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and Earnings Quality

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Graphical abstract

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Abstract: Previous studies emphasize the importance of investor legal protection on financial reporting quality. We argue that investors' awareness of their legal rights and understanding of the financial products play complementary roles. Financially well-educated investors are more likely to be able to understand investment-related information and less likely to be tricked, hence can pressure managers to eschew misappropriate behavior. This paper explores the role of investor financial education as a corporate governance mechanism in the context of earnings quality. Using data from 43 countries during the sample period of 1994 to 2012, we find that earnings quality is higher in countries with better financial education after controlling for various institutional environments. Interestingly, the positive effect of financial education on earnings quality exists only in countries with stronger investor legal protection, indicating a complementary role of financial education. Our study provides evidence on the role of financial education in investor protection.

Keywords: Financial education; Earnings quality, Investor protection **JEL Code**: M41, I25, K20

Knowledge is power.

Sir Francis Bacon, *Meditationes Sacrae*, 1597 English author and philosopher (1561-1626)

1. Introduction

Since the financial markets and products have become more and more complicated, policymakers in both developed and developing countries recognize the growing importance of financial literacy and investing resources in financial education programs. Especially after the outbreak of the global financial crisis, financial literacy and financial education are considered as a key pillar of financial market stability because financial education can enhance level of investor protection. A large body of research has addressed the role that financial education and literacy play on investors' individual financial behavior (e.g., Graham et al., 2009; van Rooij et al., 2011, 2012; Giofré, 2017; Bellofatto et al., 2018; Hsiao and Tsai, 2018; Krische 2019)¹. However, it is little known whether financial education affects corporate policy on financial reporting². This study

¹ See Martin (2007) for a literature review on the effectiveness of financial education.

 $^{^2}$ A few studies address the potential effects of the composition of firms' investor bases has on corporate decisions. Baker et al. (2007) argue that investor inertia can exert a significant influence on financial market outcomes; hence, the sophistication of the investor base affects the optimal payment method in a merger. Kalay (2015) explores the

fills in this gap by exploring the impact of investor financial education on earnings quality in an international setting³.

When investors are well educated with financial knowledge, they are more likely to be able to detect and see through the potential misbehavior of corporate insiders (Krische, 2019). This capability can help investors monitor managers' opportunistic behavior. Hence, investor financial education can serve as a corporate governance mechanism to alleviate the agency costs. This is consistent with the statement that "better-informed citizenry makes for better economic policy-making" (Mishkin, 2008).

Investor financial education may affect earnings quality at least in two ways. First, investors with rich financial literacy are less likely to be fooled and more likely to exercise their legal right to protect themselves, which in turn may put pressure on managers to discipline themselves. Prior studies document that education and economic development lead to improved government (for example, see Glaeser et al., 2004; Bobba and Coviello, 2007; Castelló-Climent, 2008; Murtin and Wacziarg, 2014). Botero et al. (2013) further explore why the quality of government improves with education and development and find that educated people are more likely to complain about misconduct by government officials, and that more frequent complaints encourage better behavior from officials. Similarly, investors equipped with rich

relationship between investor sophistication and different disclosure activities and finds that changes in the firm's disclosure policy relate to changes in the sophistication of the investor base. He suggests that investors' demand for disclosure is partially driven by their ability to utilize disclosed information.

³ Krische (2019) finds that investors with better financial-literacy education are more likely to study disclosure information of financial reporting with reasonable diligence and detect misstatements. Our paper builds on this study and further argues that, because of this, the earnings management strategy is less efficacious, hence, corporate insiders are less likely to manipulate earnings in countries with better investor financial education.

financial literacy have a better sense of their legal rights and obligations in their investments and a high level of competence to see through corporate insiders' masquerade if there is any. They understand how to exercise their rights. When their proper rights are infringed, they know how to defend them. Hence, it is likely that educated investors can impose pressure on managers and constrain the managers' misappropriate conduct.

Second, earnings management is likely to be less efficacious in countries with better financial education. Hand (1990) proposes that a firm's stock price is sometimes set by marginal investors who are relatively sophisticated in their understanding and interpretation of accounting data, while at other times prices are set by unsophisticated investors who are less knowledgeable about accounting. The likelihood that the stock price will be set by the latter is measured by the relative proportion of a firm's stock held by unsophisticated investors. Investors in countries with better financial education are likely to be more sophisticated and thus the stock prices in these countries are likely to be set by sophisticated investors. They have advantages in acquiring and processing information. These features of shareholders can decrease the perceived benefit of managing earnings accruals. Collins et al. (2003) show that the investor sophistication determines whether share prices differentially reflect the valuation implications of accruals, and firms with high investor sophistication have stock prices that more accurately reflect the persistence of accruals. These evidences suggest that educated investors can at least partially see through managers' opportunistic incentives. Krische

(2019) argues that investors with better financial-literacy education are more likely able and willing to study disclosure information of financial reporting with reasonable diligence when they form their investment-related judgments. Thus, we conjecture that earnings quality is greater in countries with better financial education.

Following Jappelli (2010), Jappelli and Padula (2013) and Giofré (2017), we employ the "Education in Finance" and "Financial skill" indices in the IMD World Competitiveness Yearbook 2002 to measure the level of financial education in each country. Following Francis and Wang (2008), three properties of earnings are investigated: the magnitude of signed abnormal accruals, the likelihood of reporting a loss and earnings conservatism. All three earnings measures capture aspects of accounting quality in the sense that earnings are implicitly more conservative ceteris paribus if losses are reported, if signed abnormal accruals are income-decreasing, and if earnings are conditionally conservative (Francis and Wang, 2008).

Using a large sample of firms from 43 countries over the period between 1994 and 2012, we find that earnings quality is higher in countries with better financial education after controlling for legal environments, economic developments, institutional investors, and endogeneity bias, and using an alternative measure of investor financial education. Specifically, signed abnormal accruals are smaller (income-decreasing), the likelihood of reporting a loss is greater, and the loss recognition is timelier in countries with better investor financial education. Interestingly, this relationship holds only in countries with stronger investor protection regulations. Our evidence suggests that the role of investor

financial education on earnings quality is complementary to that of investor protection institutions.

This study contributes to the literature in several ways. First, it extends the corporate governance literature by identifying the effects of investor financial education and literacy on financial reports. Previous studies emphasize the importance of legal institutions, culture characteristics, ownership structure, creditors, merger & acquisition, business risk and auditing quality in improving the quality of earnings (for example, see Leuz et al., 2003; Haw et al., 2004; Francis and Wang, 2008; Dechow et al., 2010; Zhang et al., 2013; Lennox et al., 2016; Kim and Yasuda, 2018; Lazzem and Jilani, 2018; Huang et al., 2019). However, we introduce another dimension of shareholders' capability to detect corporate insiders' misbehavior, financial education that affects earnings quality. Second, our work emphasizes the importance of strong investor legal protection in a country to make financial education beneficial to the market. We find that financial education enhances earnings quality only in countries with strong investor protection, indicating a complementary role of financial education in the context of corporate governance. Third, previous literature documents a positive relationship between institutional ownership and earnings quality (e.g., Balsam et al., 2002; Jiambalvo et al., 2002; Collins et al., 2003; An et al., 2016; Franco et al., 2018). These studies suggest that institutional shareholders are sophisticated and require high earnings quality. Our work adds to the literature on investor sophistication by highlighting the effects of a country's investor financial education level. Furthermore,

our study also extends the literature addressing the role of education plays in financial consumer behavior. Prior literature demonstrates that financial consumer behavior can affect corporate behavior (Baker et al., 2007; Kalay, 2015). This study provides evidence that shareholders' financial education and literacy can constrain corporate insiders' incentive to manipulate earnings. Finally, this study supplements the literature on the role of education in social and economic development. Gennaioli et al. (2013) suggest that regional education is a critical determinant of regional development and regional education influences regional development through education of workers and education of entrepreneurs. Botero et al. (2013) document that better educated countries have better governments. This study pays a particular attention on the role of financial education in stock market.

The remainder of this paper proceeds as follows. The role of investor financial education on earnings quality is further developed in the next section. Investor education and investor protection variables are introduced in section 3. The sample and models are presented in section 4. Primary results are reported in section 5, and sensitivity analyses and robustness tests are demonstrated in section 6. Section 7 concludes.

2. The governance role of financial education

2.1 Financial education and earnings quality

Previous studies document that education leads to improved government (e.g., Glaeser et al., 2004; Bobba and Coviello, 2007; Castello-Climent, 2008; Murtin and

Wacziarg, 2014). Botero et al. (2013) further investigate the mechanism through which education plays a role in government quality. They argue that educated citizens complain more about misconduct by government officials, and that more frequent complaints encourage better conduct from officials. They find that human capital operates through complaints as an operative mechanism of accountability and institutional improvement.⁴ Thus in the better educated countries, it has a lower incidence of public misconduct due to the complaint mechanism.

Educated investors are more capable to understand different disclosed documents and investment-related information. They are more likely to process financial information well and less likely to be fooled by the distorted earnings reported by the corporations. In addition, the negative relation between the board or audit committee financial expertise and earnings management (Badolato et al., 2014) gives us the insight that not only the power but also the expertise and knowledge are important to monitor the managers' opportunistic behavior effectively.

When dealing with educated investors, managers have to be more prudent because knowledgeable investors are more likely to uncover the little tricks played by corporate management, such as earnings manipulation, and more likely to find effective ways to defend their own rights, such as impeaching the management of business fraud or

⁴ Botero et al. (2013) suggest three possibilities that more sophisticated people are more likely to complain. First, educated people may know better about effective complaints because they are more literate, and more knowledgeable about how to complain and where to go. Second, people with literacy are more socialized and less tolerant of injustice (e.g., Dewey, 1944; Hayek, 1960; Putnam, 1993; Campbell, 2006; Glaeser et al., 2007; Algan et al., 2013). They are willing to complain against official misconduct regardless of the low odds to success. Third, they are less fearful of official revenge since educated people know more about the laws and legislations, and can face the officials without fear. Because educated citizens, knowing the skill of how to complain effectively and without the fear of official reprisals, can prompt the punishment on officials who has misconduct, which raises the expected costs of misconduct, thus the complaint mechanism encourages better behavior of the officials and government.

selling out the shares. There is no doubt that these actions of educated investors will largely increase the potential cost of management to manipulate earnings. In fear of this, managers may restrain their incentives to manage the reported earning, hence resulting in a higher quality of earnings.

