conservatism is more important than the TGR aspect of accounting conservatism in affecting firms' information environment.

[Insert Table 3 about here]

5.2 Empirical evidence on how private property rights protection affects the association between accounting conservatism and information environment

In this section, we present the results of tests of our second hypothesis (**H2**) that explores the role of country-level property rights protection on the association between accounting conservatism and information environment. We compare the information role of conservatism across countries based on the rank variable of good governance index *RKGGI*, and summarize the regression results in Table 4.

Consistent with H1, $D*R*FRV_{t+1}$ is significantly positive in relation to *NI* in both columns (0.152, with $p<0.01$ in column (1); 0.099, with $p<0.01$ in column (2)). More importantly, the coefficients for the interaction term on $D*R*FRV_{t+1}*RKGGI$ are significantly negative at the 5% level or above, thus suggesting that the effects of accounting conservatism on information environment are significantly more (less) pronounced in countries with weaker (stronger) protection for private property rights. The results for the TLR are also consistent with our expectation of the greater information role of conservatism in countries with weaker property rights protection.[11] In combination, our results highlight the important governance role of conservatism as a substitute for legal institutions in ensuring a high-quality information environment, which is

[11] Consistent with the TLR expectation in **H2a**, the sum of the coefficients on $R*FRV_{t+1}*RKGGI$ and $D*R*FRV_{t+1}*RKGGI$ is significantly negative in Table 4. The TGR expectation is less important, and we consistently find insignificant results regarding **H2b** (e.g., the insignificant coefficient on $R*FRV_{t+1}*RKGGI$).

consistent with **H2**.

[Insert Table 4 about here]

6. Further Tests

6.1 Testing conservatism's effect on firm-specific and systematic return variation

Fernandes and Ferreira (2009) argue that the total return variation of a firm's stock consists of two parts: firm-specific return variation and systematic return variation. In this subsection, we follow Fernandes and Ferreira (2009), and disentangle the total stock return variation into firm-specific return variation (*AFRV*) and systematic return variation (*ASRV*). We are then able to examine how accounting conservatism directly affects them. Unlike *FRV*, which is calculated as the firm-specific stock return variation divided by the total return variation, *AFRV* is the absolute return variation. **H1** predicts that accounting conservatism is positively associated with *AFRV*, but has no prediction on the association between accounting conservatism and *ASRV*. The untabulated results indicate that accounting conservatism is positively associated with next-period firm-specific stock return variation, but it is negatively associated with next-period systematic stock return variation. Therefore, our results suggest that conservatism improves information environment not only because conservatism facilitates the flow of firm-specific information from corporate insiders to outside investors, but it also reduces investors' exposure to market risk.

6.2 Applying change models

In our main tests, we examine the association between the current conservatism and the firm-specific return variation of the next period. The model specifications assume that changes in conservatism lead to changes in the information environment. In this subsection, we use change models to further investigate how accounting conservatism can be associated with changes of price informativeness in three different periods: past period (*t*-1), current period (*t*), and future period (*t*+1). If it is the application of accounting conservatism that causes the improvement in a firm's

information environment and not the reverse, we should observe that the change of firm-specific return variation during *t* and *t*+1 are positively associated with current-period accounting conservatism. However, such an association should not exist for the change of firm-specific return variation of period *t-1*. Briefly, our analysis shows that whereas conservatism is positively associated with the current- and next-period *FRV* increases, the effect of conservatism on the change of *FRV* in the lagged period is statistically insignificant. Overall, we provide evidence supporting our argument that the application of accounting conservatism leads to improvement of the information environment.

7. Robustness Checks

7.1 Alternative measure of information environment

Although firm-specific stock return variation is widely accepted in the literature as a proxy for the quality of a firm's information environment, it is not used in this way without controversy. Limits to arbitrage, pricing errors, and noisy trading could also result in firm-specific return volatility. A more direct proxy for the information environment of stock trading is a measure based on informed stock trading volume. Following Fernandes and Ferreira (2008, 2009), we additionally employ the model developed by Llorente et al. (2002)[12] to estimate informed stock trading. The untabulated results using informed stock trading are qualitatively unchanged.

