**Financial Literacy and Earnings Informativeness: Evidence from Market Reactions to Earnings Announcements**


## Abstract

Using an international sample of firms and two country-level measures of financial literacy, we find robust evidence of a positive relationship between financial literacy and market reactions to earnings announcements, measured by abnormal stock returns and abnormal trading volume. In cross-sectional analyses, we find that the effect of financial literacy in enhancing stock market reactions is more prominent in poorer information environments. In addition, using path analysis, we find support for our conjecture that earnings quality and corporate governance quality mediate the relationship between financial literacy and market reactions to earnings announcements.



**Keywords**: Financial literacy; Market efficiency; Abnormal stock returns, Abnormal trading volume; Earnings quality; Corporate governance quality

**JEL codes**: D83; G14; G15; G53

# Financial Literacy and Earnings Informativeness: Evidence from Market Reactions to Earnings Announcements

## 1. Introduction

Firms disseminate data via earnings announcements, leaving market participants to engage in a costly process of information acquisition and interpretation (e.g., Blankespoor et al. 2020). This process allows these market participants to produce valuable information that can refine their assessments of firms (e.g., Beaver 1968; Ball and Kothari 1991; Kim and Verrecchia 1994). Such belief updates may trigger unexpected changes in stock price and trading volume around announcement dates (e.g., Kim and Verrecchia 1991a, 1991b, 1994; Harris and Raviv 1993; Kandel and Pearson 1995; Landsman and Maydew 2002; Landsman et al. 2012). A notable stream of research examines how market reactions to earnings announcements vary across countries (e.g., Alford et al. 1993; Ali and Hwang 2000; Hung 2000; DeFond et al. 2007; Pevzner et al. 2015). This body of work highlights key structural factors—such as investor protection, earnings quality, the frequency of financial reporting, and societal trust —as plausible drivers of these cross-country differences.

In this study, we introduce a novel potential cross-country determinant of market reactions to earnings announcements, namely citizens' level of financial literacy, which refers to the knowledge and understanding of financial concepts and risks, and the ability to apply that knowledge to make sound financial decisions (OECD 2019).[1] The existing literature has mainly focused on the beneficial effect of financial literacy on individual decision-making (e.g., Hsiao and Tsai 2008; Van Rooij et al. 2011; Cole et al. 2011; Lusardi and Mitchell 2011a, 2011b; Gerardi et al. 2013; Lusardi and Tufano 2015), with a few recent studies revealing a positive relationship

[1] There has been heightened worldwide interest in improving citizens' financial literacy since the 2007-08 financial crisis. Indeed, financial literacy is considered essential to the policy mix for financial stability and key to national strategy (OECD 2013, 2020).

between financial literacy and bank accounting transparency (Jin et al. 2021) and a negative relationship between financial literacy and IPO underpricing (Jia et al. 2024). However, little is known about whether financial literacy plays a meaningful role in enhancing the informativeness of earnings.

It is unclear whether and how citizens' level of financial literacy relates to earnings informativeness. Earnings announcements require investors to engage in a costly process of reading, interpreting, and assessing the information before making informed decisions based on it (e.g., Grossman and Stiglitz 1980; Kim and Verrecchia 1994; Hirshleifer et al. 2009; Blankespoor et al. 2020). Financial literacy is expected to influence how effectively individuals process complex information like earnings disclosures (e.g., Alessie et al. 2011; Fornero and Monticone 2011; Klapper and Panos 2011; Lusardi and Mitchell 2011b; Sekita 2011; Lusardi and Mitchell 2014). On the one hand, investors with greater information-processing capacity can drive stronger price reactions by quickly reflecting earnings news in market prices (Kim and Verrecchia 1994). On the other hand, financial literacy may facilitate investors' capacity to gather and process pre-announcement private information, making the content of earnings announcements more anticipated and consequently diminishing their manifested informativeness (e.g., Kim and Verrecchia 1991a).[2] In addition, as pointed out by the OECD (2018), although financial literacy influences individual behaviors, its impact on macro-level outcomes beyond other institutional factors may be limited. Therefore, we propose that conducting empirical analysis to examine whether and how financial literacy is associated with earnings informativeness, particularly in an international context, is both valuable and timely.

[2] See Kim and Verrecchia (1991b), Proposition 7—anticipated announcements, due to prior private information gathering, can result in a weaker price reaction because the announcement's information has already been partially assimilated by investors.

Beyond the influence of the investor-side information processing costs, we propose that financial literacy may also enhance earnings informativeness through firm-side mechanisms, specifically by improving earnings quality and strengthening corporate governance, both documented as positive contributors to earnings informativeness (e.g., Kim and Verrecchia 1991a; Liu and Thomas 2000; DeFond et al. 2007; Giroud and Mueller 2011). First, financial literacy is likely associated with higher earnings quality. Financially literate individuals, with lower costs for acquiring and processing information, are more inclined to demand high-quality financial disclosures from firms. This demand can encourage managers and regulators to prioritize higher-quality earnings reporting. Second, financially literate investors are better equipped to interpret earnings reports, assess firm performance, and make informed decisions, which strengthens their ability to monitor and influence management, thus supporting stronger corporate governance. Moreover, financial literacy can positively impact the knowledge and decision-making of managers, employees, and board members, contributing to informed governance across the company. In this study, we also empirically test these two channels.

We conduct our empirical analyses using a large sample of firm-year observations from 32 countries over the 1998 to 2020 period. We use two measures of financial literacy. The first measure, which is from Klapper et al. (2015), is a static, country-level financial literacy index conforming to the four fundamental concepts of financial decision-making, i.e., risk diversification, inflation, numeracy, and compound interest. This index, which is based on the results of the 2014 Standard & Poor's Global Financial Literacy Survey, is constructed by calculating the proportion of 1,000 people surveyed in a country who correctly answer questions on at least three of the four fundamental concepts. The second measure is a time-varying measure that is similar to the measure in Jia et al. (2024). It is the first component extracted from a principal component analysis of six

variables (public education, tertiary enrollment, non-life insurance, bank branches, credit card, and private bureau) that cover the four concepts of financial literacy identified in Huston (2010).

We first examine the relation between financial literacy and the market reaction to earnings announcements. Following prior literature, our primary measures of stock market reaction to earnings announcements are 1) abnormal stock returns, measured over the five-day window centered on the earnings announcement date, and 2) abnormal trading volume, measured over the three-day window centered on the earnings announcement date. Using the static (time-varying) measure of financial literacy, we find that a one-standard-deviation increase in financial literacy is associated with a 0.38% (0.48%) increase in abnormal stock returns around earnings announcements. We also find that a one-standard deviation increase in the static measure (time-varying) measure of financial literacy is associated with a 4.9% (9.0%) increase in abnormal trading volume.

We conduct several robustness tests to strengthen the validity of our main findings. First, to control for potential endogeneity, we employ two-stage least squares (2SLS) instrumental variable estimation. Following Jia et al. (2024), we use the ratio of the number of individuals enrolled in secondary school to the total population of individuals in the same age group in the country as an instrumental variable for both measures of financial literacy and find consistent results. Second, we assess the magnitude of the unobserved correlated variable required to overturn our result using the Oster (2019) test and find that our result is unlikely to be driven by omitted correlated variables. Third, we document that our results are robust when using alternative measures of market reaction to earnings announcements, including a 3-day window measure of cumulative abnormal returns and a 2-day window measure of abnormal trading volume. Fourth, in

model specification sensitivity checks, we show that our main results are robust to using weighted-least squares regression and excluding observations from the U.S., Japan, and China.

Next, we examine the two firm-side channels through which financial literacy can be associated with earnings informativeness. As aforementioned, one plausible channel is earnings quality. Following prior literature, we use two measures of (low) earnings quality, the incidence of loss avoidance and discretionary accruals. Consistent with our prediction, we find robust evidence that financial literacy is negatively related to loss avoidance and discretionary accruals. In terms of economic significance, using the static (time-varying) measure of financial literacy, a one-standard-deviation increase in financial literacy is associated with a 1.4% (1.4%) lower likelihood of loss avoidance behavior and a 17.8% (24.3%) decrease in discretionary accruals.

Another potential channel is corporate governance. Consistent with previous research, we employ four distinct corporate governance measures: a corporate governance score, a board diversity score, an indicator variable denoting separation of the roles of board chair and CEO, and a board independence score.[3] We find that financial literacy is positively related to all four measures of corporate governance when using the static measure of financial literacy. When utilizing the time-varying measure of financial literacy, we observe a positive relation with two of the four corporate governance measures. Using the static (time-varying) measure of financial literacy and the corporate governance score as an example, a one-standard deviation increase in financial literacy is associated with a 7.9% (5.1%) increase in corporate governance score.

Financial literacy may play a limited role in earnings informativeness when financially literate investors are more capable of acquiring and processing pre-announcement private information and when investors rely more heavily on 'market experts', such as large investors (e.g.,

[3] The corporate governance measures are all from the *Sustainalytics* database.

institutional investors) and financial analysts. This perspective suggests that in more efficient markets with lower information asymmetry, financial literacy should play a reduced role in market reactions to earnings announcements. Considering this, we examine whether the influence of financial literacy on market reaction to earnings announcements is weaker when information asymmetry, measured by firm size, audit quality, institutional ownership, and number of exchange-listed firms, is lower. Using both market reaction proxies (i.e., abnormal stock returns and abnormal trading volume), we document that the positive influence of financial literacy on market reaction to earnings announcements is weaker for larger firms, have Big N auditors (a proxy for high audit quality), and are located in countries with a higher level of institutional ownership and a larger number of exchange-listed firms.

In addition, we conduct path analyses to examine whether earnings quality and corporate governance quality positively mediate the influence of financial literacy on stock market reaction to earnings announcements. The results of these path analyses suggest that financial literacy positively influences earnings quality and corporate governance, which in turn strengthens the market reaction to firms' earnings announcements.

Our study makes the following important contributions. First, we contribute to the growing body of literature that examines the cross-country determinants of earnings informativeness (e.g., Alford et al. 1993; Ali and Hwang 2000; Hung 2000; DeFond et al. 2007; Pevzner et al. 2015), which documents several key structural factors—such as investor protection, earnings quality, the frequency of financial reporting, and national culture—as plausible drivers of these cross-country differences. We extend this literature by documenting that citizens' level of financial literacy can also play a significant role beyond the existing identified factors.

Second, we provide a comprehensive analysis of the relationship between financial literacy and earnings informativeness through both investor-side and firm-side channels – our findings suggest that financial literacy enhances earnings informativeness not only by reducing investors' information processing costs but also by improving earnings quality and corporate governance.

Third, we add to the literature examining the impact of citizens' financial literacy on various economic outcomes (e.g., Calvet et al. 2007, 2009; Agarwal et al. 2009; Hilgert et al. 2003). We extend the literature that broadens the scope of financial literacy research beyond individual outcomes. Our study is one of the first to highlight the direct impact of citizens' financial literacy on the stock market by documenting a positive relation between financial literacy and market reactions to earnings announcements.

In addition, our study provides cross-country evidence to emphasize the role of financial literacy in strengthening the market reactions to earnings announcements through the channels of improving earnings quality and corporate governance and finds that the role of financial literacy is especially important and evident when the level of information asymmetry is high.

In terms of policy implications, our study conforms to the worldwide initiatives for financial literacy policies since the 2007-2008 global financial crisis when national strategies for financial education were first introduced as a policy tool to overcome the prolonged negative effect of the crisis (OECD 2009). The results of our study reinforce that financial literacy can have a significant capital market impact and undermine the speculation that financial literacy may not have detectable economic implications at the macro level (OECD 2018).

The rest of the study is organized as follows. We develop the hypotheses in Section 2, present the research design in Section 3, describe the data and discuss the empirical results in Section 4, and make concluding remarks in Section 5.

## 2. Related Literature and Hypotheses Development

### 2.1. Related Studies on Financial Literacy

Existing literature on financial literacy and the associated economic outcomes has mainly focused on the beneficial behavior changes of individuals and households. Studies show that more financially literate individuals are likely to accumulate more wealth (Stango and Zinman 2009; Behrman et al. 2012), be financially resilient and less likely to default on loans (Gerardi et al. 2013; Lusardi and Tufano 2015), plan and save for retirement (Cole et al. 2011; Lusardi and Mitchell 2011a, 2011b), and make better financial decisions (Calvet et al. 2007, 2009; Agarwal et al. 2009). Also, various studies explore the relationship between financial literacy and individuals' decision-making in capital markets. For example, Van Rooij et al. (2011) document that more financially literate individuals are more likely to invest in stocks and perform better in the stock markets. Hsiao and Tsai (2018) find that individuals with a higher level of financial literacy can better understand and purchase complex derivative products such as options. Hastings and Tejeda-Ashton (2008) document that more financially literate individuals are more likely to invest in mutual funds with lower fees. In addition, some recent studies explore the potential impact of financial literacy on capital market efficiency. Jin et al. (2021) suggest that financial literacy is positively associated with bank financial reporting transparency via the channels of more stable funding, more predictable loan loss provisions, and more effective monitoring of managers. In an international study, Jia et al. (2024) document that financial literacy is positively related to IPO underpricing through the mitigation of information asymmetry.

### 2.2. Hypothesis Development

Existing studies document that a country's formal institutions such as investor protection and the frequency of financial reporting, and informal institutions such as national culture can be

significant determinants of market reactions to earnings announcements (Alford et al. 1993; Ali and Hwang 2000; Hung 2000; Landsman and Maydew 2002; DeFond et al. 2007; Landsman et al. 2012; Pevzner et al. 2015). Little is known about whether and how financial literacy can be associated with earnings informativeness across countries. As discussed below, we posit that financial literacy can be either positively or negatively associated with earnings informativeness.

### 2.2.1 Financial Literacy Can Positively Relate to Earnings Informativeness

Earnings announcements convey information that can resolve some uncertainty about firms' future cash flows (e.g., Ball and Kothari 1991). In this regard, whether and how the market reacts to earnings announcements depends on whether and how earnings announcements facilitate investors' belief updates (e.g., Beaver 1981; Ball and Kothari 1991; Kim and Verrecchia 1994). However, acquiring and processing earnings disclosures are costly processes, requiring time, effort, and expertise (e.g., Kim and Verrecchia 1994; Blankespoor et al. 2020). The costs of information acquisition and processing for individuals can vary with the level of financial literacy. Prior studies suggest that the two components of financial literacy, financial knowledge and the ability to perform financial calculations, are key to the financial decision-making of individuals (Alessie et al. 2011; Lusardi and Mitchell 2011b, 2014). Individuals with higher financial literacy are better equipped to interpret firm disclosures, assess the implications of earnings news, and incorporate this information into their investment decisions. In this vein, more financially literate investors are likely to react more promptly and accurately to new earnings information. Therefore, countries with higher financial literacy should exhibit stronger market reactions to earnings announcements.

Beyond its influence on investor-side information processing, financial literacy can also affect earnings informativeness through two firm-side channels, namely earnings quality and corporate governance. Earnings quality can be defined as the decision-usefulness of reported

earnings in equity valuation decisions (e.g., Dechow et al. 2010). One key aspect of earnings quality is the ability of a firm's financial accounting system to measure performance, which can be impaired by a manager's opportunistic motivation.[4] A large literature documents that the credibility of earnings is a major determinant of market reactions to earnings announcements (e.g., Kim and Verrecchia 1991a; Liu and Thomas 2000). Indeed, market reactions to earnings announcements are often regarded as a proxy for earnings quality (see, for example, Dechow et al. 2010 for a thorough review). In addition, studies find that corporate governance also promotes the credibility of earnings, facilitating market reactions to earnings announcements (e.g., Farber 2005; DeFond et al. 2007). For example, DeFond et al. (2007) find that earnings announcements are more informative in countries with higher earnings quality and stronger investor protection.

In terms of the earnings quality channel, financial literacy can be positively related to earnings quality, which enhances market reactions to earnings announcements. Transaction cost theory (e.g., Burgstahler and Dichev 1997) suggests that assuming the terms of transactions are more favorable for firms with higher earnings and the cost of information acquisition and processing is sufficiently high, at least some stakeholders will use earnings-based heuristics, rather than demanding higher quality financial information, to determine the transaction terms with firms. In this sense, the propensity for investors to demand more financial information will be negatively related to the cost of information acquisition and processing (Conlisk 1996). As discussed, more financially literate individuals will incur lower costs of information acquisition and processing when evaluating firms, increasing their equilibrium demand for high-quality financial information. Furthermore, regulatory bodies like the International Organization of Securities Commissions (IOSCO) on a global scale, the Securities Exchange Commission (SEC) in the U.S., and the

[4] Such as managers' motivation to meet or beat earnings-based benchmarks (e.g., Burgstahler and Dichev 1997; Degeorge et al. 1999; Das and Zhang 2003).

Ontario Securities Commission (OSC) in Canada are responsible for safeguarding the interests of retail investors (Langevoort 2009). Consistent with this regulatory mandate, Iselin et al. (2022) find that the SEC imposes stricter enforcement on companies with a larger proportion of retail investors. As financially literate investors participate more in the capital markets, regulators will likely demand more high-quality accounting information from firms, thereby increasing the supply of earnings quality.

Regarding the corporate governance channel, financial literacy can play a significant role in promoting good governance within an organization. On the demand side, financial literacy enhances transparency and improves communication between the company and its existing/potential investors (Jin et al. 2021). When investors are more financially literate, they can better understand financial reports, assess the company's financial performance, and make informed investment decisions—which can better discipline and monitor the company and facilitate stronger corporate governance. On the supply side, first, citizens' financial literacy can be positively related to the financial literacy of firm managers/employees, which is positively associated with informed decision-making within the firm. Financial literacy equips individuals with the knowledge and understanding of financial concepts and data. This enables them to make more informed decisions regarding financial matters such as budgeting, investment, and financial risk management (e.g., Calvet et al. 2007, 2009; Agarwal et al. 2009). In the corporate governance context, board members and executives with higher financial literacy are better positioned to evaluate financial information, assess the financial health of the company, and make sound decisions in the best interest of stakeholders. Second, citizens' financial literacy can be positively related to the financial literacy of the board, which facilitates effective oversight of managers (e.g., Coates et al. 2007; Tanko et al. 2021). A more financially literate board can better analyze financial

reports, identify potential risks, and ask more relevant questions to management, helping the company prevent fraud, financial mismanagement, and unethical practices, and ensuring that the company adheres more closely to best financial practices and regulatory requirements. Third, higher financial literacy enables individuals to better assess financial risks (e.g., Yang et al. 2018). Board members and executives with higher financial literacy can better identify potential financial risks, evaluate their potential impact on the company, and develop appropriate risk management strategies. This helps to better safeguard the company's financial stability and protect the interests of shareholders and stakeholders. Fourth, financial literacy promotes ethical behavior and financial integrity within the firm. Individuals with higher financial literacy are more likely to understand the importance of ethical financial practices such as accurate financial reporting, avoiding conflicts of interest, and responsible use of company resources, which better contributes to a culture of integrity and ethical conduct throughout the firm.

### 2.2.2 Financial Literacy May Not Influence Earnings Informativeness

However, it is also possible that financial literacy does not significantly influence market reactions to earnings announcements. First, as implied in Kim and Verrecchia (1991b), if earnings announcements are reasonably anticipated due to prior private information gathering (i.e., the processing of pre-announcement information), the market reaction to earnings announcements can be weaker because the announcement's information has already been partially assimilated by investors. Similarly, as Merton (1987) suggests, the presence of more sophisticated investors can enhance market efficiency, attenuating the reduction in information asymmetry by earnings announcements. Kyle and Xiong (2011) argue that sophisticated investors with private insights may act on this knowledge prior to public disclosure. In this sense, if the level of information asymmetry in a market is sufficiently low because financially literate investors can effectively

acquire and process pre-announcement earnings information, the variations in citizens' financial literacy may not be associated with market reactions to earnings announcements.