Hand (1990) proposes that a firm's stock price is sometimes set by marginal investors who are relatively sophisticated in their understanding and interpretation of accounting data, while at other times prices are set by unsophisticated investors who are less knowledgeable about accounting. The likelihood that the stock price will be set by the latter type is conjectured to be measured by the relative proportion of a firm's stock held by unsophisticated investors as a whole. It is likely that financial education can enhance investors' sophistication. One stream of literature investigates the role of institutional ownership on corporate behavior and suggests institutional investors are better educated and informed, and have advantages in acquiring and processing information. These features of shareholders can decrease the perceived benefit of managing earnings. Collins et al. (2003) document that whether share prices differentially reflect the valuation implications of accruals depends on the investor sophistication, and firms with high investor sophistication have stock prices that more accurately reflect the persistence of accruals. Krische (2019) finds that investors with better financial-literacy education are more likely to study disclosure information of financial reporting with reasonable diligence and detect misstatements. The evidences suggest that educated investors can at least partially see through managers' incentives.

Thus earnings management is less efficacious in countries with high level of financial education.

Based on the discussion above, we hypothesize that earnings quality is higher in countries with better financial education.

2.2 Financial education and legal institutions: complement or substitute?

Given the significant body of empirical work documenting the importance of the legal system in corporate governance and the growing body of work advocating the importance of financial education, an interesting question to this end is the joint effect of these two factors. Specifically, if financial education plays a role in corporate governance, whether it complements to or substitutes for legal protections, or both have independent effects on earnings quality.

La Porta et al. (1998) state that: "The rights attached to securities become critical when managers of companies act in their own interest. These rights give investors the power to extract from managers the returns on their investment. Shareholders receive dividends because they can vote out the directors who do not pay them, and creditors are paid because they have the power to repossess collateral. Without these rights, investors would not be able to get paid.These rights depend on the legal rules of the jurisdictions where securities are issued."

We argue that legal institutions offer fundamental rights to investors. Without legal protection, the role of financial education on corporate governance is limited. Without legal protection, investors cannot protect themselves well even though they realize the

misconducts by corporate insiders. It is difficult to imagine that we live in a society where ordinary investors are left to navigate one by one through an ever-changing cornucopia of financial products armed only with education.

3. Investor education indices and investor protection variable

3.1 Financial education indices

Following Jappelli (2010), Jappelli and Padula (2013) and Giofré (2017), we use the education in finance (*EDU_FIN*) and the financial skills (*FIN_SKI*) from the IMD World Competitiveness Yearbook (WCY) to measure investor financial education. The indicators are calculated from the survey of senior business leaders representing the different business communities in the countries in question, and merged with data extracted from international organizations. Proportional to each country's GDP, the sample size is about 4000 business leaders in 55 countries. The sample reflects a classification of industry by sectors: manufacturing, services and primary. The survey questions are targeted to top and middle managers, located in local and foreign corporations in the country examined, who generally have an international experience and horizon (e.g., Jappelli, 2010; Giofré, 2012).

The questions ask respondents to assess the different sentences related to different investor education indices, on a 0-10 scale. For 'education in finance', the statement is: 'Education in finance does meet the needs of the business economy'. The survey also includes a 'financial skills' question, which asks for an evaluation of the sentence: 'Finance skills are readily available'. The IMD World Competitiveness Yearbook

(WCY) aggregates all the responses by country to provide an overall score each for education in finance, financial skills. The data shows that two investor education indices vary substantially across countries.

The WCY indices are drawn from country experts and business managers' responses, rather than on standardized survey of individuals. Yet, recent evidences by Jappelli (2010) and Jappelli and Padula (2013) present that the ranking of economies in this survey is largely consistent with another survey providing detailed information at the individual level, which increases confidence in the WCY indicators being reasonable proxies for the investor education.

Table 1 displays the measures of investor education index: the education in finance (*EDU_FIN*) and the financial skills (*FIN_SKI*) for the 43 countries in this paper. The mean (median) index of *EDU_FIN* 6.170 (6.417), ranging from the lowest value of 3.694 for China to the highest value of 8.603 for Finland. The mean (median) index of *FIN_SKI* 6.560 (6.941), with the lowest value of 4.351 for Indonesia and the highest value of 8.297 for Finland. As documented in Jappelli (2010), there is substantial heherogeneity of financial competence across countries.

3.2 Investor protection variable

This study employs the anti-self-dealing index (*ANTISELF*), a measure of legislation protection of minority shareholders against expropriation by corporate insiders or controlling owners drawn from Djankov et al. (2008), to measure investor protection. Table 1 also displays the value of anti-self-dealing index (*ANTISELF*) for

the 43 countries. The mean (median) is 0.50 (0.46), with the lowest value of 0.09 for Venezuela and the highest value of 1.00 for Singapore.

4. Research design and sample

4.1 Research design

Following Francis and Wang (2008), we employ three measures of earning quality: the signed abnormal accruals, the likelihood of reporting a loss and earnings conservatism.

4.1.1 Signed abnormal accruals analysis

The first model tests whether signed abnormal accruals are reduced with the increase of investor education around the world. As reviewed in Francis and Wang (2008), larger abnormal (unexpected) accruals imply greater managerial opportunism and lower quality of earnings. There are two reasons to employ signed abnormal accruals rather than absolute/unsigned abnormal accruals to measure the earnings management. First, this study is interested mainly in the use of managerial discretion to increase reported earnings because this is the misreporting scenario most likely used to meet market expectation and pleasure the investors. Second, signed abnormal accruals are a better measure of earnings quality than the absolute abnormal accruals (Hribar and Nichols, 2007).

Following Francis and Wang (2008) and DeFond and Park (2001), we employ a linear expectation model that uses a firm's own prior year accruals to calculate and set

the expectation benchmark rather than a uniform benchmark⁵. Signed abnormal accruals are calculated as:

Predicted accruals	=	{[Net sales $(\#01001)^{\circ}$ in year t
		× (current accruals in year $t - 1/\text{net sales in year } t - 1$)]
		– [gross PPE (#02301) in year t
		× (depreciation (#01148) in year $t = 1/gross$ PPE in year t
		-1]/ total assets (#02999) in year <i>t</i> -1.
Total accruals	=	(Net income before extraordinary items (#01551) in year t
		- net cash flow-operating activities (#04860) in year t)/
		total assets in year $t-1$.
Abnormal accruals	=	Total accruals in year t – predicted accruals in year t .
Where:		
Current accruals	=	Change in non-cash working capital
	=	Δ [current assets-total(#02201)
		– cash & short term investments(#02001)]
		$-\Delta$ [current liabilities-total(#03101)
		- current portion of long term debt (#18232)
		– dividends payable ⁷ (#03061)]

Abnormal accruals are defined as the enterprise's total accruals in year *t*, minus the predicted accruals in year *t*, as demonstrated above. According to the formula, three years data will be needed to compute abnormal accruals, and the first observation year is 1996 in this abnormal accruals model for the period 1994-2012.

The following model tests whether signed abnormal accruals are negatively related to the financial education across countries, with control variables for other factors which may affect the dependent variable:

$$AB_ACCR_{it} = \beta_0 + \beta_1 FinEdu + \beta_2 AntiSelf + \beta_3 Sales_{it} + \beta_4 CFO_{it} + \beta_5 LEV_{it} + \beta_6 Growth_{it} + \beta_7 \Delta PPE_{it} + \beta_8 Lagloss_{it} + \beta_9 LnGDP_{it}$$
(1)
+ fixed_effects_+ e_{it}

⁵ Francis and Wang (2008) discuss the advantage of this model over Jones model (1991) in cross-country study in detail.

⁶ The numbers in the parentheses are the field numbers of variables in *Worldscope* database.

⁷ The missing values of dividends payable are treated as zero.

Where:

AB_ACCR _{it}	=	Signed abnormal accruals scaled by the lagged total assets for firm <i>i</i> in year <i>t</i>
FinEdu	=	Proxies of financial education, measured by two indices:
		1. <i>Edu Fin</i> = The education in finance index, drawn from The
		IMD World Competitiveness Yearbook,
		2. <i>Fin_Ski</i> = The financial skills index, drawn from The IMD
		World Competitiveness Yearbook .
AntiSelf	=	The anti-self-dealing index, a measure of legislation protection of
		minority shareholders against expropriation by corporate insiders or
		controlling owners, drawn from Djankov et al. (2008).
Sales _{it}	=	The firm is ranked from 1 to 5 based on its net sales, by each country
		and year. The firm with larger net sales gets higher rank in year t.
CFO_{it}	=	Net cash flow from operating activities for firm i in year t scaled by
		lagged total assets.
LEV_{it}	=	Total liabilities divided by total assets for firm <i>i</i> in year <i>t</i> .
<i>Growth</i> _{it}	=	Net sales growth rate of firm i , defined as the net sales in year t minus
		net sales in year $t-1$ and scaled by net sales in year $t-1$.
ΔPPE_{it}	=	Growth rate of gross PPE (property, plant, and equipment) of firm i ,
		defined as gross PPE in year t minus gross PPE in year t-1 and scaled
		by gross PPE in year $t - 1$.
Lagloss _{it}	=	Dummy variable, equals to 1 if firm i discloses negative net income
		before extraordinary items/preferred dividends in year $t = -1$, and 0
		otherwise.
LnGDP _t	=	The natural logarithm of GDP per capita of each country in year t.
fixed	=	Industry and year fixed effects.
Effects		
e _{it}	=	Error term.

Financial education (*FinEdu*) is separately measured by two indices, the education in finance index (*Edu_Fin*) and the financial skills index (*Fin_Ski*) in a time, presented in section 4. The β_1 is expected to be negative if the signed abnormal accruals decrease with financial education quality.