7.2 Causality analyses between change of price informativeness and change of accounting conservatism

Another important concern is that our tests indicate only the association between accounting conservatism and firm-specific return variation, rather than revealing the causality between them, although our analyses applying the change models in Section 6.2 show that conservatism's effect exists primarily in the future rather than in the past. To assuage this concern, we conduct further

[12] The Llorente et al. (2002) model is as follows: $r_{j,t} = \alpha_j + \gamma_j r_{j,t-1} + \theta_j r_{j,t-1} V_{j,t-1} + \partial_{j,t,}$ where $r_{j,t}$ is weekly stock return of firm *j* for week *t*, and *Vj,t* is weekly trading volume divided by number of shares outstanding. Following Fernandes and Ferreira (2008, 2009), we detrend volume by subtracting a 26-week moving average.

causality analysis between change of information environment and change of accounting conservatism. Specifically, we estimate an average coefficient of conservatism for each three-digit SIC industry year using the pooled cross-sectional Basu (1997) model, and then investigate the association of industry average change of *FRV* with change of the incremental coefficient on bad news. When we regress the change of *FRV* in different periods on the current-period change of conservatism, controlling for conservatism level in the lagged period, the results (untabulated) show that the current-period change of conservatism (ΔCON_t) is positively and significantly associated with the change of *FRV* in the next period (ΔFRV_{t+1}), but the association between ΔCON_t and other-period *FRV* changes (i.e., ΔFRV_{t-1} and ΔFRV_t) is insignificant. In contrast, when the current-period change of conservatism is regressed on the different-period changes of *FRV* (i.e., ΔFRV_{t-1}, ΔFRV_t, and ΔFRV_{t+1}), we find no significant results. Therefore, our causality analyses suggest that it is the increase of conservatism that leads to improvement of the information environment, not the reverse.

7.3 Other robustness checks

We conduct several additional robustness checks. First, in addition to the investor protection proxy using *GGI*, we re-estimate the model using two alternative proxies of investors' rights protection that recent studies have frequently used (e.g., Bushman and Piotroski 2006; McLean, Zhang and Zhao 2012; Peek, Cuijpers and Buijink 2010). One is a comprehensive investor protection variable, *PROTECT*, which captures both the letter of the law and the strength of law enforcement, and the other is a public enforcement index, *PUBENF*.[13] Both proxies are from La Porta et al. (2006). Empirical results using the alternative measures of investor protection produce results consistent with our main test.

[13] *PROTECT* is measured as the first principal component of *Liability standard, Disclosure requirements*, and an index of anti-director rights, and is meant to capture both the letter of the law and the strength of law enforcement. *PUBENF* is measured in terms of supervisor (regulatory agency) characteristics, rule-making powers, investigative powers, noncriminal sanctions, and criminal sanctions. Stronger investor protection exists when the supervisor has greater investigative authority, as well as the ability to punish firms and auditors that violate securities laws. These two proxies are related to our study because they capture the protection of outside investors' rights regarding security trading and the enforcement of the security laws.

Second, although Basu (1997) regression as a baseline model is widely used in extant accounting literature (e.g., Bushman and Piotroski, 2006; LaFond and Watts, 2008; Francis and Martin, 2010), the number of variables used and interacted in the regression models raises the concern of a potential multicollinearity problem. To alleviate this concern, we demean the continuous variables (i.e., *FRV*, *NI*, *R*, *SIZE*, and *MB*) by subtracting the sample means from them and then repeating our main regression analyses (reported in Tables 3 and 4). The untabulated results under this demeaning approach are qualitatively similar to those in Tables 3 and 4, suggesting that it is unlikely that our findings are driven by the multicollinearity problem.[14]

Third, an important concern in international studies is that a number of fundamental market-level factors, such as legal origins, economy, and capital market development, could affect the empirical results. To ensure that our regression results are not driven by important but omitted market-level variables, we include several market-level control variables in our regressions to capture fundamentals of an economy: legal origins, gross domestic product per capita, and stock market capitalization. Our analysis shows that the findings are not sensitive to the inclusion of these market fundamental variables.