Based on the discussion above, it is unclear whether and how financial literacy is associated with market reactions to earnings announcements. We therefore make the following (null) hypothesis:

H1: Financial literacy is unrelated to stock market reactions to earnings announcements.

## 3. Research Design

### 3.1 Measures of Financial Literacy

We employ two measures of financial literacy in this study. The first measure follows Klapper et al. (2015), who use responses to the 2014 Standard and Poor's Rating Services Global FinLit Survey to construct their measure. This survey collected responses from 1,000 respondents in each of the 143 countries to questions on the following four topics related to financial literacy: risk diversification, inflation, interest rate, and interest compounding. We calculate the financial literacy score (*Finlit1*) as the percentage of the 1,000 respondents surveyed in the country who answer questions on at least three out of the four topics correctly.

Following Jia et al. (2024), we also construct a time-varying (country-year) measure of citizens' financial literacy. This measure (*Finlit2*) is the score of the first principal component estimated using a principal component analysis of the following six variables: public spending on education as a percentage of GDP (*Public Education*), the gross enrollment ratio of tertiary education to the population from the corresponding age group (*Tertiary Enrollment*), the ratio of non-life insurance premium volume to GDP (*Non-life Insurance*), the number of commercial bank branches per 100,000 adults (*Bank Branches*), the proportion of individuals with a credit card

(*Credit Card*), and private credit bureau coverage (*Private Bureau*).[5] We use this method for the following reasons. Consistent with the definition that financial literacy refers to individuals' knowledge and understanding of financial concepts and risks, and the ability to apply that knowledge and understanding to make effective financial decisions (OECD 2019; Lusardi and Mitchell 2014), Huston (2010) concludes that a valid proxy for financial literacy should cover the following four dimensions: 1) individuals' basic financial knowledge such as understanding of the time value of money and compound interest; 2) individuals' ability to use financial services and products such as credit cards, consumer loans, or mortgages; 3) individuals' ability to invest in savings, stocks, bonds, or mutual funds; and 4) individuals' ability to use insurance or other risk management instruments. The variables *Public Education* and *Tertiary Enrollment* capture the first dimension, because individuals who receive more education should have a better knowledge of finance. The variables *Bank Branches*, *Credit Card*, and *Private Bureau* capture the second and the third dimensions, because commercial bank branches provide a physical venue for individuals to apply for bank credit and mortgages and invest in stocks and bonds. The variable *Non-life Insurance* captures the fourth dimension, as it reflects individuals' use of risk management instruments. From the principal component analysis, we compute the score of the first principal component as follows: *Finlit2* = 0.091 * *Public Education* + 0.146 * Tertiary Education + 0.065 * *Bank Branches* + 0.506 * *Credit Card* + 0.202 * *Private Bureau* + 0.166 * *Non-life Insurance*.[6] The eigenvalue of the first principal component is 2.654; it accounts for 87.4% of the standardized variance. Kaiser's overall MSA measure of sampling adequacy is reasonably good at 0.746.[7]

[5] We obtain data on *Public Education, Tertiary Enrollment, Non-life Insurance*, *Bank Branches* and *Credit Card* from https://www.theglobaleconomy.com/download-data.php.

[6] We compute *Finlit2* annually using the above six variables standardized with means equal to zero and standard deviations equal to one.

[7] MSA values of 0.8 or 0.9 are considered good, while values below 0.5 are considered unacceptable (https://documentation.sas.com/doc/en/pgmsascdc/9.4_3.4/statug/statug_factor_examples03.htm.)

### 3.2 Measures of Market Reaction to Earnings Announcements

We focus on two measures of market reaction to earnings announcements, cumulative abnormal stock returns and abnormal trading volume. We obtain stock returns, trading volume, and country-level benchmark index data from *Refinitiv Datastream*. We calculate cumulative abnormal returns as the abnormal stock returns over the corresponding country-level benchmark stock index over the event window (-2, +2), denoted as *CAR (-2, +2)*. In additional analyses, we also use an alternative measure of cumulative abnormal returns (*CAR (-1, +1)*), using an event window of (-1, +1). Next, we compute abnormal trading volume (*ABNVOL*) as the average trading volume over the event window (-1, +1), divided by the average trading volume over the estimation window (-120, -21). We define trading volume as the number of shares traded for firm *i* on day *t*, divided by the number of shares outstanding of firm *i* on day *t*. In additional analyses, we use an alternative measure of abnormal trading volume (*ABNVOL1*) with an event window (0, +1).

### 3.3 Measures of Earnings Quality

We employ two measures of earnings quality, with lower values representing higher earnings quality. The first measure is the likelihood of a firm reporting a small loss. Previous studies show that firms manage earnings to avoid reporting losses (e.g., Burgstahler and Dichev 1997; Degeorge et al. 1999). A higher likelihood of reporting a small loss is indicative of lower earnings quality. We define *LossAvoid* as an indicator variable that equals one if a firm's ROA is between 0 to 1%, and zero otherwise. The definition of small loss is arbitrary, and hence we also use different cut-offs to define loss avoidance to check the robustness of the results.

The second measure of earnings quality is performance-controlled discretionary accruals, based on Kothari et al. (2005). Specifically, we estimate the following model (with all variables scaled by lagged total assets) at the country-year-industry (2-digit SIC code) level:

$$TAC_{it} = a_0 + a_1\ 1/Ta_{i,\ t\text{-}1} + b_1\ \Delta REV_{it}\ + b_2\ PPE_{i,\ t\text{-}1} + b_3\ NI_{\ i,\ t\text{-}1} + \varepsilon_{it} \quad (1)$$

where *TAC* is total accruals computed as income before extraordinary items minus operating cash flow, *TA* is total assets, $\Delta REV$ is change in revenue, *PPE* is gross value of property, plant, and equipment, and *NI* is net income. We require at least 20 firms in each country-year-industry combination. We then compute the absolute value of the residuals (*DTAC*) from estimating the above regression.[8] Higher values of *DTAC* indicate lower earnings quality. We also use the standard deviation of residuals from the model developed by Dechow and Dichev (2002) as modified by McNichols (2002) to check the robustness of our results.

**3.4 Measures of Corporate Governance**

Following prior literature, we obtain our measures of corporate governance from the *Sustainalytics* database, which provides an array of environmental, social, and governance-related ratings for a large number of public and private firms worldwide (e.g., Surroca et al. 2010; Husted et al. 2017; Naciti 2019). We use the overall corporate governance score (*GSCORE*) from *Sustainalytics*, which is rated on a scale from 0 to 100, with a higher value suggesting better governance, as our main measure. In addition, we use three sub-indicators reported in *Sustainalytics* as supplementary measures -- a board diversity score (*BDDIV*), an indicator variable (*DUALITY*) that equals one if there is a separation of board chair and CEO roles and zero otherwise. and a board independence score (*BDINP*).

**3.5 Empirical Models**

To test H1, we estimate the following cross-sectional regression, and use standard errors of the estimates clustered by firm to conduct our tests:

[8] We compute DTAC as follows using the coefficients $a_1$, $b_1$, $b_2$ and $b_3$ estimated from equation (1): DTAC = TAC - $a_1 - b_1$ ($\Delta$ REV- $\Delta$ AR) – $b_2$ PPE – $b_3$ NI, where $\Delta$ AR is the change in trade receivables. All variables are scaled by total assets at the beginning of the year. We then take the absolute value of DTAC as our proxy for earnings quality.

$$MR = \alpha_0 + \alpha_1 Finlit1 \text{ or } Finlit2 + \alpha_2 V + \alpha_3 W + YR\_FE + IND\_FE + C\_FE + \varepsilon \quad (2)$$

The dependent variable *MR* is a proxy of market reactions to earnings announcements measured by either *CAR* or *ABNVOL*. *CAR* denotes two measures of cumulative abnormal returns with different windows, including *CAR(-2,2)* used in the main tests and *CAR(-1,1)* used in robustness tests. *ABNVOL* denotes two measures of abnormal trading volume, including *ABNVOL* used in the main tests and *ABNVOL1* used in robustness tests. *Finlit1* and *Finlit2* are the static and time-varying measures, respectively, of financial literacy, *V* is a vector of firm characteristics, *W* is a vector of country characteristics, and *YR_FE* is year fixed effects. We include industry fixed effects (*IND_FE*) because earnings quality may vary across firms from different industries. We use the industry classification based on Frankel et al. (2002). We also include country fixed effects (*C_FE*) only when we use the time-varying measure (*Finlit2*). We provide detailed definitions of all the variables in the Appendix. If $\alpha_1$ is positive (negative), it suggests that financial literacy increases (decreases) the informativeness of earnings announcements.

We select firm-level controls that prior studies document are associated with market reactions to earnings announcements. We control for firm size (*Size*) because market reactions to earnings news are magnified for smaller firms and attenuated for larger firms (O'Brien and Bhushan 1990; EI-Gazzar 1998; Barinov et al. 2024). We include market-to-book (*MB*) to control for risk differences not already reflected in the excess returns (Fama and French 1992, 1993). We include leverage (*Leverage*) to account for the additional market reactions that may result from the firms' leverage position (Dhaliwal and Reynolds 1994). As in Chen et al. (2024), we control for firm performance, measured by profitability (*ROA*), and loss (*LOSS*). Following Pevzner et al. (2015), we control for *Large20*, which is a dummy variable that equals one if the firm's total assets are among the 20 largest in a given country. We also control for analyst following (*Analyst*) and

earnings surprise (*Surprise*) because firms with a larger analyst following have a better firm-specific information environment and because the market reaction to earnings announcements depends on earnings surprise (Francis et al. 2002; DeFond et al. 2007). We include reporting lag (*Report_lag*) and loss avoidance (*LossAvoid*) because longer reporting lags provide greater opportunities for managers to provide guidance and for analysts to update forecasts, and lower earnings quality, proxied by loss avoidance, is viewed negatively by the stock market (Chan et al. 2006).

Next, we include a comprehensive set of country-level controls that affect market reactions to earnings announcements across countries. We control for legal origin (*Common*) because prior studies find that legal tradition is associated with earnings quality (Ball et al. 2000; Haw et al. 2004; Bushman and Piotroski 2006), which is associated with market reactions to earnings announcements. We also control for the legal environment because prior studies (Ball et al. 2000; Hope 2003; Leuz et al. 2003) find that strong legal institutions enhance the quality of financial information. We use three proxies to measure the legal environment - the rule of law index (*Rule*), control of corruption (*Corruption*) from Kaufmann et al. (2011), and the legal enforcement index (*Enforce*) from Economic Freedom of the World.

Following prior studies (La Porta et al. 1998; Hung 2000; Ball et al. 2000, Leuz et al. 2003, Daske et al. 2008; Francis and Wang 2008), we control for investor protection because countries with weak protection for minority shareholders' interests provide greater incentives and opportunities for managers to manage earnings, increasing the information frictions in the capital market. We use the anti-self-dealing index (*Antideal*) reported by Djankov et al. (2008), and the protection of minority shareholders (*MSRIGHT*) provided in World Economic Forum to proxy for investor protection. We control for the economic status of the country, proxied by the natural

logarithm of per-capita GDP (*LGDP*). We control for stock market pressure, proxied by stock market turnover (*SMTURN*) because managers have strong incentives to manage earnings in periods of equity issuance when faced with strong capital market pressure (Rangan 1998; Teoh et al. 1998; Shivakumar 2000).

We control for societal trust (*Trust*) and media (*News*) because previous studies show that both are associated with stronger market reactions (Bushee et al. 2010; Engelberg and Parsons 2011; Pevzner et al. 2015) Prior studies (e.g., Barth et al. 2008; Hong et al. 2014; Christensen et al. 2015) also document that the use of International Financial Reporting Standards (IFRS) enhances country-level reporting quality. We, therefore, control for IFRS (*IFRS*). Lastly, we control for the regulation of securities exchange (*Exchange_Reg*) and population (*Population*) because effective securities regulation can improve the information environment by reducing information asymmetries among market participants (Hail and Leuz 2006) and financial literacy differs across populations (Klapper et al. 2015).

To test the two possible channels (namely, earnings quality and corporate governance) through which financial literacy may affect market reactions to earnings announcements, we estimate the following cross-sectional regression, and use standard errors of the estimates clustered by firms:

$$EQ \text{ or } Governance = \alpha_0 + \alpha_1 Finlit1 \text{ or } Finlit2 + \alpha_2 V + \alpha_3 W + YR\_FE + IND\_FE + C\_FE + \varepsilon \quad (3)$$

The dependent variable *EQ* is a proxy of earnings quality measured by either *LossAvoid* or *DTAC*, with higher values representing lower earnings quality. The dependent variable *Governance* is a proxy of corporate governance measured by *GSCORE*, *BDDIV*, *DUALITY*, or *BDINP*. We control for firm size (*Size*) because larger firms are likely to face increased external monitoring, have more stable and predictable operations, and stronger control structures, and hence

higher financial reporting quality (Haw et al. 2004). Firms with high growth options may have lower financial reporting quality because they may smooth earnings and cash flows to avoid underinvestment (Skinner 1993). However, these high-growth firms may also use discretionary adjustments to signal their true growth potential. Hence, the effect of growth potential on accruals, and therefore on earnings quality, is unclear. We capture growth opportunities using the market-to-book ratio (*MB*) and sales growth (*Growth*). We control for financial leverage (*Leverage*) because more highly levered firms are more likely to violate their debt covenants and hence more willing to engage in earnings management (Watts and Zimmerman 1986; DeFond and Jiambalvo 1994; Sweeney 1994). We control for profitability (*ROA*) because prior studies suggest that profitable firms are more likely to signal their superior performance to the market through high-quality reporting (Wallace et al. 1994; Wallace and Naser 1995). However, other studies indicate that firms with poor operating performance may also use accruals to artificially increase profitability, which would reduce earnings quality (Healy and Wahlen 1999). We also control for auditor quality (*BigN*) because Big N auditors are shown to be associated with higher earnings quality and corporate governance quality (e.g., Teoh and Wong 1993; Becker et al. 1998). Hribar and Nichols (2007) show that it is important to control for volatility in sales ($\sigma(Sale)$) and cash flow ($\sigma(CFO)$) when the dependent variable is absolute discretionary accruals. In addition, following prior studies (e.g., Ball et al. 2000; Bushman and Piotroski 2006; Leuz et al. 2003; Francis and Wang 2008), we include a comprehensive set of country-level controls covering legal environment, governance, investor protection, and societal trust that affect earnings quality and corporate governance quality across countries as well as the same set of country-level variables in equation (2).

## 4 Results

### 4.1 Sample

We obtain the country-level financial literacy measure (*Finlit1*) from Klapper et al. (2015), financial data for the period 1998-2020 from the *Compustat Global* database, reported annual earnings and analyst forecast information from I/B/E/S, and stock returns from *Refinitive DataStream*. We exclude countries for which we are not able to obtain country-level institutional variables (such as the anti-self-dealing index) used in the regression model. We retain the country if it has more than one hundred observations. To mitigate the effects of extreme values, we winsorize each continuous firm-level variable at the 1% and the 99% level. The sample size for the market reaction tests is much smaller because of missing announcement dates in I/B/E/S, and stock returns information in *DataStream.* The final sample size used in the market reaction (earnings quality and governance) test is 144,286 (348,687 and 21,660) firm-year observations over the 23-year sample period for 32 countries.[9]

### 4.2 Descriptive Statistics

Table 1 reports the sample composition and the mean characteristics for each of the 32 countries. The sample size for each country ranges widely from 335 firm-year observations for Hungary to 72,573 firm-year observations for the U.S. There is wide variation in the earnings quality measures (*LossAvoid* and *DTAC*) and market reactions (*CAR(-2,2) and ABNVOL*) across countries. Our main test variables are *Finlit1* and *Finlit2*. As shown in Table 1, the levels of financial literacy vary widely across countries. More than 65% of adults in Canada, Germany, the United Kingdom, the Netherlands, Norway, and Sweden are classified as being financially literate.

[9] Compared to the loss avoidance test, the sample size for the discretionary accruals test is reduced to 269,518 because of the additional requirements for computing *DTAC*. Additionally, the sample size for the corporate governance test is much smaller because of the more limited coverage in the *Sustainanalytics* database.

By contrast, the percentage of financially literate adults is less than 30% for some countries in Africa, Asia, and South America (Argentina, China, Egypt, Nigeria, Pakistan, Peru, Philippines, and Thailand).

Table 2 presents descriptive statistics of the regression variables for the full sample. The mean (median) of *Finlit1* is 47.80 (43.00) and the mean (median) of *Finlit2* is 0.00 (0.45). The mean (median) of abnormal stock returns (*CAR(-2,2)*) is 0.48% (0.17%), and the mean (median) of abnormal trading volume *(ABNVOL)* is 1.68 (1.26). On average, 7.1% of the observations in the overall sample have ROA between 0 and 1%. The mean (median) of *DTAC* is 0.154 (0.068) and the mean (median) of *GSCORE* is 62.8 (62.3).

### 4.3 Empirical Results

#### 4.3.1 Financial Literacy and Market Reactions to Earnings Announcements

In this section, we report the results for the test of H1, which examines the association between financial literacy (*Finlit1* and *Finlit2*) and market reactions to earnings announcements (*CAR(-2,2)* and *ABNVOL*).

We report the results for abnormal stock returns around earnings announcement dates in Table 3. In columns (1) to (4), we report the results using the static measure of financial literacy (*Finlit1*), and in columns (5) to (8), we report the results using the time-varying measure of financial literacy (*Finlit2*). Columns (1) and (5) show the results for the baseline regression. In columns (2) and (6), we employ a weighted-least-squares approach (Dittmar et al. 2003) so that each country in the sample receives equal weight in the regression estimation and no single country drives the result. Because the U.S., Japan, and China constitute a large proportion of our sample and, therefore, could have an undue influence on our results, we exclude observations of firms from these countries from the overall sample and report the results in columns (3) and (7). We

further control for corporate governance (*GSCORE*) in columns (4) and (8).[10] In columns (1) to (4), because *Finlit1* is the same for each country over time, we only include year- and industry-fixed-effects to control for observable and unobservable time-varying and cross-industry effects on abnormal stock returns. In columns (5) to (8), we report the results for *Finlit2* with the inclusion of country fixed effects.

As indicated in Table 3, we find robust, positive, and statistically significant coefficients on *Finlit1* and *Finlit2* in all columns. In terms of economic significance, using the static (time-varying) measure of financial literacy in columns (1) and (5), the marginal effect of a one-standard-deviation increase in financial literacy is associated with a 0.43% (0.41%) increase in abnormal stock returns around earnings announcement dates.[11] Given that the average abnormal stock return is 0.48% for the overall sample, this increase in abnormal stock returns is economically consequential.

For the firm-level controls, we find that firms that are larger (*Size*), have a higher market-to-book ratio (*MB*), have higher leverage (*Leverage*), report losses (Loss), have higher volatility of sales (*σ(Sale)*), and have longer reporting lags (*Report_lag*) are associated with lower abnormal stock returns. On the other hand, firms that have higher growth (*Growth*), are more profitable (*ROA*), are among the largest 20 in the country (*Large20*), and have more analysts following (*Analyst*) tend to have higher abnormal stock returns. For the country-level controls, we find that countries with higher confidence in the rules of society (*Rule of law*), higher control of corruption

[10] Because the inclusion of corporate governance reduces the sample substantially, we do not include it in the main regression to increase generalizability.