The control variables in Model (1) are intended to control for other firm-specific issues which can affect the abnormal accruals based on prior research (e.g., Becker et al., 1998; Frankel et al., 2002; Francis and Wang, 2008). The variable *AntiSelf* (the anti-

self-dealing index), a measure of investor protection is included and its coefficient is predicted to be negative because the consequence of misreporting earnings is greater for firms and their managers in countries with stronger investor protection regimes according to Francis and Wang (2008). The Sales is used to control the firm size, by ranking the firm into 1-5 based on its net sales in each country and year, with a higher rank representing larger firms. The variable CFO (net cash flow from operating activities scaled by lagged total assets) is added into the model because the inverse relation between the abnormal accruals and operating cash flow is obvious. The variable LEV (leverage) indicates the bankruptcy risk. Its effect on the earnings managements is also mixed. The possibility of financial distress and bankruptcy also can be represented by another dummy variable *Lagloss*, which equals to 1 if firm discloses negative net income before extraordinary items/preferred dividends and 0 otherwise. And the rest two variables controls for the corporate growth, *Growth* and ΔPPE . These two could influence the dependent variable if the relationship between abnormal accruals and net sales and gross PPE (the drivers) is not linear, as demonstrated in Francis and Wang (2008). The Growth captures the growth rate in net sales of each firm in different countries. While the $\triangle PPE$ measures the change rate in gross PPE relative to the prior year amount. After all above, the variable LnGDP controls for the country differences, which is the natural logarithm of GDP per capita of each country.

We include year dummies to control for systematic time period effects and industry (two-digit SIC codes) dummies to control for potential omitted variables. Because

investor financial education variables take on the same value for every firm within a country, it is possible that country effects are overstated. Therefore standard errors are estimated after clustering by countries.

4.1.2 Loss avoidance analysis

We then analyze whether the likelihood of reporting a loss differs across countries as a function of financial education. Previous studies prove that firms organically manage earnings to avoid reporting losses (e.g., Burgstahler and Dichev, 1997; Degeorge et al., 1999; Brown and Caylor, 2005). This study assumes that managers have more incentives to report a loss in countries with higher investor education.

The Model (2) below tests whether reporting a loss is positively related to the financial education across countries with several related control variables:

$$P(Loss_{it}=1) = \beta_0 + \beta_1 FinEdu + \beta_2 AntiSelf + \beta_3 Sales_{it} + \beta_4 LEV_{it} + \beta_5 Growth_{it} + \beta_5 LnGDP_{it} + fixed_{it} effects_{it} + e_{it}$$
(2)

Where:

All the other variables are defined the same as in Model (1). As with Model (1), we include firm and industry dummies and country clustering effects.

The β_1 is predicted to be positive if firms in countries with better financial education are more likely to report a loss. Model (2) also controls for investor protection (the anti-self-dealing index, *AntiSelf*), firm size (*Sales*), bankruptcy risk (*LEV*), corporate growth (*Growth*), the country differences (*LnGDP*) and fixed effects for year and industry.

4.1.3 Earnings conservatism analysis

The third model tests whether the degree of investor education across countries imposes influence on the timely loss recognition by using the earnings conservatism model. Earnings conservatism is the defining characteristics of high quality earnings and makes them play a significant part in mediating information asymmetry between the controlling owners and outside investors, which is suggested by Watts (2003) and LaFond and Watts (2008). Based on the theory above and model of Francis and Wang (2008), this paper adopts industry-adjusted return to replace the raw annual return of firm in each country to mediate the industry differences and international differences of the firm return. The industry-adjusted return, defined as the raw annual total investment return in current year, minus industry average return by each country and year. In this way, this study treats the return above the industry mean as the 'good news', and the return below the industry average return as the 'bad news'. This model extends existing literature by assessing whether the financial education affects the earnings conservatism and expanding the sample to 43 countries:

$$EARN_{it} = \begin{cases} \beta_{0} + \beta_{1}DR_{it} + \beta_{2}R_{it} + \beta_{3}R_{it} * DR_{it} + \beta_{4}FinEdu + \beta_{5}FinEdu * DR_{it} \\ + \beta_{6}FinEdu * R_{it} + \beta_{7}FinEdu * R_{it} * DR_{it} + \beta_{8}AntiSelf \\ + \beta_{9}AntiSelf * DR_{it} + \beta_{10}AntiSelf * R_{it} + \beta_{11}AntiSelf * R_{it} * DR_{it} \\ + \beta_{12}MV_{it} + \beta_{13}MV_{it} * DR_{it} + \beta_{14}MV_{it} * R_{it} + \beta_{15}MV_{it} * R_{it} * DR_{it} \\ + \beta_{16}LEV_{it} + \beta_{17}LEV_{it} * DR_{it} + \beta_{18}LEV_{it} * R_{it} + \beta_{19}LEV_{it} * R_{it} * DR_{it} \\ + \beta_{20}MB_{it} + \beta_{21}MB_{it} * DR_{it} + \beta_{22}MB_{it} * R_{it} + \beta_{23}MB_{it} * R_{it} * DR_{it} \\ + \beta_{24}LnGDP_{it} + \beta_{25}LnGDP_{it} * DR_{it} + \beta_{26}LnGDP_{it} * R_{it} \\ + \beta_{27}LnGDP_{it} * R_{it} * DR_{it} + fixed effects + e_{it} \end{cases}$$
(3)

Where:

$EARN_{it}$	=	Earnings per share before extraordinary items in year t scaled by stock price of firm i at the end of year $t-1$.
<i>R</i> _{it}	=	The industry-adjusted return, defined as the raw annual total investment return for firm <i>i</i> in year <i>t</i> , minus industry mean return by each country and year ⁸ .
DR_{it}	=	Dummy variable, equals 1 if R_{it} is negative and 0 otherwise.
MV_{it}	=	The firm is ranked from 1 to 5 based on its market capitalization,
		by each country and year. The firm with larger market capitalization
		gets higher rank in year t.
MB_{it}	=	The market-to-book ratio at the end of year <i>t</i> for firm <i>i</i> .

All the other variables are the same as defined in Models (1) and (2). Control variables and related interaction terms for investor protection (the anti-self-dealing index, *AntiSelf*), firm size (*MV*), bankruptcy risk (*LEV*), corporate growth (*MB*) and the country differences (*LnGDP*) are included. Here, the *MV* and *MB* are adopted instead of *Sales* and *Growth* because they can control for market effects. Year and industry fixed effects and country clustering effects are included.

The coefficient on *FinEdu** R_{it} * DR_{it} (β_7) is our main focus, which measures the effect of financial education on earnings conservatism. The β_7 is expected to be positive, indicating that managers have more incentives to report more conservative earnings when the investor education is relatively high. In addition, the coefficient β_{11} for the interaction term of the anti-self-dealing index, *AntiSelf* is predicted to be positive.

4.2 Sample and descriptive statistics

The sample consists of firms from 43 countries around the world. The financial reporting data are obtained from *Worldscope* Database from 1993 to 2012, the financial education indices are from IMD World Competitiveness Yearbook, investor protection

⁸ We also use raw annual return as alternative measure and obtain similar results.

index is acquired from Djankov et al. (2008), and the GDP per capita (current ME\$) from the World Bank database. Firm-year observations with missing financial statements values are excluded. Next we keep only those observations in countries with financial education measures for the 55 countries surveyed in IMD World Competitiveness Yearbook, and observations in countries with investor protection measure for 72 countries conducted in Djankov et al. (2008). Then the observations in year 2007, 2008, and 2009 during the global financial crisis are dropped because residual noises possibly come from these years with extreme performances. Financial institutions (two-digit SIC codes between 60 and 69) are also deleted because they subject to different requirements. After all the procedures above, all of the earnings and return variables are winsorized at the 1st and 99th percentiles. Finally, there are 202,550 observations in the abnormal accruals model, 344,416 observations in the loss avoidance model, and 288,918 observations in the earnings conservatism model, for the period 1994-2012. The sample selection process is described in Table 2.

Table 3 demonstrates the sample distribution by country in three main samples (Abnormal Accrual, Loss Avoidance and Earnings Conservatism) respectively. It shows that the United States accounts for the largest proportion.

Table 4 reports the descriptive statistics of variables in each model. Panel A of Table 4 presents descriptive statistics on the signed abnormal accruals and all the independent variables in the Abnormal accruals model. The mean (median) value of AB_ACCR (the signed abnormal accruals) is -0.091 (-0.073). The mean (median) value

of net sales in millions of U.S. dollars is 1.536 (0.177). The mean and median value of CFO is 0.045 and 0.064. For the rest control variables, the mean (median) value, 25% (75%) Percentiles and the standard deviation are shown in the panel A of Table 4. Panel B demonstrates the descriptive statistics on the likelihood of reporting a loss and other independent variables in the Loss avoidance analysis. The mean (median) value of the likelihood of reporting a loss is 0.295 (0). The mean and median value of Sales USD (net sales in millions of U.S. dollars) is 1.120 and 0.129. The mean (median) value, the 25% (75%) Percentiles and the standard deviation of variables LEV, Growth, and LnGDP are displayed in panel B. In panel C, it exhibits the descriptive statistics on the EARN and all the factors which may influence the EARN. The mean and median value of EARN is 0.006 and 0.042, comparable to those in prior study of Francis and Wang (2008). The mean (median) value of R is -0.013 (-0.062). The mean and median value of DR is 0.570 and 1. The detailed statistics of variables MV_USD, LEV, MB, and *LnGDP* are presented in panel C.

Table 5 displays the correlation coefficients among the related variables of each model in panels A, B, and C. In panel A, the measures of investor education, *Edu_Fin* and *Fin_Ski* are significantly and negatively correlated with the signed abnormal accruals, as expected in the research design. The correlations between the *AntiSelf* and the signed abnormal accruals *AB_ACCR*, and between the *CFO* and *AB_ACCR* are significantly negative. The correlation between the *Edu_Fin* and *Fin_Ski* is relatively high, suggesting that they are consistent in measuring financial education. The financial

education proxies always have a positive correlations with *LnGDP*, suggesting that rich countries have better financial.

In Panel B of Table 5, it shows the correlations between the variables in the Loss avoidance model. As with the prediction, both the measures of investor education index, *Edu_Fin, Fin_Ski*are significantly and positively correlated with the likelihood of reporting a loss. The correlation between the *AntiSelf* and the likelihood of reporting a loss, *Loss*, is significantly positive, consistent with the result of Francis and Wang (2008). Panel C of Table 5 presents the correlations between the variables in the Earnings conservatism model. Both the measures of investor education index, *Edu_Fin, Fin_Ski*, are significantly and positively correlated with *EARN*.