Fourth, Roychowdhury and Watts (2007) argue that the beginning composition of equity value affects asymmetric timeliness measured over short horizons. Specifically, past timeliness of earnings with respect to returns influences future earnings timeliness over short periods, which might affect the results of Basu's (1997) model. To mitigate the concern that a one-year Basu's (1997) model might lead to biased results, we re-estimate our regression models using earnings and returns over two- and three-year periods. The (untabulated) results of replicating Tables 3 and 4 using two- or three-year asymmetric timeliness measures are similar to those of the main tables.

Finally, the data being used in our main test is for 43 countries, but is highly skewed in terms of the number of observations. To ensure that the results are not driven by the data issue, we

[14] Our analyses show that, after demeaning the variables, the variance inflation factors (VIF) for all the variables are reasonably small, for example, smaller than 7.

exclude country-years with fewer than 100 observations, and reproduce Table 4. Our main results (untabulated) remain unchanged.

8. Implications and Limitations

This study provides evidence that accounting conservatism plays an important role in facilitating the flow of firm-specific information from corporate insiders to outside investors, and thus helping to improve the corporate information environment. Our findings are in line with prior literature indicating that conservatism is not only an essential property of accounting that can, arguably, alleviate information asymmetry (LaFond and Watts, 2008), but is also a key mechanism that improves corporate governance efficacy and mitigates managerial opportunism (e.g., Ball 2001; Watts 2003; Francis and Martin 2010). The findings of this study imply that users of financial reports and standard-setting bodies for accounting need to pay closer attention to the information role of accounting conservatism. Our evidence supports the International Accounting Standards Board (IASB) in its call for the increased and timely disclosure of financial accounting information. This position stands in opposition to the FASB's view that this time-honored accounting principle, to a certain extent, limits the information role of financial statements in equity markets.

Furthermore, this study indicates that the information role of conservative accounting is more pronounced in countries with poor protection of private property rights. Our findings imply that conservatism substitutes, at least to a certain extent, for legal protection of private property rights to ensure the quality of the corporate information environment. Therefore, in an environment with poor legal protection, outside stakeholders may resort to firm-level conservatism to be better informed about corporate insiders' value-creation actions and agency behavior.

Our results are robust to a series of sensitivity tests and regression specifications. However, we acknowledge that our reliance on a skewed data set in terms of the number of observations across the 43 countries constitutes the central limitation of this study.[15] To the extent that the highly

[15] For example, as shown in Table 1, the top seven (16%) countries account for 73,857 (56%) of the total observations.

skewed nature of the data matters in the context of our study, it provides potential bias in our findings. In addition, our reliance on the imperfect proxies for conservatism and information environment, especially for a cross-country sample, could be another limitation of this study.

9. Conclusions

Our study examines how accounting conservatism affects the corporate information environment, and how country-level legal institutions influence this effect. Using 130,869 observations from 43 countries for the period of 1998-2008, our results show that, on average, accounting conservatism improves the quality of the corporate information environment, and that this information role of conservative reporting is more pronounced in countries with weak legal protection for private property rights. We interpret our results as being consistent with the notion that users of accounting information benefit from the adoption of accounting conservatism, in that conservatism constrains the ability of corporate insiders to suppress bad news and overstate firm performance, thereby increasing the preciseness and timeliness of stock price incorporating management value-creation actions.

Our study extends LaFond and Watts's (2008) study by demonstrating that accounting conservatism does improve a firm's information environment, and thus helps to explain why information asymmetry could drive managers to adopt accounting conservatism. Furthermore, by documenting a positive association between accounting conservatism and the improvement of the information environment, this study contributes to the recent literature on the consequences of conservative reporting. Our sensitivity tests suggest that our documented evidence is less likely to be driven by model bias or measurement errors. Overall, this study highlights the information role of accounting conservatism, especially in countries with weak legal protection for property rights.