[11] In column (1), the impact of a one standard deviation increase in *Finlit1* on the percentage point increase in *CAR(-2,2)* is computed as 0.031 (the coefficient of *Finlit1*) × 13.777 (the sample standard deviation of *Finlit1*) = 0.43 (this is a percentage point increase as *CAR* is expressed in percentages). Analogously, the economic significance in columns 2, 3, 4, 6, 7, and 8 is 0.54, 0.55, 0.32, 0.59, 0.51, and 0.54 percentage points, respectively.

(*Corruption*), higher stock market turnover (*SMTURN*), and more effective regulation and supervision of stock exchanges (*EXREG*) are associated with lower abnormal stock returns, whereas countries with higher economic development (*LGDP*), greater societal trust (*Trust*), higher media coverage (*News*), and stronger protection of minority shareholders (*MSRIGHT*) are associated with higher abnormal stock returns.

Next, we report the results of the abnormal trading volume test in Table 4. Similar to Table 3, we report results based on several model specifications to assess the robustness of the results. As shown in Table 3, *Finlit1* and *Finlit2* are positively and significantly associated with abnormal trading volume in all columns except column 6. In terms of economic significance, using the static (time-varying) measure of financial literacy in columns (1) and (5), a one-standard-deviation increase in financial literacy is associated with a 8.7% (8.9%) increase in abnormal trading volume.[12]

For the firm-level controls, we find that the coefficients of *Size*, *MB*, *Loss, σ(CFO)*, and *Report_lag* are significantly negative, whereas the coefficients of *Growth*, *ROA*, *BigN*, *σ(Sale)*, and *Analyst* are significantly positive. These results are generally consistent with prior studies. For the country controls, the coefficients of *Corruption*, *SMTURN*, and *EXREG* are significantly negative and the coefficients of *LGDP*, *Trust*, *News*, *IFRS*, and *Population* are significantly positive. Overall, the results reported in Table 4 indicate that financial literacy plays an economically significant role in abnormal stock returns around earnings announcement dates.

**4.3.2 Addressing Endogeneity Concerns** One concern is that our main inferences and empirical results may be confounded by unobservable cross-country institutional and economic factors that

[12] In column (1), the impact of a one standard deviation increase in *Finlit1* on *ABNVOL* is computed as 0.010 (the coefficient of *Finlit1*) × 13.777 (the sample standard deviation of *Finlit1*) ÷ 1.676 (the sample mean of *ABNVOL* × 100% = 8.29%. Analogously, the economic significance in columns (2) to (8) is 10.7%, 4.9%, 8.2%, 8.9%, 5.7%, 15.4%, and 13.7%, respectively.

are potentially related to both financial literacy and market reactions to earnings announcements. To address this omitted correlated variables' concern, we employ instrumental variable (2SLS) estimation.

For both measures of financial literacy, we follow Jia et al. (2024) and use the ratio of secondary school enrollment to the corresponding age group population in the country (*Secondary Enrollment*) as an external instrumental variable. A good instrument should be highly correlated with financial literacy but should not directly influence the market reactions to earnings announcements (Roberts and Whited 2012; Lusardi et al. 2010; Lusardi 2012), and Urban et al. (2020) show that young adults' financial literacy is positively related to high school financial education programs and that these young adults have higher credit scores and are less likely to default. Secondary education also serves as the basis for higher education, which influences financial literacy because people with higher education are better at acquiring and processing information than those without (Atkinson and Messy 2012). Therefore, the ratio of secondary school enrollment is likely to meet the inclusion criterion.

Also, it is plausible that the ratio of secondary school enrollment only affects the market reactions to earnings announcements through financial literacy for the following two reasons. First, given that students in middle school are usually 12 to 18 years old, they are less likely to invest in stocks. Second, in addition to education, they also need to have the financial knowledge to make equity investment decisions. In a cross-country study, Lusardi and Mitchell (2014) document that better education is associated with higher financial literacy, but they also find that education alone is not sufficient. In this sense, even highly educated individuals are not necessarily knowledgeable about investing. Therefore, following the reasoning of Jia et al. (2024), we argue that secondary

enrollment is unlikely to be directly related to market reactions to earnings announcements and, hence, meets the exclusion criterion.

The 2SLS regression results for testing H1 are reported in Table 5. Columns (1) and (4) report the first-stage results, which indicate that *Secondary Enrollment* is significantly positively associated with both measures of financial literacy (*Finlit1* and *Finlit2)*.[13] In the second stage of the instrumental variable analysis, we use the predicted values of financial literacy from the first-stage regressions as our instrument and to test H1. The second stage results are presented in columns (2), (3), (5) and (6). We find that *Pred_Finlit1* and *Pred_Finlit2* are both significantly positively associated with abnormal stock returns (*CAR(-2,2)*) and abnormal trading volume (*ABNVOL*). These findings reaffirm the test results of H1 reported in Tables 3 and 4. Overall, the results from the instrumental variable estimation mitigate concerns that our main results are potentially driven by omitted correlated variables.

Lastly, we assess the stability of our results to unobservable correlated variables by calculating Oster's (2019) δ. To do so, we first compare the R-square from the baseline model without control variables with the R-square from the full model that includes all firm-level and country-level control variables. δ is then calculated based on the changes in the magnitude of the coefficient of interest (i.e., financial literacy) and the R-square in the baseline and full regression models. According to Oster (2019), a δ greater than one indicates that the effect of an unobservable variable needs to be as least as important as the effects of all observable control variables in order

[13] As suggested by Roberts and Whited (2012), we formally test the strength of our instrumental variable by computing the partial F-statistic for the instrument used in the first-stage regressions. The partial F-statistics are 179.02 and 58.98, in columns (1) and (4), respectively. These values are considerably higher than the suggested minimum benchmark of 8.96 for a model with one instrument, as reported by Stock and Yogo (2005). In addition, Bound et al. (1995) and Shea (1997) suggest that partial $R^2$, which measures the marginal contribution of the instrumental variable, is another useful indicator of the quality of the IV. We report a partial $R^2$ of 0.069 in column (1) and 0.1032 in column (4). Overall, it is likely that our analyses do not suffer from a weak instrument problem.

to negate the documented effect of the variable of interest, which suggests that the result is robust. In untabulated analysis, the calculated δ is 3.88 and 1.11 when we use *Finlit1* and *Finlit2* as the measure of financial literacy, respectively. This indicates that the effect of unobserved variable needs to be at least 3.88 times and 1.11 times greater than that of the observable control variables to overturn our findings. The result suggests that our documented effect is unlikely to be driven by omitted correlated variables.

**4.3.4 Additional Analysis with Alternative Proxies for Market Reactions**

In Table 6, we report the empirical results for testing H1 using alternative measures of market reaction, *CAR(-1,1)* and *ABNVOL1*. *CAR(-1,1)* represents the cumulative abnormal returns (in percentage) around earnings announcements within the event window -1 and +1, whereas *ABNVOL1* denotes abnormal trading volume within the event window 0 and +1. We find that financial literacy is positively related to these alternative measures of market reaction in three of the four columns, a result that is broadly consistent with our main findings in Tables 3 and 4.

**4.3.5 Financial Literacy and Earnings Quality**

A plausible channel through which financial literacy is related to market reactions to earnings announcements is earnings quality. In this section, we report the results that examine the association between financial literacy (*Finlit1* and *Finlit2*) and earnings quality (*LossAvoid* and *DTAC*).

We define our primary measure of loss avoidance (*LossAvoid*) as a firm's change in ROA being between 0 and 1%. In sensitivity analyses, we use two different definitions of loss avoidance. Specifically, we define *LossAvoid1* as an indicator variable that equals one if a firm's ROA is between 0 to 0.5%, and zero otherwise, and *LossAvoid2* as an indicator variable that equals one if a firm's ROA is between 0 to 1.5%, and zero otherwise. We also restrict the sample to firms with

ROA between -1% and 1% to test the robustness when the dependent variable is *LossAvoid*. We report the results for loss avoidance in Table 7. In columns (1) to (4), we report the results using the static measure of financial literacy (*Finlit1*), and in columns (5) to (8), we report the results using the time-varying measure of financial literacy (*Finlit2*). Columns (1) and (5) show the results with our primary measure of loss avoidance (*LossAvoid*), columns (2) and (6) report the results with the second measure of loss avoidance (*LossAvoid1*), and columns (3) and (7) present the results with the third measure of loss avoidance (*LossAvoid2*). In columns (4) and (8), the dependent variable is *LossAvoid* but we restrict the sample to observations with ROA between -1% and 1%.

In Table 7, we find negative and statistically significant coefficients on *Finlit1* and *Finlit2* in seven out of eight columns, which suggest that financial literacy enhances earnings quality. In terms of economic significance, using the static (time-varying) measure of financial literacy in columns (1) and (5), the marginal effect of a one-standard-deviation increase in financial literacy is associated with a 1.4% (1.3%) decrease in the likelihood of earnings avoidance behavior.[14] Given that the loss avoidance rate is 7.1% for the overall sample, this decrease in the incidence of loss avoidance is non-trivial.

We report the results of the discretionary accruals test in Table 8. Our primary measure of discretionary accruals is *DTAC*. In addition, we report results separately for the sample with positive and negative discretionary accruals, and a measure of accruals quality (*AQ*) estimated using the Dechow and Dichev (2002) model as modified by McNichols (2002). As indicated in Table 8, we find statistically significant coefficients of *Finlit1* and *Finlit2* with the expected signs

[14] The marginal effect of a one-standard deviation increase in *Finlit1* on *LossAvoid* is computed as p x (1-p) x b x Std dev, where p is the base rate (7.1%), b is the estimated coefficient from the logistic regression, and Std dev is the standard deviation of *Finlit1* (13.777).

in all ten columns. In terms of economic significance, using the static (time-varying) measure of financial literacy in columns (1) and (6), a one-standard-deviation increase in financial literacy is associated with a 8.9% (24.9%) decrease in discretionary accruals.[15] Overall, the results reported in Tables 7 and 8 indicate that financial literacy plays an economically significant role in enhancing earnings quality, a plausible channel through which financial literacy is associated with market reactions to earnings announcements.

**4.3.6 Financial Literacy and Corporate Governance**

Another plausible channel through which financial literacy relates to market reactions to earnings announcements is corporate governance. In this section, we report the results for the test which examines the association between financial literacy (*Finlit1* and *Finlit2*) and our primary measure (*GSCORE*) and supplementary measures (*BDDIV*, *DUALITY*, and *BDINP*) of corporate governance.

The empirical results in Table 9 show that the coefficients on *Finlit1* and *Finlit2* are positive and statistically significant in all eight columns, which is consistent with the notion that financial literacy is associated with better corporate governance. In terms of economic significance, using the static (time-varying) measure of financial literacy in column (1) (column (5)), the marginal effect of a one-standard-deviation increase in financial literacy is associated with a 8.2% (4.8%) increase in corporate governance score.[16] Given that the average corporate governance score is 62.826 for the overall sample, this increase in the corporate governance score is non-trivial.

**4.3.7 Cross-sectional Analyses**

[15] In column 1 (6), the impact of a one-standard deviation increase in *Finlit1* (*Finlit2*) on *DTAC* is computed as -0.001 (-0.041) (the coefficient of *Finlit1* (*Finlit2*)) × 13.777 (0.935) (the sample standard deviation of *Finlit1* (*Finlit2*)) ÷ 0.154 (the sample mean of *DTAC*) × 100% = -8.9% (-24.9%).

[16] The marginal effect of a one standard deviation increase in *Finlit1* (*Finlit2*) on *GSCORE* is computed as 0.377 (3.196) (the coefficient of *Finlit1* (*Finlit2*)) × 13.777 (0.935) (the sample standard deviation of *Finlit1* (*Finlit2*)) ÷ 62.826 (the sample mean of *GSCORE*) × 100% = 8.3% (4.8%).

In our main analysis, we find robust evidence that financial literacy is positively associated with market reactions to earnings announcements. As discussed in the hypothesis development section, the role of financial literacy should be more pronounced when the market is less informative or transparent. In this section, we examine whether the relations between financial literacy and market reactions are systematically related to the level of information quality. Specifically, we explore the interactions between financial literacy and proxies of information quality, and their joint effects on market reactions. We modify equation (1) to include the conditioning variable (*Conditioning_VAR*) and its interaction with *Finlit1 (Finlit2)*, and estimate the following cross-sectional regression:

$$MR = \alpha_0 + \alpha_1 Finlit1 \text{ (}or\ Finlit2\text{)} + \alpha_2 Finlit1\ (or\ Finlit2) \times Conditioning\_VAR + \alpha_3 Conditioning\_VAR + \alpha_4 V + \alpha_5 W + YR\_FE + IND\_FE + C\_FE + \varepsilon \quad (4)$$

High-quality information plays a crucial role in reducing information asymmetries and mitigating potential agency conflicts (Bushman et al. 2004). When investors have greater access to high-quality information about the firm, the opinions between more versus less financially literate investors may not differ as much as they would when information is difficult to acquire. Hence, we expect the incremental impact of financial literacy on market reactions to be more pronounced when investors have limited access to information.

We use information quality proxies at the firm and country levels. The firm-level proxies are auditor size (*BigN*) and firm size (*Size*). Prior research indicates that Big N auditors improve the overall information environment because of higher earnings and information disclosure quality (Behn et al. 2008; Dunn and Mayhew 2004; Legoria et al. 2018; Feng et al. 2023) and that larger firms receive more attention from equity analysts and more coverage in the financial press, and hence information quality increases as firm size increases (Lang and Lundholm 1993; Lang et al.

2003). At the country level, we use institutional ownership and stock market development to proxy for the overall information environment. Prior studies show that information is richer with the presence of more institutional investors (Bushee and Noe 2000; Boone and White 2015). Stock market development benefits the financial economy by improving firm operating performance (Mitton 2006), reducing the cost of equity capital (Bekaert and Harvey 2000), and increasing stock market liquidity (Levine and Zervos 1998). Demirgüç-Kunt and Levine (1996) argue that a better-developed market enjoys greater transparency and information quality. We obtain the mean country-level institutional ownership (*INST*) from Ferreira et al. (2010) and proxy stock market development by the natural log of the number of firms listed on the exchanges of a country (*LISTED*). Higher values of *INST* and *LISTED* indicate a better information environment.

We expect the implications of financial literacy on market reactions to be more pronounced when information environments are poorer. Specifically, we expect the coefficient on the interaction between financial literacy and *BigN/Size/INST/LISTED* to be negative. We report the results when market reaction is measured by excess stock returns in Panel A, and by abnormal trading volume in Panel B of Table 10. Consistent with our prediction, the coefficients of the interactions have the expected signs in 11 of the 14 columns. These results suggest that the association between financial literacy and market reactions to earnings announcements is significantly more pronounced when the information environment is poorer.

**4.3.8 Path Analyses**

To further shed light on financial literacy affecting market reactions to earnings announcements through the two channels of earnings quality and corporate governance, we conduct a path analysis and report the results in Table 11. Panels A and B show the results when the mediating path is earnings quality (proxied by loss avoidance and discretionary accruals) and

corporate governance (proxied by corporate governance score), respectively. There are three important observations from the path analysis. First, we find that both measures of financial literacy are significantly negatively (positively) related to our proxies of low earnings quality (corporate governance) in 10 of the 12 columns. These results provide corroborative evidence that financial literacy enhances market reactions to earnings through the channels of earnings quality and corporate governance. Second, we find that proxies of low earnings quality (corporate governance) are significantly negatively (positively) associated with abnormal market returns and trading volume in 10 of the 12 columns. Third, we find that the magnitudes of the mediated paths through earnings quality and corporate governance are statistically significant in 8 of the 12 columns. In Panel C, we conduct a multi-path analysis with both earnings quality and corporate governance as potential channels. We find that the total mediated path for each channel remains significant in 11 of the 16 path coefficients. Overall, the results from the path analysis provide some evidence that financial literacy influences market reactions to earnings announcements through its effect on earnings quality and corporate governance.

## 5. Conclusion

Considered an essential part of the policy mix (OECD 2013), financial literacy is an important factor for informed financial decision-making and capital market efficiency (Lusardi and Mitchell 2014; Klapper and Lusardi 2020). In this study, we investigate whether and how the financial literacy of citizens can influence market reactions to earnings announcements in a cross-country setting. We explore two competing hypotheses, on the one hand, financial literacy can be positively related to market reactions to earnings announcements because of lower information acquisition and processing costs, higher earnings quality, and enhanced corporate governance. On the other hand, financial literacy may be irrelevant to earnings informativeness since financially

literate investors may gather and process pre-announcement information, diminishing the informativeness of earnings announcements. In addition, we propose that, beyond its influence on investors' ability to process information, financial literacy can also affect earnings informativeness through firm-side channels, namely earnings quality and corporate governance.

Using a large sample of firms from 32 countries for the sample period 1998 to 2020, we find robust evidence of a positive relation between financial literacy and market reactions to earnings announcements, measured by abnormal stock returns and abnormal trading volume. Our inferences are robust to the use of a static as well as a time-varying measure of financial literacy, various model specifications, instrumental variable estimation to mitigate endogeneity concerns, using the Oster (2019) test to assess the magnitude of an unobserved correlated variable required to overturn our findings, and alternative measures of market reactions. We also find that earnings quality and corporate governance, two plausible firm-side channels through which financial literacy relates to market reactions, are both positively associated with financial literacy. In additional cross-sectional analyses, we find that the effect of financial literacy in enhancing stock market reactions is more prominent in poorer information environments. Lastly, using path analysis, we find support for our conjecture that earnings quality and corporate governance mediate the relationship between financial literacy and market reactions to earnings announcements.

Our study contributes to the growing body of literature that examines the cross-country determinants of earnings informativeness by documenting financial literacy as a plausible driver of market reactions to earnings announcements. Our findings also suggest that financial literacy enhances earnings informativeness not only by reducing investors' information processing costs but also by improving earnings quality and corporate governance. In addition, we contribute to the

literature that examines the influence of financial literacy on capital market efficiency (Christelis et al. 2010; Van Rooij et al. 2011; Yoong 2011; Arrondel et al. 2012; Hsiao and Tsai 2018; Jin et al. 2021; Jia et al. 2024). Our finding indicates that the role of financial literacy is especially important and evident when the level of information quality is lower. Regarding policy implications, our study corroborates the worldwide initiatives for financial literacy policies since the 2007-2008 global financial crisis by documenting that financial literacy can significantly impact the capital market.