5. Empirical results

5.1 Signed abnormal accruals

The signed abnormal accruals analysis is reported in Table 6 with Panel A for univariate tests and Panel B for multivariate analyses.

In Panel A, the sample is divided into two sub-samples based on the medians of the financial education indices, 6.417 for *Edu_Fin*, and 6.941 for *Fin_Ski*. As shown in column (1) of Panel A, the mean of *AB_ACCR* in the high *Edu_Fin* sub-sample is –0.110, smaller than that in the lower *Edu_Fin* sub-sample, -0.066, and the difference between them is significant at 1% level, indicating that the signed abnormal accruals are smaller in countries with better financial education. Column (2) of Panel A reports similar pattern when the full sample is partitioned based on the median of *Fin_Ski*.

In Panel B of Table 6, the coefficient on financial education in column (1) is -0.011, significant at the 1% level when *Edu_Fin* is used to proxy for financial education, suggesting that the signed abnormal accruals decrease with *Edu_Fin*, consistent with the evidence from univariate test. The model explains about 10 percent of the variation in *AB_ACCR*. Column (2) of Panel B reports similar results level when *Fin_Ski* is used to proxy for financial education. Both columns support our conjecture that the signed abnormal accruals decrease with financial education.

In addition, the coefficients on *AntiSelf* are significant and negative in both columns of Panel B, Table 6, indicating that the signed abnormal accruals are expected to decrease in strong investor protection countries, consistent with Francis and Wang (2008) and Leuz, Nanda, and Wysocki (2003). Both of the coefficients on *Sales* are positive and significant, indicating that larger firms are inclined to have more earnings management and lower earnings quality, consistent with Watts and Zimmerman (1978), Moses (1987), Michaelson et al. (1995), DeFond and Park (1997), Becker et al. (1998), and Francis and Wang (2008). The coefficients on *CFO* are negative and significant, as expected in research design. The relationship between *Growth* and *AB_ACCR* is positive, suggesting that firms with high sales growth rate tend to engage in earnings management. And the negative relation between *LnGDP* and *AB_ACCR* is consistent with that firms in richer countries are more likely to report lower earnings management. 5.2 Loss avoidance

The univariate tests and the multivariate results of the Loss avoidance tests are

shown in Table 7. Panel A displays the univariate tests which partition the sample into two sub-groups according to the medians of the financial education indices. In column (1) of Panel A, the mean of *Loss* is 0.349 in the high *Edu_Fin* (larger than 6.417) group, larger than that in the lower *Edu_Fin* group, 0.230. The difference between them is significant at 1% level. Likewise, the high *Fin_Ski* (larger than 6.941) group has a larger mean of *Loss* demonstrated in column (2). Both evidences indicate that firms in countries with higher financial education are more likely to report losses

Panel B of Table 7 presents the logistic regression results. Column (1) shows that the coefficient on Edu_Fin is 0.214, significant at the 1% level, suggesting that firms are more likely to report losses in countries with better financial education, consistent with the univariate tests in Panel A. The pseudo R^2 is around 18 percent. Accordingly, column (2) demonstrates similar result when Fin_Ski is used to proxy for financial education. In sum, the results from loss avoidance model are consistent with those from the signed abnormal accruals model.

In addition, both of the coefficients on *AntiSelf* are significant and positive, which indicates that firms in strict investor protection regimes are more likely to report losses, consistent with Francis and Wang (2008). As expected, the relationships between *LnGDP* and *Loss* are positive and significant in both models.

5.3 Earnings conservatism

Table 8 reports the empirical results of the earnings conservatism model using *Edu_Fin* and *Fin_Ski* alternatively. Column (1) presents the basic result of Basu model.

The positive and significant coefficient on R*DR indicates that the earning conservatism is a conventional practice around the world. The three-way interaction term, *FinEdu*R*DR*, tests the incremental effect of the investor education on the earnings. The coefficients on *Edu_Fin*R*DR* and *Fin_Ski*R*DR* are 0.022 and 0.026, respectively, both significant at the 1% level. The results support the hypothesis that earnings conservatism increases with financial education. The reason may be that educated or sophisticated investors can constrain the managers' opportunistic manipulation of earnings and force corporate to recognize "bad news" timelier than "good news", then the earnings conservatism is enhanced.

In addition, the coefficients on the three-way interaction term, $AntiSelf^*R^*DR$ in both models of Table 8 are also positive, consistent with Francis and Wang (2008). The coefficients on LEV^*R^*DR and MB^*R^*DR are negative, suggesting that firms with high financial leverage (high bankruptcy risk) and high growth opportunities tend to disclose less conservative earnings.

In sum, empirical results reported in Table 6 through Table 8 suggest that financially educated investors are more informed and sophisticated, which in turn pressure corporate insiders to discipline themselves and improve earnings quality. 5.4 Complementary effect of financial education

To test whether financial education complements to or substitutes for legal institutions, we partition the sample into strong and weak investor protection subsamples based on the median of the anti-self-dealing index (*AntiSelf*) (0.46) and rerun

the three models. The results are presented in Tables 9, 10 and 11.

Table 9 presents the effect of financial education on signed abnormal accruals under the strong and weak investor legal protection. In column (1), the coefficient on Edu_Fin is -0.011, significant at the 1% level in countries with stronger legal institutions. However, in column (2), the coefficient on Edu_Fin is -0.001 and insignificant at conventional level in countries with weak legal institutions. Columns (3) and (4) display the same pattern. These results suggest that the negative relation between financial education and the signed abnormal accruals only exists in strong investor protection environments.

The effect of the financial education on the likelihood of firms reporting losses in countries with strong and weak investor legal protection are demonstrated in Table 10. The coefficient on *Edu_Fin* is positive and significant at the 1% level in column (1) when *AntiSelf* is high, and the coefficient on *Edu_Fin* is negative but insignificant in column (2) when the *AntiSelf* is low. Similarly, *Fin_Ski* is significantly and positively related to the likelihood of reporting a loss only when the *AntiSelf* is high as shown in column (3), but not in column (4) when the *AntiSelf* is low. The results above indicate that investor financial education is positively associated with the likelihood of reporting a loss only when the investor legal protection is strong.

Table 11 reports the results about whether the effect of investor education on earnings conservatism varies across the countries with strong and weak investor protection. In column (1) (high *AntiSelf* group), the coefficient on $Edu_Fin*R*DR$ is

positive and significant; while in column (2) (low *AntiSelf* group), the coefficient on $Edu_Fin *R*DR$ is insignificant. The coefficients on $Fin_Ski*R*DR$ are significantly positive for both the high and low *AntiSelf* groups in columns (3) and (4); however, the coefficient in the low *AntiSelf* group is only marginally significant. These results indicate that financial education is positively related to the earnings conservatism when the investor protection is strong, and that there is no consistent evidence about the positive effect of investor education on the earnings conservatism in countries with weak investor protection.

In sum, Tables 9 through 11 provide evidences that investor education improves earnings quality only in countries where investors are legally well protected. When the legal institutions are not in place to protect and support the outsides investors, the corporate governance role of the investor education can be mitigated. In other words, the investor education acts as a complement role to legal institutions in corporate governance.

6. Robustness tests

6.1 Controlling for institutional investors

One concern of our study is that the empirical results might be driven by institutional investors because it is likely that there are more institutional investors in countries with better financial education. Previous literature documents that institutional investors enhance earnings quality through closely monitoring (for *e.g.*, Jiambalvo et al., 2002; Collins et al., 2003). We alleviate this concern by incorporating

a proxy for institutional investors. Following Gonnard et al. (2008), institutional investor is proxied by the financial assets held by institutional investors divided by GDP of each country. However, the inclusion of institutional investor variable reduces our sample to 26 countries.

Columns (1) and (2) of Table 12 report the main results of our analyses after controlling for institutional investor index in each model. In Panel A, both coefficients on *Edu_Fin* and *Fin_Ski* remain significantly negative at the 1% level. Panel B presents consistent results: the relationship between financial education and the likelihood of reporting a loss is positive and significant at the 1% level. Panel C exhibits consistent results that the coefficients on the three-way interaction term, *FinEdu*R*DR*, are significantly positive after controlling for the institutional investors. The above tests indicate that our main results are robust to the inclusion of institutional investor proxy. 6.2 Endogeneity bias

The multiple regressions assume, however, that investor education is exogenous variable. If, on the other hand, investor education and earnings quality are simultaneously determined, our results suffer from an endogeneity bias. We address this concern by using countries economic development and financial market development as instruments for financial education. We use a country's economic development as an instrument because education system is costly to create and maintain, and rich countries are likely to spend more on education. Hence a country's wealth potentially influences the level of education. In addition, we use a country's financial market development,

the ratio of total market capitalization over GDP, as instrument because advanced financial market development facilitates the dissemination and popularization of financial knowledge. Both the per capita GDP and the ratio of total market capitalization over GDP are measured prior to our sample period, 1994⁹.

Columns 3 and 4 of Table 12 report results of a 2SLS. The regression results support our hypothesis that earnings quality increases in the level of investor financial education, and suggest that this relation is not driven by the potential endogeneity of investor education.

6.3 Using Leuz et al. (2003) earnings quality data and method

To validate our measure of accrual quality, we apply the measure and method in Leuz et al. (2003) to test our hypothesis. The results are reported in Table 13. The coefficients on both *Edu_Fin* and *Fin_Ski* are significantly negative, consistent with the results in Table 6. In addition, the coefficients on *Anti-director Rights* are also significantly negative, consistent with Leuz et al. (2003).