Appendix: Variable definitions

Variable	Definition of variable
FRV	Firm-specific stock return variation. *FRV* is estimated from the international expanded model that includes local and U.S. market index returns
⊿FRV	The change of firm-specific stock return variation (*FRV*).
AFRV	The natural logarithm of the absolute firm-specific stock return variation.
ASRV	The natural logarithm of the absolute systematic stock return variation.
NI	Net income before extraordinary items, deflated by beginning year of market capitalization.
R	Annual market-adjusted stock returns beginning 9 months prior to fiscal year end.
D	Indicator variable for bad news, taking 1 if *R* is less than 0, and 0 otherwise.
SIZE	Firm size, measured as the natural logarithm of total assets in million US dollars at the end of the fiscal year.
MB	Market-to-book ratio.
LEV	Financial leverage, measured as the ratio of short- and long-term debts to total assets.
LIT	*LIT* is coded as one if a firm is in a litigious industry (SIC code: 2833-2836, 3570-3577, 3600-3674, 5200-5961, and 7370), and zero otherwise.
GGI	The Good Government Index. *GGI* is a proxy for private property rights protection, measured as the sum of government corruption, the risk of expropriation of private property by the government, and the risk of the government repudiating contracts. Data source: La Porta et al. (1998).
RKGGI	The rank of *GGI*. A higher rank value means stronger property rights.

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TABLE 1

Summary statistics for 43 countries

The average R^2 and firm-specific stock return variation (*FRV*) are estimated from the international expanded model that includes local and U.S. market index returns. Good Government Index (*GGI*) is a proxy for private property rights protection, measured as the sum of government corruption, the risk of expropriation of private property by the government, and the risk of the government repudiating contracts.

Country	N_{Firms}	$N_{Obs.}$	R^2	*FRV*	*GGI*
Argentina	63	343	0.358	0.652	16.84
Australia	1,253	5,626	0.263	1.108	26.50
Austria	115	566	0.289	0.994	27.86
Belgium	149	877	0.299	0.940	27.93
Brazil	239	1,133	0.352	0.679	20.24
Canada	1,687	7,746	0.274	1.060	28.63
Chile	115	710	0.338	0.743	19.60
China	1,514	6,378	0.440	0.269	.
Colombia	24	70	0.418	0.365	18.97
Czech Republic	23	64	0.352	0.682	.
Denmark	205	1,234	0.280	1.037	28.98
Finland	149	932	0.300	0.916	28.82
France	905	4,764	0.277	1.051	27.89
Germany	931	4,645	0.272	1.073	28.60
Greece	344	2,052	0.373	0.578	21.01
Hong Kong	939	5,370	0.305	0.901	25.63
Hungary	43	224	0.308	0.909	.
India	920	4,074	0.351	0.671	18.44
Indonesia	248	1,235	0.360	0.639	15.40
Ireland	83	438	0.273	1.054	27.15
Israel	203	974	0.363	0.650	24.12
Italy	337	1,837	0.327	0.795	24.65
Japan	4,334	30,684	0.314	0.855	27.88
Luxembourg	14	58	0.333	0.792	.
Malaysia	1,042	6,020	0.341	0.719	22.76
Mexico	103	567	0.326	0.818	18.61
Netherlands	224	1,244	0.312	0.875	29.33
New Zealand	139	710	0.269	1.075	28.98
Norway	226	983	0.329	0.776	29.59
Pakistan	103	531	0.390	0.491	13.47
Peru	53	282	0.290	1.011	14.92
Philippines	150	821	0.352	0.674	12.94
Poland	241	954	0.347	0.696	.
Singapore	592	2,899	0.307	0.892	26.38
South Africa	410	2,054	0.274	1.052	23.07
South Korea	1,084	6,082	0.360	0.634	22.20
Spain	164	981	0.308	0.895	25.30
Sweden	429	2,296	0.318	0.835	28.98
Switzerland	275	1,711	0.296	0.955	29.96
Taiwan	1,288	6,861	0.399	0.455	25.13
Thailand	488	2,458	0.345	0.719	20.17
Turkey	231	1,295	0.421	0.360	18.13
United Kingdom	2,156	10,086	0.270	1.079	28.44
Total/Mean (43 countries)	24,235	130,869	0.327	0.827	23.78
STD			0.044	0.213	5.04
Q1			0.293	0.673	19.74
Median			0.326	0.818	25.22
Q3			0.352	0.975	28.31