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**APPENDIX: Variable Definitions**

| | | |
|---|---|---|
| *CAR(-2,2)* | = | Cumulative abnormal returns (in percentage) around earnings announcements within the event window -2 to +2. |
| *CAR(-1,1)* | = | Cumulative abnormal returns (in percentage) around earnings announcements within the event window -1 to +1. |
| *ABNVOL* | = | Trading volume within the event window -1 to +1, scaled by an estimation window of (-120, -21). |
| *ABNVOL1* | = | Trading volume within the event window 0 to +1, scaled by an estimation window of (-120, -21). |
| *Finlit1* | = | Country-level measure of financial literacy reported by Klapper et al. (2015) |
| *Finlit2* | = | Alternative annual measure of financial literacy, which is the first principal component extracted from a principal component analysis of the following variables: *Public Education*, *Tertiary Enrollment*, *Non-life Insurance*, *Bank Branches, Credit Card,* and *Private Bureau*. |
| *LossAvoid* | = | Indicator variable that equals one if the firm's ROA is between 0 to 1%, and zero otherwise. |
| *LossAvoid1* | = | Indicator variable that equals one if the firm's ROA is between 0 to 0.5%, and zero otherwise. |
| *LossAvoid2* | = | Indicator variable that equals one if the firm's ROA is between 0 to 1.5%, and zero otherwise. |
| *DTAC* | | Absolute performance-controlled discretionary accruals as in Kothari et al. (2005). |
| *Signed DTAC* | = | Signed performance-controlled discretionary accruals as in Kothari et al. (2005), |
| *POS_DTAC* | = | Positive performance-controlled discretionary accruals as in Kothari et al. (2005), |
| *NEG_DTAC* | = | Negative performance-controlled discretionary accruals as in Kothari et al. (2005), |
| *AQ* | = | Accrual quality measure developed by Dechow and Dichev 2002, with modifications suggested by McNichols 2002. |
| *GSCORE* | = | Governance score reported in the Sustainalytics database. Its value ranges from 0 to 100, with a higher value indicating better governance. |
| *BDDIV* | = | Board diversity score reported in the Sustainalytics database. |
| *DUALITY* | = | Indicator variable that equals one if there is a separation of board chair and CEO roles, and zero otherwise. Data from the Sustainalytics database. |
| *BDINP* | = | Board independence score as reported in the Sustainalytics database. |
| *Public Education* | = | Public spending on education, as a percentage of GDP. Available at https://www.theglobaleconomy.com/download-data.php |
| *Tertiary Enrollment* | = | Gross enrollment ratio of tertiary education to the population of the age group that officially corresponds to the level of education. Available at https://www.theglobaleconomy.com/download-data.php |
| *Non-life Insurance* | = | Ratio of non-life insurance premium volume to GDP. Available at https://www.theglobaleconomy.com/download-data.php |
| *Bank Branches* | = | Number of commercial bank branches per 100,000 adults. Available at https://www.theglobaleconomy.com/download-data.php |
| *Credit Card* | = | Percentage of respondents with a credit card (% age 15+). Available at https://www.theglobaleconomy.com/download-data.php |
| *Private Bureau* | = | Private credit bureau coverage (% of adults). Data from World Development Indicators. |
| *Size* | = | Logarithm of market capitalization in U.S. dollars. |
| *MB* | = | Market-to-book ratio. |
| *Growth* | = | Percentage change in sales revenue. |
| *Leverage* | = | The sum of long-term debt and short-term debt divided by total assets. |
| *ROA* | = | Return on assets, computed as income before extraordinary items divided by lagged total assets. |
| *Loss* | = | Indicator variable that equals one if the firm's ROA is negative, and zero otherwise. |
| *BigN* | = | Indicator variable that equals one if the firm's auditor is a Big N auditor, and zero otherwise. |

| | | |
|---|---|---|
| *σ(Sale)* | = | Standard deviation of sales revenue divided by lagged total assets estimated over the current and prior 4 years. |
| *σ(CFO)* | = | Standard deviation of operating cash flow divided by lagged total assets estimated over the current and prior 4 years. |
| *Large20* | | Indicator variable that equals one if the firm is the largest 20 in the country, and zero otherwise. |
| *Analyst* | = | Natural logarithm of the number of analysts covering the firms. |
| *Surprise* | | Actual earnings minus the most recent mean analyst forecast for the fiscal year, divided by stock price one day prior to the earnings announcement date. Data from IBES summary file. |
| *Report_lag* | | Natural logarithm of the number of days between the earnings announcement date and the fiscal year-end. |
| *Common* | = | Indicator variable that equals one if the firm is in a common law country, and zero otherwise. |
| *Rule of law* | = | Measure of the confidence in the rules of society, as reported in Kaufmann et al. (2011). |
| *Corruption* | = | Control of corruption, which measures the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as the "capture" of the state by elites and private interests. Its value ranges from –2.5 to 2.5, with higher values corresponding to better governance outcomes. Data from Kaufmann et al. (2011). |
| *Enforce* | = | Law enforcement index that ranges from 0 to 10, with higher values indicating greater law enforcement. Data from the Economic Freedom of the World |
| *Antideal* | = | A measure of private control of self-dealing by controlling shareholders, as reported in Djankov et al. (2008). |
| *LGDP* | = | Natural logarithm of gross domestic product divided by population. Data are in constant 2010 U.S. dollars. Available at https://www.theglobaleconomy.com/download-data.php |
| *SMTURN* | = | Value of domestic shares traded divided by their market capitalization. The value is annualized by multiplying the monthly average by 12. Available at https://www.theglobaleconomy.com/download-data.php |
| *Trust* | | Societal trust index, based on responses to the World Values Survey (WVS) question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" The two possible answers were "Most people can be trusted" and "Can't be too careful." We recode the response to this question to 1 if a survey participant reports that most people can be trusted and 0 otherwise. We then calculate the mean of the response for each country-year. Higher values correspond to higher societal trust. |
| *News* | | Circulation of daily newspapers divided by population, as reported in Dyck and Zingales (2004) |
| *IFRS* | = | Indicator variable that equals one if the country adopts International Financial Reporting Standards in a year, and zero otherwise. |
| *MSRIGHT* | = | Protection of minority shareholders, measured by the following: To what extent are the interests of minority shareholders protected by the legal system? (1 = not protected at all; 7 = fully protected). Data from World Economic Forum. |
| *EXREG* | = | Measure of the regulation and supervision of stock exchanges in a country (1 = ineffective; 7 = effective). Data from World Economic Forum. |
| *Population* | | Natural logarithm of total population in millions. It is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. Available at https://www.theglobaleconomy.com/download-data.php |
| *Secondary Enrollment* | = | Gross ratio of secondary school enrollment to the population of the age group that officially corresponds to the level of education. Available at https://www.theglobaleconomy.com/download-data.php |
| *INST* | = | Mean country-level institutional ownership from Ferreira et al. (2010). |
| *LISTED* | = | Natural logarithm of the number of firms listed in the exchange of a country. |

**TABLE 1**
**Sample Composition and Mean Characteristics by Country**

| Country | N | *CAR(-2,2)* | *Abn_vol* | *Finlit1* | *Finlit2* | *LossAvoid* | *DTAC* | *GSCORE* | *Size* | *MB* | *Growth* | *Leverge* | *ROA* | *Loss* | *BigN* | *σ(Sale)* | σ(CFO) | *Large20* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Argentina | 786 | 0.14 | 1.13 | 28 | -0.20 | 0.05 | 0.19 | - | 18.22 | 0.82 | 0.27 | 0.24 | 0.04 | 0.29 | 0.54 | 0.17 | 0.07 | 0.40 |
| Australia | 21,738 | 1.31 | 1.54 | 64 | 1.12 | 0.02 | 0.22 | 65.76 | 17.32 | 0.81 | 0.09 | 0.15 | -0.18 | 0.31 | 0.43 | 0.21 | 0.18 | 0.02 |
| Canada | 13,771 | 0.03 | 1.64 | 68 | 1.10 | 0.03 | 0.27 | 66.46 | 18.32 | 0.73 | 0.12 | 0.24 | -0.10 | 0.37 | 0.77 | 0.19 | 0.13 | 0.00 |
| Chile | 2,877 | 0.09 | 0.99 | 41 | -0.70 | 0.08 | 0.17 | 71.56 | 19.26 | 0.83 | 0.06 | 0.25 | 0.04 | 0.09 | 0.81 | 0.10 | 0.05 | 0.30 |
| China | 44,965 | 0.16 | 1.44 | 28 | -1.34 | 0.11 | 0.09 | 52.85 | 20.15 | 0.94 | 0.14 | 0.19 | 0.05 | 0.06 | 0.13 | 0.17 | 0.07 | 0.00 |
| Colombia | 428 | -0.16 | 1.46 | 32 | -0.81 | 0.06 | 0.06 | 77.94 | 20.35 | 0.80 | 0.09 | 0.22 | 0.04 | 0.13 | 0.84 | 0.08 | 0.04 | 0.60 |
| Egypt | 1,342 | -0.06 | 1.30 | 27 | -1.62 | 0.07 | 0.07 | 52.31 | 17.84 | 0.78 | 0.11 | 0.19 | 0.06 | 0.12 | 0.19 | 0.17 | 0.07 | 0.19 |
| Finland | 449 | 0.53 | 1.80 | 63 | 0.43 | 0.07 | 0.09 | - | 18.94 | 0.93 | 0.02 | 0.24 | 0.04 | 0.21 | 0.82 | 0.20 | 0.07 | 0.19 |
| France | 8,707 | 0.64 | 1.89 | 52 | -0.17 | 0.09 | 0.10 | 64.05 | 18.87 | 0.84 | 0.04 | 0.22 | 0.00 | 0.21 | 0.40 | 0.15 | 0.07 | 0.04 |
| Germany | 9,990 | 0.35 | 1.49 | 66 | 0.14 | 0.07 | 0.11 | 63.18 | 18.72 | 0.87 | 0.07 | 0.20 | -0.01 | 0.28 | 0.50 | 0.23 | 0.09 | 0.01 |
| Hong Kong | 18,681 | 0.39 | 1.88 | 43 | 0.26 | 0.05 | 0.14 | 55.73 | 18.52 | 0.72 | 0.07 | 0.21 | -0.02 | 0.09 | 0.62 | 0.23 | 0.10 | 0.04 |
| Hungary | 335 | -0.01 | 1.39 | 54 | -0.80 | 0.04 | 0.15 | 72.71 | 18.93 | 0.84 | 0.04 | 0.20 | 0.05 | 0.19 | 0.74 | 0.13 | 0.06 | 0.91 |
| Indonesia | 4,817 | 0.20 | 1.57 | 32 | -1.74 | 0.12 | 0.10 | 61.44 | 17.90 | 0.75 | 0.08 | 0.31 | 0.02 | 0.12 | 0.07 | 0.20 | 0.08 | 0.01 |
| Italy | 2,591 | 0.54 | 1.75 | 37 | 0.03 | 0.12 | 0.10 | 67.96 | 19.16 | 0.84 | 0.02 | 0.27 | 0.00 | 0.22 | 0.50 | 0.12 | 0.06 | 0.04 |
| Japan | 56,946 | 0.49 | 1.54 | 43 | 0.56 | 0.12 | 0.06 | 55.97 | 19.05 | 0.79 | 0.04 | 0.21 | 0.02 | 0.13 | 0.00 | 0.12 | 0.04 | 0.00 |
| Malaysia | 16,526 | -0.32 | 1.58 | 36 | -0.87 | 0.08 | 0.08 | 61.22 | 17.55 | 0.75 | 0.06 | 0.21 | 0.02 | 0.13 | 0.49 | 0.16 | 0.07 | 0.03 |
| Mexico | 1,535 | -0.54 | 1.36 | 32 | -0.84 | 0.06 | 0.08 | 68.15 | 20.18 | 0.86 | 0.10 | 0.26 | 0.04 | 0.21 | 0.42 | 0.10 | 0.05 | 0.11 |
| Netherlands | 2,444 | 0.01 | 2.03 | 66 | 0.13 | 0.05 | 0.19 | 70.93 | 19.85 | 0.91 | 0.06 | 0.23 | 0.02 | 0.23 | 0.89 | 0.21 | 0.07 | 0.10 |
| New Zealand | 1,949 | 0.71 | 1.42 | 61 | 0.88 | 0.03 | 0.17 | 67.68 | 18.35 | 0.88 | 0.11 | 0.24 | -0.04 | 0.16 | 0.77 | 0.22 | 0.11 | 0.27 |
| Nigeria | 843 | 0.50 | 1.59 | 26 | - | 0.05 | 0.12 | 60.39 | 17.57 | 0.75 | 0.09 | 0.22 | 0.04 | 0.13 | 0.40 | 0.20 | 0.11 | 0.24 |
| Norway | 2,954 | -0.34 | 1.77 | 71 | 1.00 | 0.05 | 0.12 | 70.01 | 18.84 | 0.84 | 0.12 | 0.28 | -0.03 | 0.38 | 0.86 | 0.18 | 0.10 | 0.08 |
| Pakistan | 1,355 | 0.46 | 1.58 | 26 | -2.02 | 0.06 | 0.08 | - | 16.94 | 0.71 | 0.20 | 0.32 | 0.07 | 0.10 | 0.18 | 0.24 | 0.09 | 0.34 |
| Peru | 914 | -0.41 | 1.06 | 28 | -1.19 | 0.07 | 0.10 | 64.58 | 18.69 | 0.72 | 0.07 | 0.21 | 0.07 | 0.15 | 0.07 | 0.11 | 0.06 | 0.37 |
| Philippines | 2,567 | -0.11 | 1.22 | 25 | -1.74 | 0.08 | 0.09 | 58.13 | 18.40 | 0.75 | 0.07 | 0.24 | 0.04 | 0.12 | 0.07 | 0.13 | 0.07 | 0.18 |
| Singapore | 9,282 | 0.83 | 1.91 | 59 | -0.36 | 0.07 | 0.10 | 58.97 | 17.89 | 0.77 | 0.07 | 0.21 | 0.02 | 0.12 | 0.68 | 0.22 | 0.09 | 0.03 |
| South Korea | 18,360 | 0.26 | 1.40 | 33 | 1.04 | 0.09 | 0.07 | 59.54 | 18.71 | 0.78 | 0.07 | 0.25 | 0.01 | 0.17 | 0.00 | 0.16 | 0.06 | 0.04 |
| Spain | 1,784 | -0.03 | 1.41 | 49 | 0.34 | 0.09 | 0.21 | 70.13 | 20.26 | 0.84 | 0.06 | 0.33 | 0.02 | 0.20 | 0.82 | 0.11 | 0.05 | 0.17 |
| Sweden | 641 | -1.05 | 1.69 | 71 | 0.61 | 0.03 | 0.16 | - | 17.82 | 0.94 | 0.18 | 0.15 | -0.11 | 0.40 | 0.77 | 0.26 | 0.13 | 0.05 |
| Switzerland | 2,498 | 0.49 | 1.93 | 57 | 0.32 | 0.05 | 0.14 | 66.74 | 19.93 | 0.91 | 0.06 | 0.22 | 0.01 | 0.21 | 0.85 | 0.14 | 0.07 | 0.04 |
| Thailand | 5,678 | -0.51 | 1.49 | 27 | -1.18 | 0.05 | 0.08 | 67.01 | 17.89 | 0.88 | 0.07 | 0.24 | 0.05 | 0.10 | 0.49 | 0.20 | 0.08 | 0.04 |
| United Kingdom | 18,361 | 1.67 | 2.16 | 67 | 0.55 | 0.04 | 0.15 | 68.70 | 18.39 | 0.80 | 0.14 | 0.18 | -0.05 | 0.28 | 0.58 | 0.24 | 0.12 | 0.00 |
| USA | 72,573 | 0.52 | 1.89 | 57 | - | 0.03 | 0.27 | 65.27 | 19.02 | 0.73 | 0.12 | 0.26 | -0.10 | 0.29 | 0.67 | 0.24 | 0.14 | 0.00 |