6.4 Accruals-based earnings conservatism model

Due to the criticism raised in some research about the Basu (1997) earnings conservatism model (e.g., Gigler and Hemmer, 2001; Dietrich et al., 2007; Givoly et al., 2007), we employ the Ball and Shivakumar (2005) model and incorporate the same control variables:

⁹ Because we do not obtain the financial market development data on Taiwan, the sample is reduced to 42 countries.

$$ACCR_{it} = \beta_{0} + \beta_{1}DCFO_{ii} + \beta_{2}CFO_{ii} + \beta_{3}CFO_{ii} * DCFO_{ii} + \beta_{4}FinEdu + \beta_{5}FinEdu * DCFO_{ii} + \beta_{6}FinEdu * CFO_{ii} + \beta_{7}FinEdu * CFO_{ii} * DCFO_{ii} + \beta_{8}AntiSelf + \beta_{9}AntiSelf * DCFO_{ii} + \beta_{10}AntiSelf * CFO_{ii} + \beta_{11}AntiSelf * CFO_{ii} * DCFO_{ii} + \beta_{12}MV_{ii} + \beta_{13}MV_{ii} * DCFO_{ii} + \beta_{14}MV_{ii} * CFO_{ii} + \beta_{15}MV_{ii} * CFO_{ii} * DCFO_{ii} + \beta_{16}LEV_{ii} + \beta_{17}LEV_{ii} * DCFO_{ii} + \beta_{18}LEV_{ii} * CFO_{ii} + \beta_{19}LEV_{ii} * CFO_{ii} * DCFO_{ii} + \beta_{20}MB_{ii} + \beta_{21}MB_{ii} * DCFO_{ii} + \beta_{22}MB_{ii} * CFO_{ii} + \beta_{23}MB_{ii} * CFO_{ii} * DCFO_{ii} + \beta_{25}LnGDP_{i} * DCFO_{ii} + \beta_{26}LnGDP_{i} * CFO_{ii} + \beta_{27}LnGDP_{i} * CFO_{ii} * DCFO_{ii} + fixed effects + e_{ii}$$

Where:

 $ACCR_{it}$ = The total accruals, defined as net income before extraordinary items minus net operating cash flow in year *t* then divided by the lagged total assets for firm *i* in year *t*.

$$CFO_{it}$$
 = Net operating cash flow for firm *i* in year *t* scaled by lagged total assets.

$$DCFO_{it}$$
 = Dummy variable, equals 1 if CFO_{it} is negative and 0 otherwise.

All the other variables are defined the same as in model (3). The main focus, β_7 ,

is predicted to be positive.

Table 14 exhibits the results of the accruals-based earnings conservatism model. The coefficients on the three-way interaction term, *FinEdu*CFO*DCFO*, are all positive and significant no matter *Edu_Fin* or *Fin_Ski* is employed. It implies that the positive relationship between earnings conservatism and financial education is not sensitive to the model of conservatism.

6.5 Alternative measure of financial education

We also adopt an alternative measure of investor financial education, the score of management/business schools of each country, to test our hypothesis. The score of management/business schools for the 43 countries is obtained from the Global

Competitiveness Report (2006-2007) published by World Economic Forum. A higher score represents a higher quality of management/business school and higher financial education.

The empirical results using the management/business school index (MS_Score) to proxy for financial education are presented in column (1) of Table 15. All the results presented in Panels A, B and C suggest that the signed abnormal accruals are smaller, the likelihood to report a loss is larger, and the loss recognition is timelier in countries with higher quality of business schools, corroborating the results using *Edu_Fin* and *Fin_Ski*.

6.6 Excluding the U.S. observations

Because the U.S. observations accounts for almost 30% in each of the three samples, the empirical results might be driven by the observations in the U.S. We conduct robustness tests excluding the U.S. observations. The results are reported in Panels A, B, and C of columns (2) and (3) of Table 15. All the results keep quantitatively unchanged, suggesting that our main findings are not driven by U.S. observations.

6.7 Further test about the complementary role of financial education

In order to distinguish the effects of financial education from investor protection, we construct a sub-sample which only includes countries with similar Anti-self-dealing (*AntiSelf*) index but different levels of financial education The sub-sample consists of 5 countries and regions (Belgium, Colombia, India, Japan and Taiwan) with strong

investor protection. Their values of Anti-self-dealing (*AntiSelf*) index are between 0.5 and 0.58 (above the mean and median of Anti-self-dealing index of full sample), but the values of *Edu_Fin* (*Fin_Ski*) vary from 4.408 (5.309) to 7.212(7.091). The results reported in columns (4) and (5) of Table 15 are consistent with those in Table 6, 7 and 8. In addition, other sub-sample tests based on such matching approach (performed but not tabulated, both in high and low *AntiSelf* group) also show that the positive effect of financial education on earnings quality exists only in countries with stronger investor legal protection, consistent with the results in Table 9, 10 and 11.

6.8 Excluding cross-listing firms

Given multinational corporations may list in multiple countries with different levels of financial education, we exclude such firms based on the item "ADR" (WC11496) in the *WorldScope* database. The related empirical results reported in columns (6) and (7) of Table 15 still hold as those in Table 6, 7 and 8 respectively.

7. Conclusion

This paper explores the determinant of earnings quality from the angle of investor financial education cross across countries. We argue that investors with high level of financial education are likely to be able to understand investment-related information and find out the potential manipulation of earnings, and less likely to be tricked and can pressure managers to eschew misappropriate behavior. Thus, the awareness of their legal rights and understanding of the financial products play a governance role in corporate behavior.

Earnings quality is measured based on signed abnormal accruals, loss avoidance, and earnings conservatism in this paper. Using data from 43 countries during the period between 1994 and 2012, we find that earnings quality is higher in countries with better financial education. This finding is robust after controlling for legal institutions, economic development, institutional shareholders, endogeneity bias, alternative measure of financial education and alternative regression specification. Furthermore, the positive effect of financial education on earnings quality only exists in countries with strong investor legal protection, indicating a complementary role of financial education. Our study sheds lights on the corporate governance role of investor financial education.

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Table 1 Investor financial education and investor protection indices

Both education in finance (*Edu_Fin*) and financial skills (*Fin_Ski*) indices are obtained from IMD World Competitiveness Yearbook (WCY). *Edu_Fin* is calculated from the score of the statement: 'Education in finance does meet the needs of the business economy', according to senior business leaders among different business communities in each country. *Fin_Ski* is calculated from the survey of senior business leaders evaluating the sentence: 'Finance skills are readily available'. Anti-self-dealing (*AntiSelf*) index is a measure of legislation protection of minority shareholders against expropriation by corporate insiders or controlling owners, drawn from Djankov et al. (2008).

Country	Edu_Fin	Fin_Ski	AntiSelf
Argentina	6.133	6.361	0.34
Australia	8.038	8.000	0.76
Austria	7.069	6.984	0.21
Belgium	7.212	7.091	0.54
Brazil	6.056	6.056	0.27
Canada	7.450	7.488	0.64
Chile	7.333	7.448	0.63
China	3.694	4.566	0.76
Colombia	6.914	6.986	0.57
Czech Republic	5.488	7.364	0.33
Denmark	7.477	7.625	0.46
Finland	8.603	8.297	0.46
France	6.575	6.964	0.38
Germany	5.126	6.558	0.28
Greece	5.588	5.771	0.22
Hong Kong	6.500	7.364	0.96
Hungary	6.182	6.000	0.18
India	6.437	7.079	0.58
Indonesia	3.719	4.351	0.65
Ireland	7.615	7.519	0.79
Israel	7.545	7.628	0.73
Italy	4.244	5.174	0.42
Japan	4.408	5.309	0.50
South Korea	4.571	5.306	0.47
Luxembourg	6.649	7.105	0.28
Malaysia	6.876	7.055	0.95
Mexico	4.558	5.029	0.17
Netherlands	6.548	6.419	0.20
New Zealand	6.538	6.923	0.95
Norway	7.692	7.179	0.42
Philippines	6.417	7.320	0.22
Poland	4.022	5.222	0.29
Portugal	4.968	5.226	0.44
Russia	5.241	5.412	0.44
Singapore	7.688	7.813	1.00

Spain	6.235	6.343	0.37
Switzerland	7.013	7.205	0.27
Taiwan	5.887	6.611	0.56
Thailand	5.379	5.690	0.81
Turkey	6.280	6.941	0.43
United Kingdom	5.325	6.049	0.95
United States	6.891	7.627	0.65
Venezuela	5.106	5.617	0.09
Mean	6.170	6.560	0.50
Median	6.417	6.941	0.46

Table 2 Sample selection

Panel A: Abnormal accruals	
	No. of obs.
Observations with no financial statements missing values for 1994-2012	392,276
Less:	
-observations from countries not on the list of the 55 countries in Jappelli (2010)	(35,686)
and Giofré (2012)	
-observations from countries not on the list of the 72 countries in Djankov et al.	(241)
(2008)	
-observations in year 2007, 2008, and 2009	(84,216)
-observations of financial institutions (SIC: 60-69)	(69,583)
Final observations in the Abnormal accruals analysis	202,550
Panel B: Loss avoidance	
	No. of obs.
Observations with no financial statements missing values for 1994-2012	584,002
Less:	
-observations from countries not on the list of the 55 countries in Jappelli (2010)	(53,119)
and Giofré (2012)	
-observations from countries not on the list of the 72 countries in Djankov et al.	(281)
(2008)	
-observations in year 2007, 2008, and 2009	(89,335)
-observations of financial institutions (SIC: 60-69)	(96,851)
Final observations in the Loss avoidance analysis	344,416
Panel C: Earnings conservatism	
	No. of obs.
Observations with no financial statements missing values for 1994-2012	503,754
Less:	
-observations from countries not on the list of the 55 countries in Jappelli (2010)	(45,812)
and Giofré (2012)	
-observations from countries not on the list of the 72 countries in Djankov et al.	(262)
(2008)	
-observations in year 2007, 2008, and 2009	(84,816)
-observations of financial institutions (SIC: 60-69)	(83,946)
Final observations in the Earnings conservatism analysis	288,918

Table 3 Sample distribution by countries

This table gives the number and percentage of the firm-year observations by country in three main analysis samples respectively.