TABLE 2

Descriptive statistics for and correlation coefficients between firm-level variables

Panel A reports descriptive statistics. In Panel B, Pearson (Spearman) correlation coefficients are reported in the bottom left (top right). Except those marked in bold, all the correlation coefficients are significant at 1%. All variables are defined in the Appendix.

Panel A: Descriptive statistics

Variable	*N*	*STD*	*MEAN*	*Q1*	*MEDIAN*	*Q3*
R^2_{t+1}	130,869	0.139	0.321	0.215	0.302	0.411
FRV_{t+1}	130,869	0.690	0.827	0.360	0.839	1.293
$AFRV_{t+1}$	130,869	0.888	-6.308	-6.846	-6.221	-5.682
$ASRV_{t+1}$	130,869	1.043	-7.135	-7.751	-7.021	-6.397
ΔFRV_{t+1}	96,031	0.727	-0.078	-0.582	-0.074	0.425
NI	130,869	0.261	0.022	0.003	0.052	0.103
R	130,869	0.567	0.074	-0.259	-0.017	0.266
SIZE	130,869	1.872	5.320	4.100	5.194	6.424
LEV	130,869	1.517	0.810	0.037	0.295	0.885
MB	130,869	2.287	2.040	0.786	1.335	2.359
LIT	130,869	0.379	0.174	0	0	0

Panel B: Pearson and Spearman correlation coefficients

	FRV_{t+1}	$AFRV_{t+1}$	$ASRV_{t+1}$	ΔFRV_{t+1}	*NI*	*R*	*SIZE*	*LEV*	*MB*	*LIT*
FRVt+1		-0.542	0.169	0.559	-0.061	-0.009	-0.274	-0.033	-0.083	**0.005**
AFRVt+1	-0.539		0.756	-0.306	-0.207	-0.087	-0.132	-0.010	0.069	0.054
ASRVt+1	0.144	0.702		0.085	-0.299	-0.111	-0.389	-0.037	0.009	0.071
ΔFRVt+1	0.572	-0.302	0.084		-0.042	-0.026	-0.041	**0.004**	-0.061	0.012
NI	-0.070	-0.133	-0.210	-0.032		0.340	0.201	0.088	-0.030	-0.082
R	**-0.003**	0.015	0.016	-0.025	0.169		0.101	0.084	0.109	-0.046
SIZE	-0.280	-0.135	-0.377	-0.039	0.164	0.014		0.325	-0.040	-0.099
LEV	0.015	0.017	0.031	**0.007**	-0.074	0.072	0.209		-0.303	-0.118
MB	-0.052	0.110	0.089	-0.049	-0.039	0.146	-0.102	-0.160		0.119
LIT	**0.005**	0.056	0.070	0.011	-0.041	-0.024	-0.096	-0.095	0.092	

TABLE 3

OLS analyses of the association between firm-specific return variation and the asymmetric timeliness of loss recognition

$$NI_{j,t} = \beta_1 + \beta_2 D_{j,t} + \beta_3 R_{j,t} + \beta_4 D_{j,t}*R_{j,t} + \beta_5 FRV_{j,t+1} + \beta_6 D_{j,t}*FRV_{j,t+1} + \beta_7 R_{j,t}*FRV_{j,t+1} + \beta_8 D_{j,t}*R_{j,t}*FRV_{j,t+1} + \beta_9 SIZE_{j,t} + \beta_{10} D_{j,t}*SIZE_{j,t} + \beta_{11} R_{j,t}*SIZE_{j,t} + \beta_{12} D_{j,t}*R_{j,t}*SIZE_{j,t} + \beta_{13} LEV_{j,t} + \beta_{14} D_{j,t}*LEV_{j,t} + \beta_{15} R*LEV_{j,t} + \beta_{16} D_{j,t}*R_{j,t}*LEV_{j,t} + \beta_{17} MB_{j,t} + \beta_{18} D_{j,t}*MB_{j,t} + \beta_{19} R_{j,t}*MB_{j,t} + \beta_{20} D_{j,t}*R_{j,t}*MB_{j,t} + \beta_{21} LIT_{j,t} + \beta_{22} D_{j,t}*LIT_{j,t} + \beta_{23} R_{j,t}*LIT_{j,t} + \beta_{24} D_{j,t}*R_{j,t}*LIT_{j,t} + Fixed\ Effects + \omega_{j,t}\ .$$