## TABLE 1 (continued)

| Country | *Analyst* | *Surprise* | *Report_lag* | *Common* | *Rule of law* | *Corruption* | *Enforce* | *Antideal* | *LGDP* | *SMTURN* | *Trust* | *News* | *IFRS* | *MSRIGHT* | *EXREG* | *Population* | *INST* | *LISTED* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Argentina | 0.37 | -0.10 | 4.42 | 0 | -0.55 | -0.35 | 5.02 | 0.34 | 9.43 | 7.98 | 0.16 | 3.70 | 0.43 | 2.42 | 3.95 | 3.71 | 0.00 | 4.61 |
| Australia | 1.17 | -0.02 | 4.05 | 1 | 1.77 | 1.91 | 6.23 | 0.76 | 10.89 | 72.04 | 0.49 | 5.08 | 0.81 | 6.26 | 5.97 | 3.10 | 0.02 | 7.50 |
| Canada | 1.30 | -0.03 | 4.12 | 1 | 1.77 | 1.94 | 4.81 | 0.64 | 10.61 | 67.72 | 0.38 | 5.12 | 0.48 | 6.13 | 5.66 | 3.53 | 0.23 | 8.06 |
| Chile | 0.96 | -0.02 | 4.16 | 0 | 1.27 | 1.37 | 5.11 | 0.63 | 9.35 | 14.12 | 0.11 | 4.58 | 0.55 | 4.68 | 5.45 | 2.83 | 0.01 | 5.44 |
| China | 0.89 | -0.01 | 4.30 | 0 | -0.37 | -0.36 | 6.73 | 0.76 | 8.85 | 213.91 | 0.52 | 4.08 | 0.89 | 4.01 | 4.22 | 7.22 | - | 7.87 |
| Colombia | 0.88 | 0.00 | 4.10 | 0 | -0.37 | -0.31 | 1.80 | 0.57 | 8.65 | 13.04 | 0.05 | 3.27 | 0.45 | 3.25 | 4.33 | 3.85 | - | 4.31 |
| Egypt | 0.74 | -0.02 | 4.25 | 0 | -0.48 | -0.64 | 3.41 | 0.20 | 8.20 | 34.50 | 0.20 | 3.44 | 0.00 | 4.53 | 4.20 | 4.53 | - | 5.53 |
| Finland | 1.55 | 0.03 | 4.03 | 0 | 1.98 | 2.38 | 8.06 | 0.46 | 10.56 | 81.18 | 0.57 | 6.10 | 0.00 | 6.43 | 5.82 | 1.65 | 0.04 | 4.98 |
| France | 1.31 | -0.03 | 4.40 | 0 | 1.43 | 1.39 | 6.91 | 0.38 | 10.47 | 87.73 | 0.18 | 4.96 | 0.67 | 5.13 | 5.67 | 4.16 | 0.10 | 6.54 |
| Germany | 1.35 | -0.05 | 4.48 | 0 | 1.68 | 1.86 | 6.62 | 0.28 | 10.54 | 118.50 | 0.30 | 5.67 | 0.71 | 6.27 | 5.55 | 4.41 | 0.07 | 6.45 |
| Hong Kong | 1.29 | -0.02 | 4.43 | 1 | 1.56 | 1.71 | 7.69 | 0.96 | 10.53 | 52.33 | 0.43 | 5.38 | 0.81 | 6.08 | 6.01 | 1.96 | 0.02 | 7.29 |
| Hungary | 1.01 | 0.00 | 4.16 | 0 | 0.71 | 0.35 | 7.15 | 0.18 | 9.40 | 61.80 | 0.25 | 5.09 | 0.85 | 3.92 | 4.45 | 2.30 | - | 3.80 |
| Indonesia | 1.11 | 0.07 | 4.45 | 0 | -0.52 | -0.60 | 1.17 | 0.65 | 7.99 | 29.19 | 0.08 | 3.13 | 0.72 | 3.70 | 4.88 | 5.51 | - | 6.16 |
| Italy | 1.24 | -0.01 | 4.34 | 0 | 0.54 | 0.33 | 3.18 | 0.42 | 10.38 | 164.25 | 0.19 | 4.69 | 0.72 | 3.71 | 4.33 | 4.07 | 0.03 | 5.67 |
| Japan | 1.00 | -0.01 | 3.73 | 0 | 1.39 | 1.40 | 6.37 | 0.50 | 10.42 | 109.43 | 0.30 | 6.34 | 0.54 | 5.74 | 5.29 | 4.85 | 0.03 | 7.91 |
| Malaysia | 0.95 | -0.02 | 4.07 | 1 | 0.48 | 0.22 | 4.27 | 0.95 | 9.04 | 31.89 | 0.09 | 4.56 | 0.44 | 4.88 | 5.37 | 3.33 | 0.01 | 6.82 |
| Mexico | 1.30 | -0.03 | 4.03 | 0 | -0.51 | -0.48 | 5.39 | 0.17 | 9.12 | 26.19 | 0.14 | 4.54 | 0.41 | 3.35 | 4.78 | 4.73 | 0.00 | 4.97 |
| Netherlands | 1.75 | 0.00 | 4.19 | 0 | 1.79 | 2.10 | 5.11 | 0.20 | 10.65 | 104.42 | 0.42 | 5.63 | 0.52 | 6.39 | 5.63 | 2.79 | 0.03 | 5.41 |
| New Zealand | 1.19 | 0.00 | 4.07 | 1 | 1.89 | 2.27 | 7.50 | 0.95 | 10.50 | 16.89 | 0.45 | 5.31 | 0.65 | 6.60 | 5.80 | 1.48 | 0.00 | 4.98 |
| Nigeria | 0.81 | -0.05 | 4.32 | 1 | -1.01 | -1.09 | 5.08 | 0.43 | 7.79 | 9.91 | 0.17 | 3.23 | 0.63 | 3.55 | 4.61 | 5.16 | - | 5.23 |
| Norway | 1.27 | 0.02 | 3.95 | 0 | 1.96 | 2.13 | 7.53 | 0.42 | 11.19 | 72.74 | 0.73 | 6.34 | 0.74 | 6.22 | 5.84 | 1.58 | 0.08 | 5.23 |
| Pakistan | 0.44 | -0.01 | 4.62 | 1 | -0.86 | -0.99 | 3.55 | 0.41 | 7.08 | 165.67 | 0.19 | 3.67 | 0.00 | 3.43 | 4.03 | 5.12 | - | 6.47 |
| Peru | 0.72 | -0.03 | 4.05 | 0 | -0.57 | -0.36 | 4.77 | 0.45 | 8.54 | 6.22 | 0.06 | 3.12 | 0.48 | 2.57 | 4.79 | 3.38 | - | 5.32 |
| Philippines | 1.23 | 0.01 | 4.59 | 0 | -0.41 | -0.56 | 3.42 | 0.22 | 7.83 | 16.48 | 0.05 | 4.19 | 0.51 | 3.35 | 4.76 | 4.54 | 0.00 | 5.52 |
| Singapore | 0.91 | 0.09 | 4.03 | 1 | 1.66 | 2.17 | 8.48 | 1.00 | 10.76 | 46.36 | 0.26 | 5.61 | 0.63 | 5.65 | 6.03 | 1.59 | 0.01 | 6.11 |
| South Korea | 1.05 | -0.02 | 3.94 | 0 | 1.05 | 0.54 | 8.11 | 0.47 | 10.20 | 158.96 | 0.28 | 5.98 | 0.71 | 4.10 | 4.54 | 3.92 | 0.00 | 7.54 |
| Spain | 2.07 | -0.02 | 4.06 | 0 | 1.07 | 0.91 | 5.54 | 0.37 | 10.17 | 103.13 | 0.16 | 4.59 | 0.96 | 3.88 | 4.37 | 3.83 | 0.03 | 8.07 |
| Sweden | 1.21 | -0.11 | 4.17 | 0 | 1.84 | 2.24 | 4.73 | 0.33 | 10.63 | 94.44 | 0.57 | 6.01 | 0.00 | 6.16 | 6.26 | 2.19 | 0.24 | 5.63 |
| Switzerland | 1.55 | -0.01 | 4.23 | 0 | 1.88 | 2.08 | 6.03 | 0.27 | 11.30 | 64.92 | 0.43 | 5.92 | 0.74 | 6.34 | 5.77 | 2.06 | 0.04 | 5.51 |
| Thailand | 0.93 | -0.02 | 4.02 | 1 | -0.02 | -0.36 | 6.11 | 0.81 | 8.60 | 77.21 | 0.33 | 5.28 | 0.50 | 4.25 | 5.00 | 4.22 | 0.01 | 6.38 |
| United Kingdom | 0.96 | -0.02 | 4.34 | 1 | 1.73 | 1.86 | 6.00 | 0.95 | 10.64 | 77.34 | 0.28 | 5.79 | 0.59 | 6.06 | 5.57 | 4.11 | 0.09 | 7.75 |
| USA | 1.53 | 0.00 | 3.78 | 1 | 1.59 | 1.51 | 7.33 | 0.65 | 10.86 | 165.46 | 0.36 | 5.28 | 1.00 | 5.10 | 5.33 | 5.70 | 0.65 | 8.55 |

This table provides the sample composition and selected mean characteristics by country. Detailed definitions of the variables are provided in the Appendix.

**TABLE 2**
**Descriptive Statistics**

| | N | Mean | Q1 | Median | Q3 | Std Dev |
|---|---|---|---|---|---|---|
| *CAR(-2,2)* | 144,286 | 0.475 | -3.412 | 0.165 | 4.071 | 8.514 |
| *Abn_vol* | 141,784 | 1.676 | 0.767 | 1.261 | 2.000 | 1.570 |
| *Finlit1* | 348,687 | 47.799 | 36.000 | 43.000 | 57.000 | 13.777 |
| *Finlit2* | 280,760 | 0.000 | -0.936 | 0.454 | 0.665 | 0.935 |
| *LossAvoid* | 348,687 | 0.071 | 0.000 | 0.000 | 0.000 | 0.256 |
| *DTAC* | 269,518 | 0.154 | 0.026 | 0.068 | 0.190 | 0.190 |
| *GSCORE* | 21,660 | 62.826 | 55.667 | 62.333 | 69.333 | 9.908 |
| *Size* | 348,687 | 18.812 | 17.273 | 18.727 | 20.292 | 2.201 |
| *MB* | 348,687 | 0.798 | 0.740 | 1.000 | 1.000 | 0.419 |
| *Growth* | 348,687 | 0.092 | -0.062 | 0.055 | 0.211 | 0.362 |
| *Leverge* | 348,687 | 0.220 | 0.031 | 0.176 | 0.339 | 0.216 |
| *ROA* | 348,687 | -0.027 | -0.032 | 0.025 | 0.068 | 0.239 |
| *Loss* | 150,514 | 0.200 | 0.000 | 0.000 | 0.000 | 0.400 |
| *BigN* | 348,687 | 0.402 | 0.000 | 0.000 | 1.000 | 0.490 |
| *σ(Sale)* | 348,687 | 0.188 | 0.059 | 0.116 | 0.230 | 0.207 |
| *σ(CFO)* | 348,687 | 0.095 | 0.028 | 0.050 | 0.094 | 0.151 |
| *Large20* | 150,514 | 0.026 | 0.000 | 0.000 | 0.000 | 0.160 |
| *Analyst* | 166,557 | 1.189 | 0.000 | 1.099 | 2.079 | 1.035 |
| *Surprise* | 150,514 | -0.013 | -0.008 | 0.000 | 0.003 | 0.461 |
| *Report_lag* | 150,514 | 4.037 | 3.761 | 4.025 | 4.331 | 0.467 |
| *Common* | 348,687 | 0.518 | 0.000 | 1.000 | 1.000 | 0.500 |
| *Rule of law* | 348,687 | 1.127 | 0.880 | 1.530 | 1.640 | 0.793 |
| *Corruption* | 348,687 | 1.122 | 0.460 | 1.410 | 1.760 | 0.877 |
| *Enforce* | 348,687 | 6.492 | 6.230 | 6.730 | 7.329 | 1.251 |
| *Antideal* | 348,687 | 0.658 | 0.499 | 0.654 | 0.763 | 0.200 |
| *LGDP* | 348,687 | 10.180 | 9.961 | 10.489 | 10.793 | 0.866 |
| *SMTURN* | 348,687 | 117.495 | 63.610 | 103.500 | 151.710 | 77.356 |
| *Trust* | 348,687 | 0.342 | 0.283 | 0.349 | 0.401 | 0.131 |
| *News* | 348,687 | 5.260 | 4.957 | 5.280 | 5.788 | 0.775 |
| *IFRS* | 348,687 | 0.729 | 0.000 | 1.000 | 1.000 | 0.444 |
| *MSRIGHT* | 348,687 | 5.203 | 4.655 | 5.258 | 6.032 | 0.905 |
| *EXREG* | 348,687 | 5.244 | 4.767 | 5.480 | 5.788 | 0.674 |
| *Population* | 348,687 | 4.608 | 3.515 | 4.840 | 5.689 | 1.534 |
| *INST* | 293,689 | 0.195 | 0.021 | 0.026 | 0.229 | 0.268 |
| *LISTED* | 348,386 | 7.542 | 7.116 | 7.732 | 8.231 | 0.936 |

This table provides the descriptive statistics of the main variables used in this study. Detailed definitions of the variables are provided in the Appendix.

**TABLE 3**
**Relation between Abnormal Stock Returns and Financial Literacy**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | | | *Financial literacy = Finlit2* | | | |
| ***Financial literacy*** | **0.031** | **0.039** | **0.040** | **0.023** | **0.442** | **0.636** | **0.543** | **0.575** |
| | **(5.38)***** | **(4.54)***** | **(5.58)***** | **(1.82)*** | **(2.43)**** | **(2.90)***** | **(3.51)***** | **(2.19)**** |
| *Size* | -0.203 | -0.206 | -0.187 | -0.361 | -0.251 | -0.252 | -0.263 | -0.395 |
| | (-8.56)*** | (-6.32)*** | (-5.43)*** | (-6.04)*** | (-11.09)*** | (-10.57)*** | (-3.40)*** | (-6.31)*** |
| *MB* | -0.634 | -0.598 | -0.601 | -0.201 | -0.542 | -0.651 | -0.549 | 0.618 |
| | (-5.40)*** | (-4.08)*** | (-3.27)*** | (-0.82) | (-5.12)*** | (-5.75)*** | (-2.48)** | (2.22)** |
| *Growth* | 0.490 | 0.552 | 0.308 | 1.186 | 0.480 | 0.697 | 0.329 | 1.124 |
| | (4.91)*** | (3.87)*** | (2.23)** | (4.01)*** | (5.59)*** | (7.35)*** | (3.12)*** | (4.55)*** |
| *Leverage* | -0.293 | 0.256 | -1.230 | 0.048 | -0.560 | -0.082 | -1.237 | -0.271 |
| | (-1.87)* | (1.26) | (-4.66)*** | (0.13) | (-3.73)*** | (-0.53) | (-3.16)*** | (-0.71) |
| *ROA* | 1.892 | 1.377 | 2.775 | -0.566 | 2.935 | 2.977 | 2.836 | 1.198 |
| | (6.74)*** | (3.78)*** | (6.44)*** | (-0.70) | (13.08)*** | (12.07)*** | (3.59)*** | (1.76)* |
| *Loss* | -0.788 | -0.621 | -1.172 | -0.471 | -0.831 | -0.655 | -1.200 | -0.459 |
| | (-8.64)*** | (-5.10)*** | (-8.55)*** | (-2.07)** | (-10.00)*** | (-7.47)*** | (-6.40)*** | (-2.22)** |
| *BigN* | -0.053 | 0.146 | -0.210 | -0.291 | 0.009 | 0.013 | 0.054 | -0.142 |
| | (-0.69) | (1.18) | (-2.24)** | (-1.42) | (0.12) | (0.14) | (0.53) | (-0.65) |
| *σ(Sale)* | -0.505 | -0.731 | -0.382 | 1.166 | -0.347 | -0.319 | -0.469 | 2.442 |
| | (-2.72)*** | (-2.73)*** | (-1.50) | (1.70)* | (-2.12)** | (-1.71)* | (-1.79)* | (4.27)*** |
| *σ(CFO)* | -0.350 | -0.203 | -0.772 | -1.754 | -1.259 | -1.633 | -0.622 | -8.156 |
| | (-0.74) | (-0.30) | (-1.41) | (-0.92) | (-3.48)*** | (-3.94)*** | (-1.38) | (-5.81)*** |
| *Large20* | 0.366 | 0.426 | 0.231 | 0.438 | 0.208 | 0.289 | 0.383 | 0.375 |
| | (2.44)** | (1.33) | (1.43) | (1.98)** | (1.27) | (0.90) | (1.91)* | (1.52) |
| *Analyst* | 0.074 | 0.029 | -0.016 | 0.224 | 0.127 | 0.162 | 0.020 | 0.189 |
| | (2.15)** | (0.59) | (-0.31) | (2.58)*** | (3.61)*** | (4.32)*** | (0.34) | (2.00)** |
| *Surprise* | 0.170 | 0.248 | 0.137 | 0.118 | 0.141 | 0.198 | 0.145 | 0.039 |
| | (1.63) | (1.18) | (1.24) | (0.41) | (3.03)*** | (3.18)*** | (1.32) | (0.20) |
| *Report_lag* | -0.553 | -0.795 | -0.426 | -0.290 | -0.704 | -0.804 | -0.602 | -0.399 |
| | (-8.13)*** | (-7.84)*** | (-4.05)*** | (-1.63) | (-9.93)*** | (-10.31)*** | (-2.53)** | (-1.89)* |
| *LossAvoid* | -0.212 | -0.100 | -0.451 | -1.035 | -0.200 | -0.085 | -0.479 | -1.119 |
| | (-2.22)** | (-0.78) | (-2.86)*** | (-4.18)*** | (-2.01)** | (-0.85) | (-3.29)*** | (-4.75)*** |
| *Common* | -0.774 | -1.577 | 0.323 | -0.195 | | | | |
| | (-6.00)*** | (-6.29)*** | (1.35) | (-0.64) | | | | |
| *Rule of law* | -0.492 | -1.629 | 0.060 | -1.057 | -0.768 | -1.412 | -0.551 | -0.512 |
| | (-2.75)*** | (-4.05)*** | (0.25) | (-2.26)** | (-2.59)*** | (-3.60)*** | (-1.18) | (-0.53) |
| *Corruption* | -0.593 | -0.780 | -0.349 | -0.478 | 0.143 | -0.054 | 0.678 | -0.289 |
| | (-4.08)*** | (-3.90)*** | (-1.57) | (-1.20) | (0.73) | (-0.21) | (1.62) | (-0.40) |
| *Enforce* | 0.073 | 0.218 | 0.008 | 0.190 | | | | |
| | (2.37)** | (3.71)*** | (0.16) | (1.90)* | | | | |
| *Antideal* | 2.029 | 3.663 | 0.431 | 1.338 | | | | |
| | (8.16)*** | (7.89)*** | (1.08) | (1.51) | | | | |
| *LGDP* | 1.288 | 2.564 | 0.692 | 1.156 | -0.095 | -0.191 | 0.156 | 3.008 |
| | (11.47)*** | (10.73)*** | (5.60)*** | (3.76)*** | (-0.32) | (-0.99) | (0.85) | (2.08)** |
| *SMTURN* | -0.003 | -0.004 | 0.001 | -0.000 | -0.002 | -0.003 | -0.003 | -0.001 |
| | (-5.60)*** | (-5.75)*** | (0.79) | (-0.29) | (-3.68)*** | (-4.13)*** | (-1.69) | (-0.31) |
| *Trust* | 1.151 | 2.004 | 0.447 | 1.946 | 2.628 | 3.366 | -0.625 | 1.986 |
| | (4.00)*** | (4.00)*** | (1.21) | (2.22)** | (3.87)*** | (1.72)* | (-0.75) | (2.32)** |
| *News* | 0.407 | 0.651 | 0.404 | 0.405 | | | | |
| | (5.28)*** | (4.60)*** | (3.44)*** | (2.33)** | | | | |
| *IFRS* | -0.103 | -0.140 | 0.317 | 0.193 | -0.043 | -0.163 | 0.213 | -0.527 |
| | (-1.14) | (-1.19) | (2.20)** | (0.61) | (-0.39) | (-1.28) | (0.90) | (-1.03) |
| *MSRIGHT* | 0.422 | 0.949 | 0.018 | 0.488 | 0.477 | 0.868 | 0.105 | -0.128 |
| | (5.45)*** | (6.96)*** | (0.18) | (2.47)** | (4.00)*** | (5.28)*** | (0.77) | (-0.36) |
| *EXREG* | -0.365 | -0.675 | -0.374 | -0.041 | -0.336 | -0.369 | 0.043 | 0.056 |
| | (-4.94)*** | (-5.64)*** | (-3.55)*** | (-0.64) | (-3.39)*** | (-3.27)*** | (0.25) | (0.18) |
| *Population* | 0.062 | -0.007 | 0.037 | -0.016 | 1.415 | 4.358 | 0.296 | 6.271 |
| | (2.15)** | (-0.16) | (0.25) | (-0.22) | (1.92)* | (3.42)*** | (1.42) | (1.68)* |
| *GSCORE* | | | | 0.002 | | | | 0.004 |
| | | | | (1.68)* | | | | (2.02)** |
| Constant | -5.280 | -17.163 | 1.895 | -3.629 | 4.016 | -24.183 | 2.981 | -64.090 |
| | (-4.16)*** | (-7.40)*** | (1.28) | (-1.08) | (0.48) | (-0.00) | (0.77) | (-2.55)** |
| Observations | 144,286 | 144,286 | 57,154 | 21,137 | 109,547 | 108,252 | 56,968 | 15,270 |
| R-squared | 0.010 | 0.008 | 0.020 | 0.012 | 0.017 | 0.014 | 0.021 | 0.019 |

This table reports the regression results of the relation between financial literacy and abnormal stock returns. The dependent variable is *CAR(-2,2)*. Columns 1 to 3 show the results when financial literacy is proxied by *Finlit1* and Columns 4 to 6 show the results when financial literacy is proxied by *Finlit*2. Columns 1 and 4 are the baseline regressions. Columns 2 and 5 show the results using weighted-least squares regression. Columns 3 and 6 show the results after removing observations from the U.S., Japan, and China from the sample. The standard errors of all regressions are clustered by firm and with industry and year fixed effects. In Columns 5 to 8, the standard errors are further clustered by country. Detailed definitions of all variables are provided in the Appendix. Coefficients of the year, industry, and country indicator variables are not tabulated for brevity. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