	Abnormal Accruals Sample		Loss Av	voidance	Earnings Conservatism		
Country			San	nple	Sample		
	No. of Obs.	Percentage	No. of Obs.	Percentage	No. of Obs.	Percentage	
Argentina	322	0.16%	895	0.26%	631	0.22%	
Australia	5,834	2.88%	9,743	2.83%	11,278	3.90%	
Austria	516	0.25%	1,167	0.34%	1,026	0.36%	
Belgium	626	0.31%	1,551	0.45%	1,283	0.44%	
Brazil	990	0.49%	3,734	1.08%	2,597	0.90%	
Canada	7,246	3.58%	13,154	3.82%	12,924	4.47%	
Chile	1,101	0.54%	1,888	0.55%	1,667	0.58%	
China	12,770	6.30%	19,242	5.59%	13,222	4.58%	
Colombia	212	0.10%	444	0.13%	263	0.09%	
Czech	126	0.06%	437	0.13%	379	0.13%	
Denmark	1,198	0.59%	2,054	0.60%	1,844	0.64%	
Finland	999	0.49%	1,881	0.55%	1,607	0.56%	
France	4,149	2.05%	10,190	2.96%	8,319	2.88%	
Germany	4,432	2.19%	10,156	2.95%	8,003	2.77%	
Greece	788	0.39%	3,278	0.95%	2,775	0.96%	
Hong Kong	6,011	2.97%	9,103	2.64%	7,624	2.64%	
Hungary	165	0.08%	390	0.11%	348	0.12%	
India	7,396	3.65%	11,559	3.36%	9,663	3.34%	
Indonesia	2,348	1.16%	3,375	0.98%	2,585	0.89%	
Ireland	573	0.28%	882	0.26%	828	0.29%	
Israel	1,126	0.56%	1,965	0.57%	1,433	0.50%	
Italy	1,471	0.73%	3,178	0.92%	2,547	0.88%	
Japan	24,591	12.14%	48,290	14.02%	44,921	15.55%	
South Korea	7,689	3.80%	12,575	3.65%	9,647	3.34%	
Luxembourg	148	0.07%	384	0.11%	289	0.10%	
Malaysia	5,737	2.83%	9,052	2.63%	7,953	2.75%	
Mexico	975	0.48%	1,574	0.46%	1,215	0.42%	
Netherlands	1,581	0.78%	2,646	0.77%	2,193	0.76%	
New Zealand	708	0.35%	1,201	0.35%	1,124	0.39%	
Norway	1,107	0.55%	2,367	0.69%	1,876	0.65%	
Philippines	1,058	0.52%	1,629	0.47%	1,360	0.47%	
Poland	992	0.49%	2,302	0.67%	1,633	0.57%	
Portugal	470	0.23%	925	0.27%	790	0.27%	
Russia	1,162	0.57%	2,523	0.73%	1,015	0.35%	
Singapore	3,924	1.94%	5,881	1.71%	5,087	1.76%	
Spain	331	0.16%	1,929	0.56%	1,683	0.58%	

Switzerland	1,800	0.89%	2,864	0.83%	2,568	0.89%
Taiwan	9,506	4.69%	13,099	3.80%	10,395	3.60%
Thailand	3,519	1.74%	5,015	1.46%	3,977	1.38%
Turkey	819	0.40%	2,312	0.67%	1,895	0.66%
United	10 675	6 760/	20 666	6 000/	10 001	6 5 4 0/
Kingdom	12,075	0.20%	20,000	0.00%	18,894	0.34%
United States	63,229	31.22%	96,686	28.07%	77,418	26.80%
Venezuela	130	0.06%	230	0.07%	139	0.05%
Total	202,550	100%	344,416	100%	288,918	100%

Table 4 Descriptive statistics

 AB_ACCR is the signed abnormal accruals scaled by the lagged total assets. *Sales_USD* represents the net sales or revenues in millions of U.S. dollars. *CFO* is the net cash flow-operating activities scaled by lagged total assets. *LEV* is the ratio of total liabilities to total assets. *Growth* is the net sales growth rate, defined as the net sales in current year minus net sales in prior year and scaled by net sales in prior year. ΔPPE is the growth rate of gross PPE (property, plant, and equipment), defined as the gross PPE in current year minus the gross PPE in prior year and scaled by the gross PPE in prior year. *Lagloss* equals to 1 if firm discloses negative net income before extraordinary items/preferred dividends in prior year and 0 otherwise. *LnGDP* is the natural logarithm of GDP per capita of each country. Loss equals to 1 if firm reports negative income before extraordinary items/preferred dividends in the current year, and 0 otherwise. *EARN* is defined as the earnings per share before extraordinary items in current year divided by stock price in prior year. *R* is the industry-adjusted return, defined as the raw annual total investment return in current year, minus industry mean return by each country and year. *DR* is a dummy variable, equals 1 if R is negative and 0 otherwise. *MV_USD* represents the total market value of the company in millions of U.S. dollars. *MB* is the market-to-book ratio.

Variables	Mean	Std. Dev	25%	Median	75%				
Panel A: Abnormal accruals ($N = 202,550$)									
AB_ACCR	-0.091	0.213	-0.152	-0.073	-0.007				
NS_USD	1.536	4.647	0.045	0.177	0.751				
CFO	0.045	0.180	0.005	0.064	0.123				
LEV	0.546	0.387	0.331	0.508	0.670				
Growth	0.138	0.464	-0.040	0.068	0.212				
ΔPPE	0.122	0.387	-0.001	0.051	0.156				
Lagloss	0.287	0.452	0	0	1				
LnGDP	9.964	1.067	9.872	10.425	10.589				
Panel B: Loss avoidance	N = 344,416)							
Loss	0.295	0.456	0	0	1				
Sales_USD	1.120	3.427	0.031	0.129	0.543				
LEV	0.574	0.508	0.330	0.515	0.685				
Growth	0.262	0.994	-0.035	0.078	0.251				
LnGDP	9.908	1.068	9.784	10.349	10.550				
Panel C: Earnings conse	rvatism ($N = 2$	88,918)							
EARN	0.006	0.188	-0.023	0.042	0.089				
R	-0.013	0.552	-0.308	-0.062	0.167				
DR	0.570	0.495	0	1	1				
MV_USD	1.861	49.400	0.029	0.112	0.498				
LEV	0.532	0.404	0.315	0.500	0.663				
MB	1.984	2.931	0.930	1.215	1.835				
LnGDP	9.959	1.028	9.907	10.360	10.550				

Table 5 Pearson correlation coefficients

The variables are defined in fubles I and S. ; , and a denote significance at the 1070; 570; and 170 levels, respectively (100 taned).
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Panel A: Abi	normal accruals									
	AB_ACCR	Edu_Fin	Fin_Ski	AntiSelf	Sales	CFO	LEV	Growth	ΔPPE	Lagloss
Edu_Fin	-0.103***									
Fin_Ski	-0.110***	0.968***								
AntiSelf	-0.031***	0.178***	0.171***							
Sales	0.063***	-0.000	0.000	0.002						
CFO	-0.015***	-0.060***	-0.070***	-0.038***	0.313***					
LEV	-0.206***	0.030***	0.040***	-0.038***	0.011***	-0.291***				
Growth	-0.017***	0.032***	0.030***	0.047***	0.013***	-0.012***	-0.049***			
ΔPPE	-0.080***	0.021***	0.019***	0.038***	-0.005**	0.015***	-0.088 * * *	0.364***		
Lagloss	-0.083***	0.122***	0.129***	0.031***	-0.318***	-0.384***	0.228***	0.030***	-0.074***	
LnGDP	-0.056***	0.357***	0.409***	-0.076***	0.001	-0.062***	0.019***	-0.039***	-0.038***	0.113***
Panel B: Los	ss avoidance									
	Loss	Edu_F	in	Fin_Ski	AntiSelf	Se	ales	LEV	Gro	wth
Edu_Fin	0.147***									
Fin_Ski	0.160***	0.9	64***							
AntiSelf	0.045***	0.1	97***	0.203***						
Sales	-0.313***	-0.0	000	0.000	0.001					
LEV	0.233***	0.0	45***	0.060***	-0.024	***	-0.049***			
Growth	0.043***	0.0	71***	0.071***	0.041	***	-0.079***	-0.020*	**	
LnGDP	0.121***	0.3	04***	0.364***	-0.050	***	0.001	0.051*	**	0.003

Panel C: Ear	mings conservatism								
	EARN	R	DR	Edu_Fin	Fin_Ski	AntiSelf	MV	LEV	MB
R	0.195***								
DR	-0.198***	-0.671***							
Edu_Fin	-0.101***	-0.009***	-0.003						
Fin_Ski	-0.113***	-0.011***	0.007***	0.964***					
AntiSelf	-0.049***	-0.006***	0.027***	0.218***	0.220***				
MV	0.255***	0.164***	-0.164***	0.005**	0.006***	0.003*			
LEV	-0.200***	-0.057***	0.044***	-0.010***	0.012***	-0.054***	-0.122***		
MB	-0.167***	0.124***	-0.053***	0.142***	0.164***	0.065***	-0.032***	0.462***	
LnGDP	-0.130***	-0.008***	0.018***	0.251***	0.307***	-0.044***	0.005***	0.042***	0.090***

Table 6 Regression analyses of abnormal accruals

Panel A compares the abnormal accruals between high and low financial education sub-groups. In Panel B, the dependent variable is abnormal accruals. All variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), t-statistics are in the parentheses.

Panel A: Univariate tests of abnormal accruals model						
	(1)			(2)		
	$FinEdu = Edu_Fin$		$FinEdu = Fin_Ski$			
	High	Low	Difference	High	Low	Difference
AB_ACCR	-0.110	-0.066	-0.044***	-0.109	-0.066	-0.043***
Panel B: Multivariate an	nalyses of a	ubnormal acc	cruals (Depende	ent Variable	$a = AB_ACC$	<i>R</i>)
Independent Variables	I	FinEdu = Ed	lu_Fin		FinEdu = Fi	n_Ski
FinEdu		-0.011*	***		-0.013*	***
		(-2.90)			(-3.07)	
AntiSelf		-0.031*	**		-0.031*	*
		(-2.65)			(-2.55)	
Sales		0.013*	***		0.013*	***
		(4.90)			(4.91)	
CFO		-0.155*	k		-0.156*	:
		(-1.81)			(-1.82)	
LEV	<i>LEV</i> -0.136***		***	-0.136***		
		(-10.44)			(-10.50)	
Growth		0.005			0.005	
		(1.16)			(1.17)	
ΔPPE		-0.054***		-0.054***		
		(-5.13)			(-5.13)	
Lagloss		-0.015*	***		-0.015*	**
		(-4.14)			(-4.00)	
LnGDP		-0.005			-0.004	
		(-1.45)			(-1.01)	
Intercept		0.072*	**		0.086*	*
		(2.09)			(2.38)	
Year and Industry		Include	d		Included	1
Dummies						
Clustered by		Country	y		Country	I
Ν		202,550			202,550	
Adj. R^2		0.098			0.098	

Table 7 Logistic regression of loss avoidance

All variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), z-statistics are in the parentheses.