FRV is the firm-specific stock return variation. See Appendix for definitions of variables. The *t*-statistics are estimated with clustered standard errors at the firm level. ***, ** and * indicate the significance at 1%, 5% and 10% levels, respectively (one-tailed test where sign is predicted; two-tailed test otherwise).

	Sign	(1)		(2)		(3)	
		Coeff.	*t-stat.*	*Coeff.*	*t-stat.*	*Coeff.*	*t-stat.*
Intercept		0.058***	41.31	0.065***	34.85	0.026*	1.80
D		-0.007***	-3.49	-0.012***	-4.32	-0.044***	-5.20
R		0.019***	6.54	0.034***	7.64	-0.039***	-3.29
*D*R*		0.220***	32.66	0.126***	12.32	0.336***	13.35
FRV_{t+1}				-0.010***	-5.07	0.005**	2.39
$D*FRV_{t+1}$				0.002	0.63	0.005*	1.71
$R*FRV_{t+1}$				-0.017***	-3.88	-0.002	-0.40
$D*R*FRV_{t+1}$	+			0.092***	8.86	0.053***	5.16
SIZE						0.010***	11.19
*D*SIZE*						0.004***	3.17
*R*SIZE*						0.017***	9.37
*D*R*SIZE*						-0.054***	-13.02
LEV						-0.017***	-8.65
*D*LEV*						0.000	0.09
*R*LEV*						0.005**	2.14
*D*R*LEV*						0.069***	6.22
MB						-0.008***	-11.72
*D*MB*						0.001	1.09
*R*MB*						-0.003***	-3.92
*D*R*MB*						-0.006**	-2.19
LIT						-0.021***	-5.77
*D*LIT*						0.014***	2.71
*R*LIT*						-0.007	-1.07
*D*R*LIT*						0.042***	2.61
***F*-test:**							
$R*FRV_{t+1} + D*R*FRV_{t+1}$	+			0.075***	7.97	0.052***	5.53
Year Fixed Effects		NO		NO		YES	
Industry Fixed Effects		NO		NO		YES	
Country Fixed Effects		NO		NO		YES	
$N_{Obs.}$		130,869		130,869		130,869	
Adjusted R^2 (%)		4.82		5.32		13.45	

TABLE 4

Private property rights protection and the association between firm-specific return variation and the asymmetric timeliness of loss recognition

This table presents select coefficients and test statistics from estimations of the following model:

$$NI_{j,t} = \beta_1 + \beta_2 D_{j,t} + \beta_3 R_{j,t} + \beta_4 D_{j,t}*R_{j,t} + \beta_5 FRV_{j,t+1} + \beta_6 D_{j,t}*FRV_{j,t+1} + \beta_7 R_{j,t}*FRV_{j,t+1} + \beta_8 D_{j,t}*R_{j,t}*FRV_{j,t+1} + \beta_9 RKGGI + \beta_{10} D_{j,t}*RKGGI + \beta_{11} R_{j,t}*RKGGI + \beta_{12} D_{j,t}*R_{j,t}*RKGGI + \beta_{13} FRV_{j,t+1}*RKGGI + \beta_{14} D_{j,t}*FRV_{j,t+1}*RKGGI + \beta_{15} R_{j,t}*FRV_{j,t+1}*RKGGI + \beta_{16} D_{j,t}*R_{j,t}*FRV_{j,t+1}*RKGGI + \beta_{17} SIZE_{j,t} + \beta_{18} D_{j,t}*SIZE_{j,t} + \beta_{19} R_{j,t}*SIZE_{j,t} + \beta_{20} D_{j,t}*R_{j,t}*SIZE_{j,t} + \beta_{21} LEV_{j,t} + \beta_{22} D_{j,t}*LEV_{j,t} + \beta_{23} R*LEV_{j,t} + \beta_{24} D_{j,t}*R_{j,t}*LEV_{j,t} + \beta_{25} MB_{j,t} + \beta_{26} D_{j,t}*MB_{j,t} + \beta_{27} R_{j,t}*MB_{j,t} + \beta_{28} D_{j,t}*R_{j,t}*MB_{j,t} + \beta_{29} LIT_{j,t} + \beta_{30} D_{j,t}*LIT_{j,t} + \beta_{31} R_{j,t}*LIT_{j,t} + \beta_{32} D_{j,t}*R_{j,t}*LIT_{j,t} + Fixed\ Effects + \omega_{j,t}$$

FRV is the firm-specific stock return variation. Private property rights protection is proxied as the Good Government Index, which is measured in rank (*RKGGI*). Higher *RKGGI* means stronger property rights. See Appendix for definitions of variables. The *t*-statistics are estimated with clustered standard errors at the firm level. ***, ** and * indicate the significance at a 1%, 5% and 10% level, respectively (one-tailed test where sign is predicted; two-tailed test otherwise).

	Sign	(1)		(2)	
		Coeff.	*t-stat.*	*Coeff.*	*t-stat.*
Intercept		0.116***	17.84	0.107***	7.20
D		-0.049***	-4.53	-0.072***	-5.74
R		0.100***	8.00	0.005	0.28
*D*R*		0.012	0.39	0.243***	6.38
FRV_{t+1}		0.001	0.20	0.007	1.09
$D*FRV_{t+1}$		0.032***	2.84	0.028**	2.49
$R*FRV_{t+1}$		-0.015	-1.13	-0.007	-0.57
$D*R*FRV_{t+1}$	+	0.152***	4.38	0.099***	2.88
RKGGI		-0.002***	-7.82	-0.002***	-10.29
*D*RKGGI*		0.001***	3.77	0.001***	3.03
*R*RKGGI*		-0.003***	-6.80	-0.002***	-4.44
*D*R*RKGGI*		0.006***	5.48	0.005***	3.95
FRV_{t+1}*RKGGI		0.000	-1.64	0.000	-0.63
$D*FRV_{t+1}$*RKGGI		-0.001***	-3.13	-0.001**	-2.34
$R*FRV_{t+1}$*RKGGI		0.000	0.88	0.000	1.01
$D*R*FRV_{t+1}$*RKGGI	-	-0.003***	-2.87	-0.002**	-1.84
SIZE				0.009***	10.15
*D*SIZE*				0.004***	2.72
*R*SIZE*				0.019***	9.78
*D*R*SIZE*				-0.058***	-13.63
LEV				-0.016***	-8.00
*D*LEV*				0.000	-0.03
*R*LEV*				0.004*	1.67
*D*R*LEV*				0.067***	6.02
MB				-0.007***	-10.26
*D*MB*				0.002	1.43
*R*MB*				-0.003***	-3.70
*D*R*MB*				-0.005	-1.50
LIT				-0.023***	-5.84
*D*LIT*				0.014**	2.54
*R*LIT*				-0.005	-0.64
*D*R*LIT*				0.034**	2.01
F-test:					
$R*FRV_{t+1} + D*R*FRV_{t+1}$	+	0.137***	4.28	0.091***	-2.49
$R*FRV_{t+1}$*RKGGI + $D*R*FRV_{t+1}$*RKGGI	-	-0.003***	-2.75	-0.002*	-1.58
Year Fixed Effects		NO		YES	
Industry Fixed Effects		NO		YES	
Country Fixed Effects		NO		NO	
$N_{Obs.}$		123,191		123,191	
Adjusted R^2 (%)		6.39		13.59	