**TABLE 4**
**Relation between Abnormal Trading Volume and Financial Literacy**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | | | *Financial literacy = Finlit2* | | | |
| ***Financial literacy*** | **0.010** | **0.013** | **0.006** | **0.012** | **0.159** | **0.103** | **0.276** | **0.246** |
| | **(7.53)***** | **(6.78)***** | **(3.50)***** | **(4.85)***** | **(2.81)***** | **(0.25)** | **(3.81)***** | **(1.88)*** |
| *Size* | -0.103 | -0.094 | -0.106 | -0.074 | -0.119 | -0.054 | -0.126 | -0.103 |
| | (-23.48)*** | (-19.08)*** | (-14.22)*** | (-7.88)*** | (-22.65)*** | (-2.43)** | (-15.88)*** | (-8.94)*** |
| *MB* | -0.107 | -0.045 | -0.217 | -0.060 | -0.136 | -0.220 | -0.187 | -0.088 |
| | (-5.14)*** | (-2.08)** | (-5.72)*** | (-1.44) | (-4.52)*** | (-1.90)* | (-4.72)*** | (-1.19) |
| *Growth* | 0.140 | 0.166 | 0.100 | 0.066 | 0.102 | 0.299 | 0.124 | 0.090 |
| | (8.31)*** | (8.68)*** | (3.68)*** | (1.54) | (5.14)*** | (3.36)*** | (4.55)*** | (1.70)* |
| *Leverage* | -0.004 | -0.018 | -0.149 | 0.026 | 0.079 | -0.070 | -0.082 | -0.009 |
| | (-0.12) | (-0.57) | (-2.70)*** | (0.45) | (2.23)** | (-0.44) | (-1.48) | (-0.13) |
| *ROA* | 0.281 | 0.344 | 0.178 | 0.054 | 0.226 | -0.403 | 0.192 | 0.139 |
| | (6.98)*** | (7.57)*** | (2.50)** | (0.60) | (4.06)*** | (-1.07) | (2.65)*** | (1.19) |
| *Loss* | -0.081 | -0.044 | -0.171 | -0.018 | -0.105 | 0.194 | -0.161 | -0.044 |
| | (-5.12)*** | (-2.50)** | (-6.26)*** | (-0.58) | (-5.38)*** | (2.35)** | (-5.78)*** | (-1.14) |
| *BigN* | 0.104 | 0.061 | 0.016 | 0.186 | 0.062 | -0.226 | 0.030 | 0.140 |
| | (6.52)*** | (3.06)*** | (0.74) | (6.03)*** | (3.21)*** | (-1.10) | (1.25) | (3.49)*** |
| *σ(Sale)* | 0.098 | 0.096 | 0.036 | 0.241 | 0.048 | 0.042 | 0.030 | 0.158 |
| | (2.90)*** | (2.37)** | (0.67) | (2.53)** | (1.19) | (0.20) | (0.55) | (1.31) |
| *σ(CFO)* | -0.157 | -0.028 | -0.400 | -0.154 | -0.137 | -1.893 | -0.346 | -0.130 |
| | (-2.23)** | (-0.32) | (-3.83)*** | (-0.65) | (-1.43) | (-2.10)** | (-3.30)*** | (-0.35) |
| *Large20* | 0.014 | 0.095 | 0.022 | -0.038 | 0.072 | 0.043 | 0.083 | 0.017 |
| | (0.45) | (2.00)** | (0.72) | (-0.96) | (2.37)** | (0.66) | (2.45)** | (0.47) |
| *Analyst* | 0.083 | 0.101 | 0.041 | 0.124 | 0.051 | -0.022 | 0.029 | 0.092 |
| | (12.79)*** | (13.47)*** | (3.59)*** | (8.67)*** | (7.06)*** | (-0.59) | (2.56)** | (5.61)*** |
| *Surprise* | 0.000 | 0.009 | -0.012 | -0.030 | -0.002 | 0.127 | -0.009 | -0.047 |
| | (0.03) | (0.50) | (-0.67) | (-1.30) | (-0.13) | (1.49) | (-0.55) | (-1.74)* |
| *Report_lag* | -0.128 | -0.113 | -0.200 | -0.055 | -0.311 | -0.139 | -0.386 | -0.203 |
| | (-9.55)*** | (-6.96)*** | (-8.63)*** | (-1.82)* | (-18.65)*** | (-1.96)** | (-14.76)*** | (-5.86)*** |
| *LossAvoid* | -0.021 | 0.028 | -0.109 | 0.048 | -0.059 | -0.038 | -0.124 | -0.022 |
| | (-1.12) | (1.29) | (-3.31)*** | (1.47) | (-2.93)*** | (-0.53) | (-3.68)*** | (-0.64) |
| *Common* | -0.123 | -0.340 | -0.256 | 0.094 | | | | |
| | (-4.10)*** | (-7.71)*** | (-4.43)*** | (1.81)* | | | | |
| *Rule of law* | -0.156 | -0.236 | -0.416 | -0.070 | -0.147 | 0.457 | -0.135 | 0.021 |
| | (-3.41)*** | (-3.85)*** | (-6.97)*** | (-0.82) | (-2.28)** | (0.85) | (-1.35) | (0.16) |
| *Corruption* | -0.163 | -0.406 | 0.308 | -0.225 | -0.136 | 0.100 | 0.147 | -0.270 |
| | (-5.22)*** | (-13.74)*** | (6.00)*** | (-2.89)*** | (-3.06)*** | (0.32) | (2.10)** | (-2.56)** |
| *Enforce* | 0.024 | 0.067 | -0.103 | 0.094 | | | | |
| | (3.01)*** | (5.02)*** | (-8.50)*** | (4.51)*** | | | | |
| *Antideal* | 0.581 | 1.238 | 0.671 | -0.474 | | | | |
| | (9.49)*** | (12.72)*** | (6.79)*** | (-4.11)*** | | | | |
| *LGDP* | 0.368 | 0.740 | 0.223 | 0.137 | -0.083 | -0.246 | -0.527 | 0.312 |
| | (12.65)*** | (18.21)*** | (6.71)*** | (2.00)** | (-1.09) | (-0.56) | (-3.31)*** | (1.53) |
| *SMTURN* | -0.001 | -0.002 | -0.000 | 0.000 | -0.002 | -0.002 | -0.001 | -0.003 |
| | (-14.65)*** | (-23.83)*** | (-0.81) | (1.35) | (-16.03)*** | (-3.62)*** | (-5.56)*** | (-8.11)*** |
| *Trust* | 0.415 | 1.315 | 0.004 | 0.542 | 0.056 | 1.503 | 0.241 | 0.036 |
| | (5.96)*** | (15.03)*** | (5.71)*** | (3.93)*** | (0.35) | (1.95)* | (1.24) | (4.67)*** |
| *News* | 0.031 | 0.129 | 0.208 | 0.066 | | | | |
| | (1.76)* | (5.04)*** | (7.16)*** | (2.08)** | | | | |
| *IFRS* | 0.059 | 0.058 | 0.183 | 0.083 | 0.112 | -0.031 | 0.169 | 0.119 |
| | (3.32)*** | (3.48)*** | (4.61)*** | (1.24) | (7.59)*** | (-0.38) | (5.84)*** | (1.91)* |
| *MSRIGHT* | 0.020 | 0.151 | -0.009 | 0.168 | 0.084 | -0.282 | 0.014 | 0.187 |
| | (1.14) | (6.19)*** | (-0.35) | (4.15)*** | (3.26)*** | (-2.47)** | (0.41) | (2.96)*** |
| *EXREG* | -0.038 | -0.108 | -0.018 | -0.066 | -0.028 | 0.104 | -0.037 | -0.080 |
| | (-2.30)** | (-6.71)*** | (-0.66) | (-1.87)* | (-1.53) | (1.55) | (-1.42) | (-2.03)** |
| *Population* | 0.045 | 0.075 | 0.058 | 0.073 | 0.397 | 0.805 | 0.537 | 1.099 |
| | (7.01)*** | (8.79)*** | (4.84)*** | (1.73)* | (2.17)** | (0.59) | (2.23)** | (2.27)** |
| *GSCORE* | | | | 0.001 | | | | 0.001 |
| | | | | (2.35)** | | | | (2.31)* |
| Constant | -0.111 | -3.920 | 1.254 | 0.951 | 3.973 | 5.463 | 7.775 | -12.477 |
| | (-0.37) | (-10.43)*** | (3.14)*** | (1.40) | (4.36)*** | (1.49) | (7.34)*** | (-3.76)*** |
| Observations | 141,784 | 141,784 | 57,693 | 21,081 | 107,144 | 98,503 | 55,372 | 15,603 |
| R-squared | 0.036 | 0.042 | 0.036 | 0.086 | 0.040 | 0.065 | 0.045 | 0.074 |

This table reports the regression results of the relation between financial literacy and abnormal trading volume. The dependent variable is *ABNVOL*. Columns 1 to 3 show the results when financial literacy is proxied by *Finlit1* and Columns 4 to 6 show the results when financial literacy is proxied by *Finlit*2. Columns 1 and 4 are the baseline regressions. Columns 2 and 5 show the results using weighted-least squares regression. Columns 3 and 6 show the results after removing observations from the U.S., Japan, and China from the sample. The standard errors of all regressions are clustered by firm and with industry and year fixed effects. In Columns 5 to 8, the standard errors are further clustered by country. Detailed definitions of all variables are provided in the Appendix. Coefficients of the year, industry, and country indicator variables are not tabulated for brevity. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

**TABLE 5**
**Relation between Market Reactions and Financial Literacy**
**– Instrumental Variable (2SLS) Estimation**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | | *Financial literacy = Finlit2* | | |
| | First stage | Second stage | | First stage | Second stage | |
| Dependent variables | *Finlit1* | *CAR(-2,2)* | *ABNVOL* | *Finlit2* | *CAR(-2,2)* | *ABNVOL* |
| ***Pred_Finlit1/Pred_Finlit2*** | | **0.127** | **0.108** | | **0.443** | **0.159** |
| | | **(3.24)***** | **(9.63)***** | | **(2.17)**** | **(2.80)***** |
| ***Secondary enrolment*** | **0.061** | | | **0.002** | | |
| | **(13.38)***** | | | **(7.68)***** | | |
| *Size* | -0.567 | -0.147 | -0.171 | -0.004 | -0.250 | -0.119 |
| | (-17.71)*** | (-4.37)*** | (-20.51)*** | (-7.25)*** | (-9.51)*** | (-22.65)*** |
| *MB* | 0.486 | -0.685 | -0.047 | 0.003 | -0.543 | -0.136 |
| | (5.30)*** | (-5.71)*** | (-1.95)* | (1.11) | (-3.65)*** | (-4.51)*** |
| *Growth* | 0.095 | 0.481 | 0.154 | -0.003 | 0.481 | 0.102 |
| | (1.84)* | (4.81)*** | (8.46)*** | (-2.46)** | (4.46)*** | (5.14)*** |
| *Leverage* | 0.725 | -0.364 | 0.089 | 0.009 | -0.555 | 0.080 |
| | (4.22)*** | (-2.24)** | (2.42)** | (2.50)** | (-3.12)*** | (2.25)** |
| *ROA* | 0.575 | 1.840 | 0.338 | 0.001 | 2.932 | 0.228 |
| | (3.83)*** | (6.53)*** | (7.50)*** | (0.29) | (8.44)*** | (4.09)*** |
| *Loss* | 0.284 | -0.815 | -0.044 | 0.004 | -0.830 | -0.104 |
| | (4.71)*** | (-8.83)*** | (-2.43)** | (2.41)** | (-8.18)*** | (-5.34)*** |
| *BigN* | 2.068 | -0.224 | 0.318 | -0.002 | 0.009 | 0.061 |
| | (22.84)*** | (-2.13)** | (11.13)*** | (-1.53) | (0.11) | (3.19)*** |
| *σ(Sale)* | 1.639 | -0.669 | 0.304 | -0.009 | -0.347 | 0.046 |
| | (9.97)*** | (-3.40)*** | (7.05)*** | (-2.58)*** | (-1.74)* | (1.14) |
| *σ(CFO)* | 1.503 | -0.487 | 0.019 | -0.025 | -1.257 | -0.134 |
| | (5.02)*** | (-1.03) | (0.24) | (-2.82)*** | (-2.62)*** | (-1.40) |
| *Large20* | 1.775 | 0.196 | 0.226 | 0.003 | 0.208 | 0.072 |
| | (3.49)*** | (1.11) | (2.96)*** | (0.87) | (1.30) | (2.37)** |
| *Analyst* | 0.765 | 0.001 | 0.176 | 0.006 | 0.127 | 0.051 |
| | (19.68)*** | (0.02) | (14.31)*** | (6.50)*** | (3.47)*** | (7.09)*** |
| *Surprise* | 0.094 | 0.161 | 0.011 | -0.001 | 0.141 | -0.002 |
| | (2.68)*** | (1.54) | (0.71) | (-1.18) | (1.44) | (-0.13) |
| *Report_lag* | 2.356 | -0.762 | 0.127 | -0.005 | -0.704 | -0.311 |
| | (31.08)*** | (-6.84)*** | (4.08)*** | (-3.41)*** | (-8.81)*** | (-18.65)*** |
| *LossAvoid* | -0.181 | -0.195 | -0.041 | 0.004 | -0.200 | -0.059 |
| | (-3.00)*** | (-2.03)** | (-2.02)** | (2.60)*** | (-2.01)** | (-2.92)*** |
| *Common* | 5.668 | -1.284 | 0.511 | | | |
| | (30.61)*** | (-5.22)*** | (7.47)*** | | | |
| *Rule of law* | 4.961 | -0.992 | 0.498 | 0.408 | -0.772 | -0.148 |
| | (14.31)*** | (-3.59)*** | (5.43)*** | (30.64)*** | (-2.60)*** | (-2.29)** |
| *Corruption* | 8.277 | -1.370 | 0.776 | -0.109 | 0.141 | -0.136 |
| | (49.87)*** | (-3.95)*** | (8.30)*** | (-9.94)*** | (0.66) | (-3.07)*** |
| *Enforce* | -1.135 | 0.198 | -0.130 | | | |
| | (-18.54)*** | (3.38)*** | (-7.28)*** | | | |
| *Antideal* | -8.456 | 2.841 | -0.415 | | | |
| | (-17.11)*** | (6.86)*** | (-3.32)*** | | | |
| *LGDP* | 1.874 | 1.041 | 0.672 | 0.890 | -0.122 | -0.081 |
| | (9.10)*** | (6.97)*** | (14.77)*** | (47.55)*** | (-0.35) | (-1.06) |
| *SMTURN* | -0.007 | -0.002 | -0.002 | -0.000 | -0.002 | -0.002 |
| | (-15.23)*** | (-3.84)*** | (-16.37)*** | (-10.35)*** | (-3.57)*** | (-16.04)*** |
| *Trust* | -6.812 | 2.041 | 0.691 | -0.443 | 2.647 | 0.055 |
| | (-8.75)*** | (4.26)*** | (4.16)*** | (-15.13)*** | (3.82)*** | (0.34) |
| *News* | 3.776 | -0.003 | 0.545 | | | |
| | (36.69)*** | (-0.02) | (10.60)*** | | | |
| *IFRS* | -0.218 | -0.076 | 0.028 | -0.025 | -0.040 | 0.112 |
| | (-2.62)*** | (-0.84) | (1.36) | (-7.96)*** | (-0.36) | (7.59)*** |
| *MSRIGHT* | 2.437 | 0.176 | 0.326 | -0.117 | 0.483 | 0.085 |
| | (20.37)*** | (1.43) | (9.30)*** | (-19.43)*** | (4.30)*** | (3.28)*** |
| *EXREG* | -2.714 | -0.109 | -0.351 | 0.016 | -0.339 | -0.028 |
| | (-27.31)*** | (-0.86) | (-10.25)*** | (3.84)*** | (-3.73)*** | (-1.53) |
| *Population* | 1.148 | -0.022 | 0.154 | -0.993 | 1.402 | 0.393 |
| | (19.44)*** | (-0.49) | (13.73)*** | (-31.63)*** | (1.79)* | (2.15)** |
| Constant | 32.532 | -8.707 | 4.105 | -2.563 | 2.969 | 3.977 |
| | (15.00)*** | (-4.55)*** | (7.12)*** | (-16.58)*** | (0.29) | (4.36)*** |
| Observations | 144,219 | 144,219 | 141,719 | 109,480 | 109,480 | 107,079 |
| R-squared | 0.906 | 0.007 | -0.066 | 0.988 | 0.017 | 0.040 |

This table reports the regression results of the relation between financial literacy and market reactions proxied by *CAR(-2,2)* and *ABNVOL* using instrumental variable (2SLS) estimation. Columns 1 and 4 show the results of the first-stage regression, where we regress *Finlit1 and Finlit2* on the *Secondary_Enrollment* as the instrument, and all the control variables in the main regression. In Columns 2 and 3, we report the second-stage regression results when the dependent variable is *CAR(-2,2)* using the predicted value of *Finlit1* from first-stage regression. In Columns 5 and 6, we report the second-stage regression results when the dependent variable is *ABNVOL* using the predicted value of *Finlit2* from the first-stage regression. The standard errors of all regressions are clustered by firm and with industry and year fixed effects. In Columns 4 to 6, the standard errors are further clustered by country. Detailed definitions of all variables are provided in the Appendix. Coefficients of the year, industry, and country indicator variables are not tabulated for brevity. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

**TABLE 6**
**Alternative Proxies for Market Reactions**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | *Financial literacy = Finlit2* | |
| Dependent variables | *CAR(-1,1)* | *ABNVOL1* | *CAR(-1,1)* | *ABNVOL1* |
| ***Financial literacy*** | **0.019** | **0.037** | **0.350** | **0.156** |
| | **(3.94)*** ** | **(6.13)*** ** | **(2.13)** ** | **(0.63)** |
| *Size* | -0.134 | -0.207 | -0.177 | -0.241 |
| | (-6.80)*** | (-16.15)*** | (-8.26)*** | (-12.48)*** |
| *MB* | -0.489 | -0.120 | -0.439 | -0.095 |
| | (-4.77)*** | (-2.34)** | (-3.41)*** | (-1.15) |
| *Growth* | 0.329 | 0.147 | 0.333 | 0.050 |
| | (3.98)*** | (2.96)*** | (3.80)*** | (0.83) |
| *Leverage* | -0.116 | -0.151 | -0.345 | -0.025 |
| | (-0.87) | (-1.51) | (-2.36)** | (-0.20) |
| *ROA* | 1.763 | 0.574 | 2.501 | 0.510 |
| | (7.45)*** | (4.22)*** | (8.63)*** | (2.37)** |
| *Loss* | -0.627 | -0.154 | -0.639 | -0.205 |
| | (-8.19)*** | (-3.15)*** | (-7.70)*** | (-3.07)*** |
| *BigN* | -0.025 | 0.135 | -0.024 | 0.109 |
| | (-0.40) | (2.38)** | (-0.34) | (1.36) |
| *σ(Sale)* | -0.596 | 0.232 | -0.436 | 0.207 |
| | (-3.93)*** | (2.19)** | (-2.74)*** | (1.37) |
| *σ(CFO)* | -0.059 | -0.412 | -0.465 | -0.703 |
| | (-0.15) | (-2.27)** | (-1.11) | (-3.01)*** |
| *Large20* | 0.222 | 0.078 | 0.153 | 0.198 |
| | (1.82)* | (1.13) | (1.17) | (2.93)*** |
| *Analyst* | 0.044 | 0.087 | 0.086 | 0.036 |
| | (1.52) | (4.61)*** | (2.89)*** | (1.50) |
| *Surprise* | 0.145 | -0.054 | 0.141 | -0.063 |
| | (1.84)* | (-1.29) | (1.83)* | (-1.40) |
| *Report_lag* | -0.391 | -0.153 | -0.467 | -0.462 |
| | (-6.92)*** | (-3.76)*** | (-7.06)*** | (-8.23)*** |
| *LossAvoid* | -0.106 | -0.009 | -0.144 | -0.043 |
| | (-1.31) | (-0.16) | (-1.76)* | (-0.64) |
| *Common* | -0.478 | -0.150 | | |
| | (-4.59)*** | (-1.17) | | |
| *Rule of law* | -0.332 | -0.797 | -0.564 | -0.352 |
| | (-2.31)** | (-3.29)*** | (-2.36)** | (-1.46) |
| *Corruption* | -0.374 | 0.011 | 0.169 | 0.207 |
| | (-3.08)*** | (0.08) | (0.95) | (0.73) |
| *Enforce* | 0.028 | 0.007 | | |
| | (1.14) | (0.28) | | |
| *Antideal* | 1.302 | 1.366 | | |
| | (6.40)*** | (4.07)*** | | |
| *LGDP* | 0.952 | 0.555 | -0.140 | -0.127 |
| | (10.60)*** | (6.49)*** | (-0.41) | (-0.61) |
| *SMTURN* | -0.002 | -0.002 | -0.001 | -0.001 |
| | (-4.56)*** | (-4.09)*** | (-2.61)*** | (-2.05)** |
| *Trust* | 0.876 | 1.141 | 2.203 | 0.597 |
| | (3.66)*** | (4.47)*** | (3.86)*** | (1.14) |
| *News* | 0.275 | 0.191 | | |
| | (4.35)*** | (2.98)*** | | |
| *IFRS* | -0.174 | 0.042 | -0.111 | 0.235 |
| | (-2.30)** | (0.57) | (-1.19) | (3.92)*** |
| *MSRIGHT* | 0.247 | -0.148 | 0.329 | -0.131 |
| | (3.86)*** | (-2.11)** | (3.59)*** | (-1.42) |
| *EXREG* | -0.197 | -0.008 | -0.190 | 0.053 |
| | (-3.28)*** | (-0.16) | (-2.59)*** | (0.70) |
| *Population* | 0.044 | 0.027 | 0.632 | -0.331 |
| | (1.81)* | (1.16) | (1.00) | (-0.48) |
| Constant | -4.195 | -1.014 | 5.831 | 9.663 |
| | (-3.98)*** | (-1.00) | (0.65) | (0.00) |
| Observations | 144,286 | 141,143 | 109,547 | 106,521 |
| R-squared | 0.008 | 0.009 | 0.014 | 0.010 |