		(1)			(2)	
	-	FinEdu = E	du_Fin		FinEdu = F	Fin_Ski
	High	Low	Difference	High	Low	Difference
Loss	0.349	0.230	0.119***	0.351	0.228	0.123***
Panel B: Multivariate log	gistic regre	ssion of los	s avoidance (De	pendent V	ariable = P	(Loss=1))
Independent Variables		FinEdu = E	du_Fin		FinEdu = F	Fin_Ski
FinEdu		0.214***		0.278***		***
		(3.67)			(4.47)	
AntiSelf		0.492*	;		0.440*	*
		(1.81)			(1.70)	
Sales		-0.574*	***		-0.577°	***
		(-7.46)			(-7.45)	
LEV	1.739***		***	1.739***		
		(7.29)			(7.25)	
Growth	0.008			0.007		
		(0.21)			(0.17)	
LnGDP		0.241*	***	0.216***		
		(4.35)			(3.85)	
Intercept		-4.019*	***		-4.255	***
		(-5.72)			(-6.29)	
Year and Industry		Include	ed		Include	ed
Dummies						
Clustered by		Count	ry		Count	ry
Ν		344,416			344,410	5
-	0.184		0.185			

Table 8 Regression analysis of earnings conservatism

Independent Variables	Basic model	$FinEdu = Edu_Fin$	FinEdu = Fin_Ski
	(1)	(2)	(3)
DR	-0.020***	0.002	0.005
	(-7.69)	(0.12)	(0.30)
R	0.002	0.280***	0.296***
	(0.10)	(7.40)	(7.53)
R*DR	0.152***	-0.340***	-0.367***
	(5.32)	(-5.15)	(-5.16)
FinEdu		0.005	0.005
		(1.40)	(1.03)
FinEdu*DR		-0.005***	-0.005***
		(-4.26)	(-3.00)
FinEdu*R		-0.014***	-0.016***
		(-4.70)	(-5.03)
FinEdu*R*DR		0.022***	0.026***
		(2.97)	(2.97)
AntiSelf		-0.015	-0.015
		(-0.88)	(-0.84)
AntiSelf *DR		-0.014*	-0.015*
		(-1.73)	(-1.80)
AntiSelf *R		-0.032	-0.033
		(-1.26)	(-1.28)
AntiSelf*R*DR		0.017	0.018
		(0.29)	(0.30)
MV		0.015***	0.015***
		(4.13)	(4.10)
MV*DR		0.005***	0.005***
		(4.34)	(4.32)
MV*R		0.008***	0.008***
		(4.23)	(4.04)
MV*R*DR		-0.037***	-0.037***
		(-7.87)	(-7.95)
LEV		-0.063***	-0.063***
		(-6.69)	(-6.79)
LEV*DR		-0.018**	-0.018**
		(-2.57)	(-2.54)
LEV*R		0.028***	0.029***

Dependent variable is earnings per share before extraordinary items scaled by stock price in prior year. *EARN* is defined as the earnings per share before extraordinary items in current year divided by stock price in prior year. *R* is the industry-adjusted return, defined as the raw annual total investment return in current year, minus industry mean return by each country and year. *DR* is a dummy variable, equals 1 if R is negative and 0 otherwise. All variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), t-statistics are in the parentheses.

		(2.78)	(2.76)
LEV*R*DR		-0.004	-0.006
		(-0.50)	(-0.69)
MB		-0.010***	-0.010***
		(-8.83)	(-8.54)
MB*DR		0.005***	0.005***
		(8.11)	(7.92)
MB*R		-0.002**	-0.002**
		(-2.55)	(-2.50)
MB*R*DR		-0.014***	-0.015***
		(-15.83)	(-15.58)
LnGDP		-0.010**	-0.010**
		(-2.14)	(-2.08)
LnGDP*DR		0.000	0.000
		(0.08)	(0.14)
LnGDP*R		-0.018***	-0.018***
		(-8.47)	(-9.44)
LnGDP*R*DR		0.040***	0.040***
		(8.70)	(9.06)
Intercept	-0.015	0.043	0.038
	(-0.83)	(0.83)	(0.72)
Year and Industry Dummies	Included	Included	Included
Country Dummies	Included	Excluded	Excluded
Clustered by	Country	Country	Country
Ν	288,918	288,918	288,918
Adj. R^2	0.131	0.210	0.210

288,918 0.131

Table 9 Splitting sample based on the median of investor legal institutions: abnormal accruals

Independent Variable	es FinEdu	= Edu_Fin	FinEdu	= Fin_Ski
	High AntiSelf	Low AntiSelf	High AntiSelf	Low AntiSelf
	(1)	(2)	(3)	(4)
FinEdu	-0.011***	-0.001	-0.014***	-0.004
	(-2.96)	(-0.36)	(-3.00)	(-1.05)
Sales	0.013***	0.008***	0.013***	0.008***
	(4.53)	(7.59)	(4.54)	(7.87)
CFO	-0.135	-0.559***	-0.135	-0.559***
	(-1.70)	(-14.62)	(-1.70)	(-14.70)
LEV	-0.138***	-0.098***	-0.138***	-0.098***
	(-11.15)	(-10.07)	(-11.15)	(-10.03)
Growth	0.006	0.014*	0.006	0.014*
	(1.14)	(1.77)	(1.15)	(1.77)
ΔPPE	-0.055***	-0.046***	-0.055***	-0.046***
	(-4.73)	(-6.41)	(-4.72)	(-6.47)
Lagloss	-0.015***	-0.022***	-0.015***	-0.022***
	(-3.90)	(-4.30)	(-3.81)	(-4.25)
LnGDP	-0.005	-0.003	-0.004	-0.003
	(-1.41)	(-1.25)	(-1.01)	(-1.26)
Intercept	0.077*	0.030	0.090*	0.046
	(1.83)	(0.67)	(2.00)	(0.91)
Year Dummies	Included	Included	Included	Included
Industry Dummies	Included	Included	Included	Included
Clustered by	Country	Country	Country	Country
Ν	179,018	23,532	179,018	23,532
Adj. R^2	0.100	0.192	0.100	0.192

The dependent variable, AB_ACCR, is the signed abnormal accruals scaled by the lagged total assets. All variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), t-statistics are in the parentheses.

Table 10 Splitting sample based on the median of investor legal institutions: loss avoidance

Independent Variables	FinEdu	= Edu_Fin	$FinEdu = Fin_Ski$		
	High AntiSelf	Low AntiSelf	High AntiSelf	Low AntiSelf	
	(1)	(2)	(3)	(4)	
FinEdu	0.245***	-0.029	0.294***	0.054	
	(4.31)	(-0.33)	(5.04)	(0.68)	
Sales	-0.601***	-0.464***	-0.602***	-0.464***	
	(-6.62)	(-19.75)	(-6.62)	(-19.49)	
LEV	1.696***	2.334***	1.691***	2.340***	
	(6.77)	(11.64)	(6.71)	(11.80)	
Growth	0.016	-0.098**	0.015	-0.099**	
	(0.44)	(-2.29)	(0.41)	(-2.33)	
LnGDP	0.279***	-0.069	0.257***	-0.087	
	(5.41)	(-0.90)	(4.89)	(-1.25)	
Intercept	-4.532***	-0.021	-4.751***	-0.379	
	(-6.48)	(-0.02)	(-6.62)	(-0.39)	
Year and Industry	Included	Included	Included	Included	
Dummies					
Clustered by	Country	Country	Country	Country	
Ν	289,306	55,083	289,306	55,083	
Pseudo- R^2	0.199	0.139	0.199	0.139	

The dependent variable is the probability of reporting a loss: P(Loss=1)). Loss equals to 1 if firm reports negative income before extraordinary items/preferred dividends in the current year, and 0 otherwise. All variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), z-statistics are in the parentheses.

Table 11 Splitting sample based on the median of investor legal institutions: earnings conservatism

The dependent variable, EARN, is defined as the earnings per share before extraordinary items in current year divided by stock price in prior year. R is the industry-adjusted return, defined as the raw annual total investment return in current year, minus industry mean return by each country and year. DR is a dummy variable, equals 1 if R is negative and 0 otherwise. All variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), t-statistics are in the parentheses.

Independent Variables	<i>FinEdu</i> :	= Edu_Fin	FinEdu =	= Fin_Ski
	High AntiSelf	Low AntiSelf	High AntiSelf	Low AntiSelf
	(1)	(2)	(3)	(4)
DR	0.002	-0.050	0.008	-0.077
	(0.11)	(-0.96)	(0.48)	(-1.44)
R	0.261***	0.160***	0.277***	0.175***
	(5.87)	(3.44)	(5.89)	(3.13)
R*DR	-0.297***	-0.283**	-0.319***	-0.413***
	(-3.13)	(-2.44)	(-3.08)	(-3.50)
FinEdu	0.005	0.007**	0.005	0.003
	(1.14)	(2.10)	(1.00)	(0.57)
FinEdu*DR	-0.006***	0.002	-0.006***	0.008*
	(-4.04)	(0.48)	(-2.84)	(1.81)
FinEdu*R	-0.015***	-0.001	-0.016***	-0.003
	(-4.47)	(-0.20)	(-4.45)	(-0.46)
FinEdu*R*DR	0.024**	0.003	0.026**	0.027*
	(2.78)	(0.18)	(2.52)	(1.74)
MV	0.014***	0.016***	0.014***	0.016***
	(3.17)	(8.10)	(3.15)	(7.84)
MV*DR	0.006***	0.005***	0.006***	0.005***
	(3.88)	(3.46)	(3.84)	(3.46)
MV*R	0.009***	-0.004	0.009***	-0.004
	(4.11)	(-1.22)	(3.95)	(-1.18)
MV*R*DR	-0.040***	-0.015*	-0.040***	-0.014
	(-7.97)	(-1.73)	(-8.00)	(-1.67)
LEV	-0.055***	-0.117***	-0.055***	-0.118***
	(-5.44)	(-9.51)	(-5.55)	(-9.61)
LEV*DR	-0.020**	-0.009	-0.020**	-0.009
	(-2.27)	(-0.52)	(-2.25)	(-0.53)
LEV*R	0.025**	0.031	0.026**	0.031
	(2.76)	(1.47)	(2.71)	(1.45)
LEV*R*DR	0.002	0.044**	0.000	0.041**
	(0.20)	(2.41)	(0.02)	(2.16)
MB	-0.010***	-0.005**	-0.010***	-0.005**
	(-6.77)	(-2.51)	(-6.59)	(-2.41)
MB*DR	0.005***	0.004**	0.005***	0.003**
	(6.32)	(2.50)	(6.11)	(2.37)

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MB*R	-0.002**	-0.004***	-0.002**	-0.004***
	(-2.58)	(-3.28)	(-2.54)	(-3.31)
MB*R*DR	-0.015***	-0.012**	-0.015***	-0.013**
	(-14.98)	(-2.20)	(-14.84)	(-2.27)
LnGDP	-0.011**	-0.004	-0.011**	-0.002
	(-2.10)	(-0.49)	(-2.12)	(-0.30)
LnGDP*DR	0.000	0.004	0.000	0.003
	(0.02)	(0.85)	(0.12)	(0.70)
LnGDP*R	-0.018***	-0.010***	-0.018***	-0.010***
	(-7.91)	(-3.02)	(-8.10)	(-3.05)
LnGDP*R*DR	0.038***	0.044***	0.037***	0.043***
	(7.39)	(5.13)	(7.21)	(5.37)
Intercept	0.060	0.003	0.052	0.013
	(0.94)	(0.04)	(0.80)	(0.16)
Year and Industry	Included	Included	Included	Included
Dummies				
Clustered by	Country	Country	Country	Country
Ν	245,637	43,281	245,637	43,281
Adj. R^2	0.219	0.175	0.219	0.174

Table 12 Controlling for institutional investors and 2SLS analysis

All variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), t-statistics are in the parentheses In Panel A. In panel B, z-statistics are in the parentheses. Year and industry dummies are included and standard errors are clustered by countries. Other variables are included but untabulated.

	Controlling for institutional investors		2SLS analysis		
Independent	FinEdu =	FinEdu =	FinEdu=	FinEdu=	
variables	Edu_Fin	Fin_Ski	Residual_edufin	Residual_finski	
	(1)	(2)	(3)	(4)	
Panel A: Abnorm	al accruals model (De	pendent Variable is A	AB_ACCR)		
FinEdu	-0.017***	-0.023***	-0.008**	-0.009**	
	(-4.67)	(-6.91)	(0.003)	(0.004)	
Ν	100,062	100,062	199986	199986	
Adj. R^2	0.110	0.111	0.0990	0.0991	
Panel B: Loss avo	bidance model (Depen	dent Variable is P (L	oss=1))		
FinEdu	0.232***	0.349***	0.173***	0.230***	
	(3.59)	(6.11)	(0.051)	(0.055)	
Ν	188,083	188,083	314,798	314,798	
Pseudo- <i>R</i> ²	0.192	0.196	0.190	0.191	
Panel C: Earnings conservatism model (Dependent Variable is EARN)					
DR	0.056	0.060	-0.016	-0.020	
	(0.93)	(1.01)	(0.020)	(0.020)	
R	0.225*	0.258**	0.178***	0.168***	
	(2.03)	(2.27)	(0.031)	(0.028)	
R*DR	-0.148	-0.226	-0.199***	-0.182***	
	(-0.53)	(-0.79)	(0.051)	(0.050)	
FinEdu	0.002	-0.000	0.004	0.005	
	(0.66)	(-0.02)	(0.003)	(0.004)	
FinEdu*DR	-0.006***	-0.006***	-0.005***	-0.006***	
	(-5.16)	(-3.34)	(0.001)	(0.002)	
FinEdu*R	-0.014***	-0.016***	-0.008**	-0.007	
	(-6.22)	(-5.85)	(0.004)	(0.005)	
FinEdu*R*DR	0.025***	0.031***	0.012**	0.012*	
	(3.96)	(4.12)	(0.006)	(0.007)	
N	160,136	160,136	262,013	262,013	
Adj. R^2	0.222	0.222	0.214	0.214	

Table 13 Using Leuz et al. (2003) earnings quality data and method

The dependent variable is the earnings quality measure from Leuz et al. (2003). The dependent variable is earnings quality measure obtained from Leuz et al. (2003). *Edu_Fin* and *Fin_Ski* are defined Table 1. *Anti-director Right* and *Legal Enforcement* are obtained from Leuz et al. (2003). *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), t-statistics are in the parentheses.

	(1)	(2)
Independent Variables	$FinEdu = Edu_Fin$	$FinEdu = Fin_Ski$
FinEdu	-2.429*	-2.989*
	(-1.194)	(-1.508)
Antidirector_Right	-2.535***	-2.398**
	(-0.882)	(-0.907)
Legal_Enforcement	0.0618	0.0365
	(0.240)	(0.235)
Constant	38.35***	43.14***
	(6.287)	(7.988)
Observations	28	28
R-squared	0.443	0.438

Table 14 Accruals-based earnings conservatism

The dependent variable, ACCR, is the total accruals, defined as net income before extraordinary items minus net operating cash flow then divided by the lagged total assets. All variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), t-statistics are in the parentheses. Year and industry dummies are included and standard errors are clustered by countries. Other variables in column (2) and column (3) are included but untabulated.

Independent Variables	Basic model	FinEdu = Edu_Fin	FinEdu = Fin_Ski
	(1)	(2)	(3)
DCFO	0.021***	0.069**	0.068**
	(3.03)	(2.50)	(2.12)
CFO	-0.520***	-0.536***	-0.531***
	(-32.35)	(-5.54)	(-5.45)
CFO*DCFO	0.807***	-3.084***	-3.357***
	(5.85)	(-6.27)	(-6.41)
FinEdu		0.001	0.001
		(0.83)	(0.49)
FinEdu*DCFO		-0.008*	-0.006
		(-1.82)	(-1.28)
FinEdu*CFO		-0.005	-0.008
		(-0.54)	(-0.79)
FinEdu*CFO*DCFO		0.094**	0.169***
		(2.10)	(3.42)
Ν	280,580	280,580	280,580
Adj. R^2	0.095	0.178	0.180

Table 15 Alternative proxy for financial education, deletion of the U.S. and cross-listing firms, and further tests on the complementary role of financial education

MS_Score is the score of management/business schools in each country, getting from the Global Competitiveness Report (2006-2007) published by World Economic Forum. The higher score of management/business schools indicates higher quality of them and higher investor education. Loss equals to 1 if firm reports negative income before extraordinary items/preferred dividends in the current year, and 0 otherwise. All other variables are defined in Tables 1 and 3. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively (two-tailed), t-statistics are in the parentheses. For panel B, z-statistics are in the parentheses. Year and industry dummies are included and standard errors are clustered by countries. Other variables are included but untabulated.

Independent	FinEdu =	FinEdu = Edu_Fin	FinEdu = Fin_Ski	FinEdu = Edu_Fin	FinEdu = Fin_Ski	FinEdu = Edu_Fin	FinEdu = Fin_Ski					
Variables	MS_Score											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)					
Panel A: Abnormal accruals (Dependent Variable = AB_ACCR)												
FinEdu	-0.021***	-0.008**	-0.009**	-0.011***	-0.014***	-0.010***	-0.013***					
	(-5.05)	(-2.58)	(-2.37)	(-7.26)	(-7.92)	(-2.82)	(-3.03)					
Ν	202,550	139,321	139,321	42,331	42,331	193,280	193,280					
Adj. R^2	0.100	0.105	0.105	0.211	0.211	0.094	0.094					
Panel B: Loss avoidance (Dependent Variable = $P(Loss=1)$)												
FinEdu	0.312***	0.160***	0.209***	0.245***	0.372***	0.175***	0.233***					
	(3.95)	(2.71)	(2.76)	(7.73)	(8.81)	(3.39)	(4.31)					
Ν	344,416	247,718	247,718	74,925	74,925	330,312	330,312					
Pseudo- R^2	0.183	0.146	0.146	0.101	0.101	0.127	0.128					
Panel C: Earnings conservatism (Dependent Variable = EARN)												
DR	-0.001	0.006	0.015	0.025	0.022	0.023**	0.021*					
	(-0.03)	-0.34	-0.91	(0.69)	(0.48)	(-2.00)	(1.81)					

R	0.297***	0.223***	0.236***	0.074*	0.028	0.188***	0.200***				
	(10.63)	(6.85)	(5.58)	(1.77)	(0.54)	(19.65)	(19.83)				
R*DR	-0.384***	-0.296***	-0.326***	-1.856	-0.283**	0.007	-0.020				
	(-7.78)	(-4.03)	(-3.56)	(1.60)	(-1.98)	(0.21)	(-0.64)				
FinEdu	0.008*	0.006**	0.008*	0.004*	0.002	0.002***	0.001				
	(1.68)	(2.06)	(1.88)	(1.87)	(0.89)	(3.15)	(0.45)				
FinEdu*DR	-0.004	-0.006***	-0.007***	0.001	0.001	-0.001	0.001				
	(-1.52)	(-4.76)	(-4.36)	(0.28)	(0.30)	(-1.15)	(0.64)				
FinEdu*R	-0.021***	-0.011***	-0.012**	0.004	0.009*	-0.009***	0.010***				
	(-5.97)	(-3.12)	(-2.56)	(1.08)	(1.81)	(-10.35)	(-10.10)				
FinEdu *R *DR	0.040***	0.018**	0.021**	0.042***	0.051***	0.025***	0.029***				
	(5.75)	(2.32)	(2.05)	(4.23)	(4.07)	(10.21)	(9.96)				
Ν	288,918	211,500	211,500	66,525	66,525	276,331	276,331				
Adj. R^2	0.210	0.187	0.187	0.211	0.212	0.233	0.233				