This table shows the results of alternative proxies for the market reaction tests. Columns 1 and 2 show the results when financial literacy is proxied by *Finlit1* and Columns 3 and 4 show the results when financial literacy is proxied by *Finlit2*. In Columns (1) and (3), the dependent variable is *CAR(-1,1)*; in Columns (2) and (4), the dependent variable is *ABNVOL1.* The standard errors of all regressions are clustered by firm and with industry and year fixed effects. In Columns 3 and 4, the standard errors are further clustered by country. Detailed definitions of all variables are provided in the Appendix. Coefficients of the year, industry, and country indicator variables are not tabulated for brevity. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

**TABLE 7**
**Relation between Loss Avoidance and Financial Literacy**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | | | *Financial literacy = Finlit2* | | | |
| Dependent variables | *LossAovid* | *LossAovid1* | *LossAovid2* | *LossAovid* | *LossAovid* | *LossAovid1* | *LossAovid2* | *LossAovid* |
| ***Financial literacy*** | **-0.015** | **-0.009** | **-0.014** | **-0.003** | **-0.208** | **-0.201** | **0.052** | **-0.067** |
| | **(-7.00)***** | **(-3.20)***** | **(-7.33)***** | **(-4.72)***** | **(-2.96)***** | **(-1.81)*** | **(0.71)** | **(-2.22)**** |
| *Size* | -0.089 | -0.101 | -0.082 | -0.002 | -0.093 | -0.108 | -0.084 | -0.000 |
| | (-15.92)*** | (-14.04)*** | (-16.18)*** | (-1.06) | (-20.63)*** | (-12.95)*** | (-14.16)*** | (-0.13) |
| *MB* | 0.003 | 0.025 | -0.063 | 0.027 | -0.112 | -0.049 | -0.160 | 0.021 |
| | (0.14) | (0.89) | (-3.14)*** | (3.10)*** | (-5.31)*** | (-1.56) | (-6.89)*** | (2.40)** |
| *Growth* | -0.694 | -0.678 | -0.531 | 0.009 | -0.756 | -0.737 | -0.527 | 0.008 |
| | (-26.27)*** | (-18.08)*** | (-24.72)*** | (1.09) | (-29.56)*** | (-17.85)*** | (-22.36)*** | (0.91) |
| *Leverage* | 1.398 | 1.475 | 1.343 | 0.007 | 1.520 | 1.550 | 1.422 | 0.025 |
| | (30.42)*** | (25.70)*** | (31.54)*** | (0.51) | (41.91)*** | (24.35)*** | (29.64)*** | (1.92)* |
| *ROA* | 0.639 | 0.624 | 0.621 | 22.646 | 0.536 | 0.497 | 0.435 | 34.399 |
| | (18.15)*** | (14.71)*** | (18.76)*** | (9.41)*** | (8.85)*** | (9.68)*** | (10.64)*** | (10.10)*** |
| *BigN* | -0.023 | -0.019 | -0.013 | -0.023 | -0.048 | -0.042 | -0.047 | -0.007 |
| | (-0.94) | (-0.61) | (-0.58) | (-2.96)*** | (-2.19)** | (-1.20) | (-1.94)* | (-0.89) |
| *σ(Sale)* | -0.578 | -0.593 | -0.653 | -0.044 | -0.618 | -0.661 | -0.742 | -0.037 |
| | (-9.38)*** | (-7.19)*** | (-11.61)*** | (-2.40)** | (-11.87)*** | (-7.10)*** | (-11.60)*** | (-1.87)* |
| *σ(CFO)* | -3.376 | -3.308 | -3.648 | -0.060 | -3.169 | -3.026 | -3.279 | -0.080 |
| | (-18.80)*** | (-13.58)*** | (-22.09)*** | (-1.41) | (-21.90)*** | (-10.98)*** | (-17.67)*** | (-1.78)* |
| *Common* | -0.595 | -0.586 | -0.543 | -0.084 | | | | |
| | (-18.18)*** | (-13.93)*** | (-18.02)*** | (-9.04)*** | | | | |
| *Rule of law* | -0.398 | -0.350 | -0.643 | -0.130 | -0.158 | -0.181 | -0.708 | 0.003 |
| | (-5.98)*** | (-4.03)*** | (-10.52)*** | (-6.16)*** | (-2.01)** | (-1.44) | (-8.67)*** | (0.12) |
| *Corruption* | 0.121 | 0.009 | 0.205 | 0.063 | -0.143 | -0.465 | -0.110 | 0.005 |
| | (2.46)** | (0.14) | (4.68)*** | (4.50)*** | (-2.38)** | (-4.84)*** | (-1.80)* | (0.21) |
| *Enforce* | 0.053 | 0.074 | 0.075 | 0.016 | | | | |
| | (4.11)*** | (4.27)*** | (6.19)*** | (4.76)*** | | | | |
| *Antideal* | 0.121 | 0.169 | 0.225 | 0.024 | | | | |
| | (5.05)*** | (5.39)*** | (9.95)*** | (3.31)*** | | | | |
| *LGDP* | 0.219 | 0.145 | 0.260 | 0.007 | 0.239 | 0.247 | 0.168 | 0.014 |
| | (5.35)*** | (2.78)*** | (6.89)*** | (0.52) | (2.92)*** | (1.89)* | (1.92)* | (0.53) |
| *SMTURN* | -0.000 | -0.001 | -0.000 | -0.000 | -0.000 | 0.000 | -0.000 | -0.000 |
| | (-1.95)* | (-3.60)*** | (-2.45)** | (-0.90) | (-0.38) | (0.88) | (-0.13) | (-0.21) |
| *Trust* | -0.059 | -0.237 | -0.263 | -0.129 | -0.112 | -0.100 | -0.139 | 0.003 |
| | (-0.48) | (-1.51) | (-2.33)** | (-3.53)*** | (-7.11)*** | (-3.77)*** | (-7.93)*** | (1.15) |
| *News* | -0.098 | -0.145 | -0.054 | -0.042 | | | | |
| | (-2.82)*** | (-3.29)*** | (-1.70)* | (-4.45)*** | | | | |
| *IFRS* | -0.151 | -0.037 | -0.091 | 0.003 | -0.329 | -0.148 | -0.173 | 0.009 |
| | (-5.15)*** | (-0.90) | (-3.55)*** | (0.29) | (-14.98)*** | (-4.28)*** | (-7.81)*** | (0.86) |
| *MSRIGHT* | 0.175 | 0.155 | 0.205 | 0.069 | -0.089 | -0.068 | 0.001 | -0.004 |
| | (6.55)*** | (4.54)*** | (8.73)*** | (7.97)*** | (-2.81)*** | (-1.32) | (0.02) | (-0.31) |
| *EXREG* | -0.179 | -0.143 | -0.202 | -0.024 | -0.080 | -0.111 | -0.137 | 0.005 |
| | (-6.69)*** | (-4.11)*** | (-8.58)*** | (-3.08)*** | (-3.35)*** | (-2.84)*** | (-5.39)*** | (0.62) |
| *Population* | 0.088 | 0.094 | 0.137 | 0.006 | 1.691 | 1.083 | 1.770 | -0.106 |
| | (6.72)*** | (5.20)*** | (10.97)*** | (1.67)* | (7.49)*** | (2.98)*** | (7.11)*** | (-1.26) |
| Constant | -2.146 | -2.543 | -3.344 | 0.610 | -2.513 | -1.379 | 0.024 | 0.534 |
| | (-5.34)*** | (-4.92)*** | (-9.05)*** | (4.69)*** | (-2.87)*** | (-0.93) | (0.03) | (2.21)** |
| Observations | 348,687 | 348,687 | 348,687 | 32,278 | 280,760 | 280,760 | 280,760 | 28,622 |
| R-squared | 0.0706 | 0.0572 | 0.0762 | 0.257 | 0.0645 | 0.0545 | 0.0729 | 0.361 |

This table reports the regression results of the relation between financial literacy and loss avoidance. Columns 1 to 4 show the results when financial literacy is proxied by *Finlit1* and Columns 5 to 8 show the results when financial literacy is proxied by *Finlit2*. In Columns (1) and (5), the dependent variable is *LossAvoid*, in Columns (2) and (6), the dependent variable is *LossAvoid1*, and in Columns (3) and (7), the dependent variable is *LossAvoid2*. In Columns (4) and (8), the dependent variable is *LossAvoid* but we restrict the sample to observations with ROA between -1% and 1%. The standard errors of all regressions are clustered by firm and with industry and year fixed effects. In Columns 5 to 8, the standard errors are further clustered by country. Detailed definitions of all variables are provided in the Appendix. Coefficients of the year, industry, and country indicator variables are not tabulated for brevity. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

**TABLE 8**
**Relation between Discretionary Accruals and Financial Literacy**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | | | | *Financial literacy = Finlit2* | | | | |
| Dependent variables | *DTAC* | *Signed_DTAC* | *POS_DTAC* | *NEG_DTAC* | *AQ* | *DTAC* | *Signed_DTAC* | *POS_DTAC* | *NEG_DTAC* | *AQ* |
| ***Financial literacy*** | **-0.001** | **-0.001** | **-0.002** | **0.001** | **-0.002** | **-0.041** | **-0.015** | **-0.047** | **0.030** | **-0.045** |
| | **(-9.84)***** | **(-9.63)***** | **(-9.36)***** | **(5.95)***** | **(-5.41)***** | **(-10.70)***** | **(-2.98)***** | **(-8.93)***** | **(6.25)***** | **(-5.11)***** |
| *Size* | 0.002 | -0.005 | 0.002 | -0.004 | 0.015 | 0.004 | -0.004 | 0.002 | -0.006 | 0.018 |
| | (3.85)*** | (-14.21)*** | (2.61)*** | (-6.20)*** | (10.55)*** | (4.77)*** | (-10.10)*** | (2.76)*** | (-6.83)*** | (9.23)*** |
| *MB* | -0.018 | -0.000 | -0.020 | 0.014 | -0.037 | -0.015 | 0.007 | -0.013 | 0.013 | -0.035 |
| | (-13.94)*** | (-0.20) | (-11.00)*** | (9.43)*** | (-12.97)*** | (-9.09)*** | (3.03)*** | (-5.42)*** | (7.12)*** | (-9.45)*** |
| *Growth* | 0.023 | 0.025 | 0.033 | -0.011 | 0.011 | 0.023 | 0.019 | 0.033 | -0.012 | 0.007 |
| | (19.97)*** | (13.70)*** | (20.78)*** | (-7.32)*** | (5.02)*** | (17.82)*** | (10.23)*** | (18.19)*** | (-7.18)*** | (2.77)*** |
| *Leverage* | 0.002 | 0.001 | 0.005 | 0.005 | -0.044 | 0.009 | 0.009 | 0.015 | 0.002 | -0.021 |
| | (0.59) | (0.41) | (1.42) | (1.88)* | (-7.16)*** | (3.33)*** | (2.85)*** | (4.20)*** | (0.73) | (-3.00)*** |
| *ROA* | -0.094 | 0.208 | -0.008 | 0.197 | -0.114 | -0.097 | 0.247 | 0.034 | 0.220 | -0.109 |
| | (-32.82)*** | (46.91)*** | (-2.14)** | (51.24)*** | (-18.94)*** | (-25.04)*** | (43.87)*** | (6.25)*** | (44.05)*** | (-13.70)*** |
| *BigN* | -0.006 | -0.008 | -0.003 | 0.004 | -0.006 | -0.003 | -0.010 | -0.003 | 0.000 | 0.010 |
| | (-3.44)*** | (-5.06)*** | (-1.75)* | (2.20)** | (-1.43) | (-1.86)* | (-5.62)*** | (-1.36) | (0.13) | (2.09)** |
| *σ(Sale)* | 0.064 | -0.016 | 0.066 | -0.056 | 0.113 | 0.064 | -0.021 | 0.058 | -0.061 | 0.081 |
| | (23.77)*** | (-4.47)*** | (18.74)*** | (-17.97)*** | (17.04)*** | (21.76)*** | (-5.49)*** | (14.70)*** | (-17.25)*** | (11.09)*** |
| *σ(CFO)* | 0.159 | 0.153 | 0.207 | -0.100 | 0.372 | 0.180 | 0.173 | 0.256 | -0.101 | 0.385 |
| | (36.18)*** | (21.71)*** | (35.94)*** | (-18.22)*** | (38.13)*** | (29.05)*** | (19.56)*** | (31.23)*** | (-13.07)*** | (28.28)*** |
| *Common* | 0.115 | 0.031 | 0.136 | -0.092 | 0.285 | | | | | |
| | (30.09)*** | (10.37)*** | (33.23)*** | (-20.78)*** | (30.79)*** | | | | | |
| *Rule of law* | 0.056 | 0.043 | 0.072 | -0.033 | 0.073 | 0.012 | 0.024 | 0.025 | 0.004 | -0.017 |
| | (8.03)*** | (7.33)*** | (10.43)*** | (-3.74)*** | (4.21)*** | (2.77)*** | (4.45)*** | (4.34)*** | (0.75) | (-1.92)* |
| *Corruption* | 0.029 | -0.012 | 0.014 | -0.043 | 0.041 | -0.006 | -0.005 | -0.016 | -0.002 | -0.027 |
| | (10.23)*** | (-3.69)*** | (3.87)*** | (-12.52)*** | (5.62)*** | (-2.01)** | (-1.31) | (-3.77)*** | (-0.62) | (-3.67)*** |
| *Enforce* | -0.011 | -0.008 | -0.013 | 0.009 | -0.022 | | | | | |
| | (-11.26)*** | (-9.64)*** | (-10.33)*** | (8.67)*** | (-7.63)*** | | | | | |
| *Antideal* | -0.135 | -0.069 | -0.177 | 0.093 | -0.390 | | | | | |
| | (-19.64)*** | (-11.77)*** | (-21.10)*** | (12.95)*** | (-21.16)*** | | | | | |
| *LGDP* | 0.014 | 0.003 | 0.021 | -0.007 | 0.074 | 0.030 | 0.008 | 0.031 | -0.021 | 0.018 |
| | (3.23)*** | (0.90) | (4.28)*** | (-1.36) | (6.25)*** | (6.82)*** | (1.52) | (4.81)*** | (-3.91)*** | (1.79)* |
| *SMTURN* | 0.000 | 0.000 | 0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | 0.000 | -0.000 |
| | (6.06)*** | (2.94)*** | (3.74)*** | (-6.65)*** | (-7.93)*** | (-0.61) | (-0.75) | (-0.13) | (0.48) | (-4.90)*** |
| *Trust* | -0.121 | -0.086 | -0.144 | 0.082 | -0.295 | -0.011 | -0.067 | -0.019 | 0.007 | -0.058 |
| | (-16.50)*** | (-11.76)*** | (-15.12)*** | (10.25)*** | (-13.21)*** | (-0.75) | (-4.29)*** | (-0.96) | (0.46) | (-1.54) |
| *News* | -0.041 | -0.013 | -0.048 | -0.029 | -0.082 | | | | | |
| | (-18.47)*** | (-6.94)*** | (-20.34)*** | (-11.02)*** | (-14.45)*** | | | | | |
| *IFRS* | -0.007 | 0.018 | -0.002 | 0.015 | -0.042 | -0.002 | 0.001 | 0.001 | 0.004 | 0.011 |
| | (-4.13)*** | (8.98)*** | (-0.75) | (8.05)*** | (-9.66)*** | (-1.90)* | (0.57) | (0.83) | (2.97)*** | (4.09)*** |
| *MSRIGHT* | -0.022 | -0.006 | -0.014 | 0.026 | -0.047 | -0.001 | 0.003 | 0.001 | 0.002 | -0.014 |
| | (-10.26)*** | (-3.40)*** | (-6.07)*** | (10.30)*** | (-8.82)*** | (-0.52) | (1.41) | (0.44) | (0.68) | (-3.42)*** |
| *EXREG* | -0.007 | 0.009 | -0.011 | 0.005 | 0.008 | -0.004 | -0.009 | -0.008 | -0.001 | 0.021 |
| | (-4.51)*** | (5.30)*** | (-5.43)*** | (2.80)*** | (1.95)* | (-3.03)*** | (-5.28)*** | (-4.26)*** | (-0.33) | (6.73)*** |
| *Population* | 0.016 | 0.005 | 0.019 | -0.013 | 0.040 | -0.016 | -0.067 | -0.037 | -0.036 | -0.056 |
| | (18.97)*** | (7.78)*** | (19.29)*** | (-13.76)*** | (17.71)*** | (-1.19) | (-3.93)*** | (-2.01)** | (-2.22)** | (-1.46) |
| Constant | 0.149 | 0.143 | 0.106 | -0.157 | -0.557 | -0.165 | 0.004 | -0.052 | 0.323 | -0.023 |
| | (3.42)*** | (4.09)*** | (2.35)** | (-2.90)*** | (-5.56)*** | (-2.93)*** | (0.07) | (-0.43) | (6.74)*** | (-0.00) |
| Observations | 269,518 | 269,518 | 133,215 | 136,303 | 238,902 | 199,448 | 199,448 | 97,541 | 101,907 | 174,409 |
| R-squared | 0.323 | 0.051 | 0.355 | 0.329 | 0.446 | 0.252 | 0.066 | 0.281 | 0.278 | 0.368 |

This table reports the regression results of the relation between financial literacy and discretionary accruals. Columns 1 to 5 show the results when financial literacy is proxied by *Finlit1* and Columns 6 to 10 show the results when financial literacy is proxied by *Finlit2*. In Columns (1) and (6), the dependent variable is *DTAC;* in Columns (2) and (7), the dependent variable is signed *DTAC*; in Columns (3) and (8), the dependent variable is positive *DTAC*; in Columns (4) and (9), the dependent variable is negative *DTAC*; and in Columns (5) and (10), the dependent variable is accruals quality, *AQ*. The standard errors of all regressions are clustered by firm and with industry and year fixed effects. In Columns 6 to 10, the standard errors are further clustered by country. Detailed definitions of all variables are provided in the Appendix. Coefficients of the year, industry, and country indicator variables are not tabulated for brevity. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

**TABLE 9**
**Relation between Corporate Governance and Financial Literacy**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | | | *Financial literacy = Finlit2* | | | |
| Dependent variables | *GSCORE* | *BDDIV* | *DUALITY* | *BDINP* | *GSCORE* | *BDDIV* | *DUALITY* | *BDINP* |
| ***Financial literacy*** | **0.377** | **0.011** | **0.011** | **0.010** | **3.196** | **0.07** | **0.089** | **0.405** |
| | **(10.00)***** | **(5.46)***** | **(3.43)***** | **(3.67)***** | **(5.45)***** | **(2.41)**** | **(1.95)*** | **(9.18)***** |
| *Size* | 1.242 | 0.060 | -0.175 | -0.187 | 1.531 | 0.056 | -0.188 | -0.155 |
| | (9.42)*** | (11.42)*** | (-18.60)*** | (-18.56)*** | (8.76)*** | (7.66)*** | (-16.63)*** | (-13.62)*** |
| *MB* | 0.013 | -0.006 | 0.138 | 0.110 | -0.164 | 0.001 | 0.253 | 0.095 |
| | (0.03) | (-0.31) | (3.97)*** | (2.81)*** | (-0.23) | (0.04) | (4.27)*** | (1.73)* |
| *Growth* | -3.377 | -0.146 | 0.077 | 0.028 | -3.642 | -0.084 | 0.060 | 0.033 |
| | (-9.76)*** | (-7.31)*** | (2.19)** | (0.80) | (-8.22)*** | (-3.41)*** | (1.43) | (0.80) |
| *Leverage* | 0.480 | 0.031 | 0.021 | -0.110 | 1.750 | 0.078 | 0.060 | -0.085 |
| | (0.56) | (0.77) | (0.27) | (-1.39) | (1.43) | (1.43) | (0.63) | (-0.96) |
| *ROA* | -3.243 | -0.096 | 0.191 | 0.338 | -3.942 | -0.144 | 0.276 | 0.351 |
| | (-2.91)*** | (-1.43) | (1.71)* | (2.97)*** | (-2.54)** | (-1.53) | (2.01)** | (2.65)*** |
| *BigN* | 3.068 | 0.117 | 0.140 | 0.034 | 7.516 | 0.330 | 0.413 | 0.352 |
| | (5.77)*** | (3.53)*** | (2.40)** | (0.72) | (16.38)*** | (12.85)*** | (10.39)*** | (10.29)*** |
| *σ(Sale)* | 2.146 | -0.036 | 0.077 | 0.175 | 3.053 | -0.055 | 0.133 | 0.372 |
| | (1.94)* | (-0.60) | (0.71) | (1.59) | (1.89)* | (-0.59) | (0.89) | (2.58)*** |
| *σ(CFO)* | -11.540 | -0.843 | 0.539 | -0.237 | -10.250 | -0.683 | 0.588 | -0.188 |
| | (-3.42)*** | (-4.51)*** | (1.81)* | (-0.82) | (-2.38)** | (-2.57)** | (1.72)* | (-0.58) |
| *Common* | -0.218 | -0.288 | -0.046 | 0.715 | | | | |
| | (-0.23) | (-4.62)*** | (-0.53) | (10.98)*** | | | | |
| *Rule of law* | 3.095 | 0.249 | -0.110 | 0.019 | -4.496 | 0.230 | -0.261 | -0.528 |
| | (2.14)** | (3.22)*** | (-0.77) | (0.19) | (-2.60)*** | (2.65)*** | (-1.94)* | (-4.55)*** |
| *Corruption* | -4.649 | -0.186 | -0.438 | -0.053 | 3.995 | -0.066 | -0.312 | 0.282 |
| | (-5.03)*** | (-3.33)*** | (-5.35)*** | (-0.73) | (3.63)*** | (-1.05) | (-3.14)*** | (3.44)*** |
| *Enforce* | -1.746 | 0.028 | -0.033 | -0.080 | | | | |
| | (-6.29)*** | (2.22)** | (-1.62) | (-4.30)*** | | | | |
| *Antideal* | -0.904 | 0.301 | 0.580 | -0.817 | | | | |
| | (-0.53) | (2.73)*** | (3.63)*** | (-6.86)*** | | | | |
| *LGDP* | 1.235 | 0.083 | -0.069 | 0.237 | 1.185 | 0.070 | -0.191 | 0.024 |
| | (1.14) | (1.49) | (-0.72) | (3.13)*** | (1.02) | (1.11) | (-1.85)* | (0.31) |
| *SMTURN* | -0.003 | 0.001 | -0.001 | 0.000 | -0.052 | -0.001 | -0.002 | -0.002 |
| | (-1.02) | (3.47)*** | (-2.82)*** | (0.33) | (-11.07)*** | (-3.60)*** | (-4.12)*** | (-7.02)*** |
| *Trust* | 2.443 | 0.049 | 0.439 | 0.688 | -0.558 | 0.268 | 0.383 | 0.394 |
| | (1.10) | (0.44) | (2.69)*** | (4.73)*** | (-0.24) | (2.41)** | (2.46)** | (2.89)*** |
| *News* | 1.244 | 0.250 | 0.105 | 0.038 | | | | |
| | (2.17)** | (7.42)*** | (2.02)** | (0.93) | | | | |
| *IFRS* | 1.696 | -0.071 | -0.031 | -0.091 | 1.181 | -0.012 | -0.067 | -0.176 |
| | (3.27)*** | (-3.20)*** | (-0.71) | (-2.10)** | (1.97)** | (-0.44) | (-1.43) | (-3.90)*** |
| *MSRIGHT* | -2.860 | -0.007 | 0.099 | -0.183 | -1.185 | -0.110 | 0.150 | -0.024 |
| | (-5.71)*** | (-0.26) | (2.04)** | (-4.94)*** | (-2.21)** | (-3.91)*** | (3.53)*** | (-0.63) |
| *EXREG* | -1.177 | 0.077 | 0.052 | -0.015 | -3.376 | 0.045 | 0.101 | 0.009 |
| | (-2.15)** | (2.63)*** | (1.13) | (-0.36) | (-6.19)*** | (1.63) | (2.17)** | (0.22) |
| *Population* | -1.062 | 0.006 | -0.131 | 0.065 | 0.209 | 0.054 | -0.121 | 0.028 |
| | (-5.60)*** | (0.54) | (-7.97)*** | (4.46)*** | (0.69) | (3.24)*** | (-4.93)*** | (1.34) |
| Constant | 31.061 | -1.541 | 5.347 | 3.276 | 37.178 | -1.565 | 6.303 | 4.104 |
| | (2.94)*** | (-2.86)*** | (5.44)*** | (4.29)*** | (3.19)*** | (-2.53)** | (5.96)*** | (5.06)*** |
| Observations | 21,660 | 11,630 | 18,237 | 18,237 | 15,587 | 7,834 | 12,822 | 12,822 |
| R-squared | 0.324 | 0.422 | 0.319 | 0.311 | 0.296 | 0.365 | 0.330 | 0.255 |

This table reports the regression results of the relation between financial literacy and corporate governance. Columns 1 to 4 show the results when financial literacy is proxied by *Finlit1* and Columns 5 to 8 show the results when financial literacy is proxied by *Finlit2*. In Columns (1) and (5), the dependent variable is *GSCORE;* In Columns (2) and (6), the dependent variable is *BDDIV*; in Columns (3) and (7), the dependent variable is *DUALITY*; in Columns (4) and (8), the dependent variable is *BDINP.* The standard errors of all regressions are clustered by firm and with industry and year fixed effects. In Columns 5 to 8, the standard errors are further clustered by country. Detailed definitions of all variables are provided in the Appendix. Coefficients of the year, industry, and country indicator variables are not tabulated for brevity. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

## TABLE 10
## Relation between Financial Reporting Quality/Market Reactions and Financial Literacy – The Role of Information Environment

**Panel A: Abnormal Stock Returns**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | | | *Financial literacy = Finlit2* | | |
| ***INFOENV=*** | *BigN* | *Size* | *INST* | *LISTED* | *BigN* | *Size* | *LISTED* |
| *Financial literacy* | 0.042 | 0.197 | 0.055 | 0.106 | 0.703 | 2.613 | 3.402 |
| | (6.35)*** | (8.38)*** | (7.42)*** | (4.19)*** | (3.38)*** | (5.93)*** | (3.93)*** |
| *Financial literacy*INFOENV* | **-0.011** | **-0.008** | **-0.354** | **-0.022** | **-0.372** | **-0.113** | **-0.434** |
| | **(-2.38)**** | **(-7.39)***** | **(-4.55)***** | **(-6.23)***** | **(-4.12)***** | **(-5.55)***** | **(-3.48)***** |
| *INFOENV* | 0.486 | 0.232 | 18.396 | 0.928 | -0.048 | 0.22 | 0.547 |
| | (2.28)** | (3.91)*** | (4.27)*** | (4.95)*** | (-0.53) | (8.40)*** | (3.54)*** |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 144,286 | 144,286 | 122,198 | 144,139 | 109,547 | 109,547 | 109,400 |
| R-squared | 0.009 | 0.010 | 0.009 | 0.009 | 0.017 | 0.017 | 0.017 |

**Panel B: Abnormal Trading Volume**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | *Financial literacy = Finlit1* | | | | *Financial literacy = Finlit2* | | |
| ***INFOENV=*** | *BigN* | *Size* | *INST* | *LISTED* | *BigN* | *Size* | *LISTED* |
| *Financial literacy* | 0.015 | 0.019 | 0.017 | 0.022 | 0.183 | 0.209 | 0.376 |
| | (9.82)*** | (3.73)*** | (10.12)*** | (7.99)*** | (3.20)*** | (2.34)** | (1.93)* |
| *Financial literacy*INFOENV* | **-0.004** | **0.002** | **-0.094** | **-0.002** | **-0.048** | **0.018** | **-0.033** |
| | **(-4.37)***** | **(6.72)***** | **(-6.30)***** | **(-5.67)***** | **(-2.54)**** | **(4.36)***** | **(-1.12)** |
| *INFOENV* | 0.309 | -0.181 | 6.179 | -0.000 | 0.054 | -0.126 | -0.000 |
| | (6.44)*** | (-14.26)*** | (7.59)*** | (-0.27) | (2.67)*** | (-23.25)*** | (-1.22) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 141,784 | 141,784 | 120,403 | 141,637 | 107,144 | 107,144 | 106,997 |
| R-squared | 0.035 | 0.035 | 0.034 | 0.035 | 0.041 | 0.041 | 0.040 |

This table reports the regression results of the role of information environment (*INFOENV*) at the firm level and the country level on the relation between financial literacy and market reactions. *INFOENV* at the firm level is proxied by *BigN* and *Size*, and *INFOENV* at the country level is proxied by *INST* and *LISTED*. Panel A shows the results for abnormal stock returns, and Panel B shows the results for abnormal trading volume. In each panel, Columns 1 to 4 show the results when financial literacy is proxied by *Finlit1* and Columns 5 to 7 show the results when financial literacy is proxied by *Finlit2*. The standard errors of all regressions are clustered by firm and with industry and year fixed effects. In Columns 5 to 7, the standard errors are further clustered by country. Detailed definitions of all variables are provided in the Appendix. Coefficients of the year, industry, and country indicator variables are not tabulated for brevity. ***, **, and * denote significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

## TABLE 11
### Path Analysis of the Relation between Market Reactions and Financial Literacy, Mediated by Earnings Quality and Corporate Governance

**Panel A: Mediated Path by Earnings Quality**

**Earnings Quality proxied by *LOSSAVOID***

| | *Financial literacy = Finlit1* | | *Financial literacy = Finlit2* | |
|---|---|---|---|---|
| | *CAR(-2,2)* | *ABNVOL* | *CAR(-2,2)* | *ABNVOL* |
| ρ(*Finlit, LOSSAVOID*)=$\alpha_1$ | -0.056*** | -0.056*** | -0.004 | -0.004 |
| | (-21.39) | (-21.06) | (-1.28) | (-1.16) |
| ρ(*LOSSVOID*, *MARKET*) =$\beta_1$ | -0.006** | -0.006** | -0.006** | -0.011*** |
| | (-2.27) | (-2.24) | (-2.09) | (-3.76) |
| Total mediated path of | 0.000** | 0.000** | 0.000 | 0.000 |
| *LOSSAVOID* = ($\alpha_1$*$\beta_1$) | (2.28) | (2.24) | (1.13) | (1.26) |
| Observations | 144,286 | 141,784 | 109,547 | 107,144 |

**Earnings Quality proxied by *DTAC***

| | *Financial literacy = Finlit1* | | *Financial literacy = Finlit2* | |
|---|---|---|---|---|
| | *CAR(-2,2)* | *ABNVOL* | *CAR(-2,2)* | *ABNVOL* |
| ρ(*Finlit, DTAC*)=$\alpha_1$ | -0.286*** | -0.289*** | -0.139*** | -0.139*** |
| | (-105.90) | (-106.3) | (-40.58) | (-40.08) |
| ρ(*DTAC*, *MARKET*) =$\beta_1$ | -0.006* | -0.010*** | -0.015*** | -0.002 |
| | (-1.83) | (-3.42) | (-4.23) | (-0.70) |
| Total mediated path of *DTAC* | 0.002** | 0.001*** | 0.002*** | 0.000 |
| = ($\alpha_1$*$\beta_1$) | (2.22) | (3.68) | (4.35) | (0.58) |
| Observations | 115,376 | 113,648 | 81,943 | 80,288 |

**Panel B: Mediated Path by Corporate Governance (*GSCORE*)**

| | *Financial literacy = Finlit1* | | *Financial literacy = Finlit2* | |
|---|---|---|---|---|
| | *CAR(-2,2)* | *ABNVOL* | *CAR(-2,2)* | *ABNVOL* |
| ρ(*Finlit, GSCORE*)=$\alpha_1$ | 0.066*** | 0.067*** | 0.056*** | 0.127*** |
| | (9.67) | (9.75) | (6.99) | (15.03) |
| ρ(*GSCORE*, *MARKET*) =$\beta_1$ | 0.015** | 0.013** | 0.009 | 0.059*** |
| | (2.20) | (2.00) | (1.17) | (6.99) |
| Total mediated path of | 0.001** | 0.001* | 0.001 | 0.008*** |
| *GSCORE* = ($\alpha_1$*$\beta_1$) | (2.14) | (186) | (1.11) | (6.33) |
| Observations | 21,137 | 21,081 | 15,270 | 13,507 |

**Panel C: Mediated Path by Earnings Quality and Corporate Governance**

**Earnings Quality proxied by *LOSSAVOID***

| | *Financial literacy = Finlit1* | | *Financial literacy = Finlit2* | |
|---|---|---|---|---|
| | *CAR(-2,2)* | *ABNVOL* | *CAR(-2,2)* | *ABNVOL* |
| ρ(*Finlit, LOSSAVOID*)=$\alpha_1$ | -0.044*** | -0.044*** | -0.015* | -0.015* |
| | (-6.42) | (-6.44) | (-1.79) | (-1.83) |
| ρ(*LOSSAVOID*, *MARKET*) =$\beta_1$ | -0.034*** | -0.004 | -0.041*** | -0.005 |
| | (-4.94) | (-0.59) | (-5.09) | (-0.63) |
| ρ(*Finlit, GSCORE*)=$\alpha_2$ | 0.066*** | 0.067*** | 0.056*** | 0.056*** |
| | (9.67) | (9.75) | (6.99) | (6.98) |
| ρ(*GSCORE*, *MARKET*) =$\beta_2$ | 0.014** | 0.013** | 0.008*** | 0.012 |
| | (2.11) | (2.01) | (1.03) | (1.53) |
| Total mediated path of *LOSSAVOID* = ($\alpha_1$*$\beta_1$) | 0.001*** | 0.000 | 0.001* | 0.000 |
| | (3.92) | (0.58) | (1.74) | (0.58) |
| Total mediated path of *GSCORE* = ($\alpha_2$*$\beta_2$) | 0.001** | 0.001* | 0.000 | 0.001 |
| | (2.01) | (1.86) | (0.99) | (1.46) |
| Observations | 21,137 | 21,081 | 14,869 | 15,218 |

**Earnings Quality proxied by *DTAC***

| | *Financial literacy = Finlit1* | | *Financial literacy = Finlit2* | |
|---|---|---|---|---|
| | *CAR(-2,2)* | *ABNVOL* | *CAR(-2,2)* | *ABNVOL* |
| ρ(*Finlit, DTAC*)=$\alpha_1$ | -0.149*** | -0.227*** | -0.066*** | -0.127*** |
| | (-19.85) | (-31.20) | (-7.12) | (-13.79) |
| ρ(*DTAC*, *MARKET*) =$\beta_1$ | -0.024*** | -0.028*** | -0.015* | -0.040*** |
| | (-3.11) | (-3.73) | (-1.65) | (-4.32) |
| ρ(*Finlit, GSCORE*)=$\alpha_2$ | 0.058*** | 0.059*** | 0.059*** | 0.059*** |
| | (7.60) | (7.70) | (6.36) | (6.33) |
| ρ(*GSCORE*, *MARKET*) =$\beta_2$ | 0.016** | 0.024*** | 0.020** | 0.001 |
| | (2.08) | (3.30) | (2.11) | (0.12) |
| Total mediated path of *DTAC* = ($\alpha_1$*$\beta_1$) | 0.004*** | 0.006*** | 0.001* | 0.005*** |
| | (3.15) | (3.82) | (1.65) | (4.14) |
| Total mediated path of *GSCORE* = ($\alpha_2$*$\beta_2$) | 0.001** | 0.001*** | 0.001** | 0.000 |
| | (2.02) | (2.92) | (2.04) | (0.11) |
| Observations | 17,055 | 17,012 | 11,413 | 11,374 |

The table reports the results from a path analysis. The path analysis examines the effect of financial literacy on market reactions (*MARKET*), through financial reporting quality (measured by either *LOSSAVOID* or *DTAC*) and corporate governance (measured by *GSCORE*). *MARKET* is measured by either *CAR(-2,2)* or *ABNVOL*. Panel A reports the results for the mediating path of financial reporting quality measured by *LOSSAVOID* and *DTAC*. Panel B reports the results for the mediating path measured by *GSCORE*. Panel C reports the results for the multi-path analysis involving both financial reporting quality and corporate governance. ρ(X1, X2) represents the standardized path coefficient. The t-statistics of the coefficients are reported in parentheses. We estimate the following model:

$LOSSAVOID/DTAC = \alpha_0 + \alpha_1\ Finlit1/Finlit2 + \alpha' X + \varepsilon$
$GSCORE = \alpha_0 + \alpha_2\ Finlit1/Finlit2 + \alpha' X + \varepsilon$
$MARKET = \beta_0 + \beta_1\ LOSSAVOID/DTAC + \beta_2\ GSCORE + \alpha' X + \varepsilon$

The path coefficient $\alpha 1*\beta 1$ is the magnitude of the path from financial literacy to market reactions mediated through financial reporting quality, while the path coefficient $\alpha 2*\beta 2$ is the magnitude of the path from financial literacy to market reactions mediated through corporate governance. The significance of the mediated effect is estimated using the Sobel (1982) test statistic. X is the set of controls used in the main regressions. The table reports the path coefficients of interest. Detailed definitions of all variables are provided in the Appendix. *, **, and *** denote significance at the 10%, 5%, and 1% levels (two-tailed), respectively. The t-statistics reported in parentheses are based on heteroscedasticity robust standard errors.