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On the association between strategic institutional ownership and earnings quality: Does investor protection strength matter?

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ABSTRACT

The aim of this study is to examine: (i) whether strategic institutional ownership is associated with better earnings quality at the international level and (ii) whether this relationship varies with the strength of investor protection. Using firm level data from 41 different countries, we document a positive association between strategic institutional ownership and firm earnings quality. More importantly, we find that the documented association is economically more significant in countries with stronger investor protection. Our results are robust to a battery of robustness tests. We interpret our findings as evidence that the monitoring role played by institutional investors is shaped by the degree of investor protection at the country level.

1. Introduction

The aim of this study is to examine: (i) whether strategic institutional ownership is positively associated with earnings quality at the international level and (ii) whether this relationship varies with the strength of investor protection at the country level.

Our motivation stems from two strands of literature. First, several studies show that institutional investors, in particular dedicated ones, are beneficial for U.S. firms. For instance, institutional ownership is positively associated with firm financial strength (Chung et al., 2015), earnings quality (Rajgopal et al., 2002), pay performance sensitivity (Hartzell and Starks, 2003); and dividend payment (Crane et al., 2016). Further, it is negatively associated with real-activities based earnings management (Bushee, 1998; Roychowdhury, 2006; Zang, 2012) and total executive compensation (Hartzell and Starks, 2003). Although there is extensive evidence showing that institutional investors, in particular dedicated ones, play a monitoring role in the U.S. context, empirical research seldom examines whether such roles exist elsewhere, due in part to data availability.

The second relevant strand in the literature concerns studies that argue that country level institutional factors matter to financial reporting quality. For instance, Ball et al. (2000) find that earnings are significantly more timely in common law countries than in code law countries, and Leuz et al. (2003) document a negative association between earnings management and the degree of investor protection at the country level. The channels through which investor protection can impact earnings quality remain an open question, however. Leuz et al. (2003) attribute their findings to differences in firms' incentive to manage earnings. The authors argue that managers of firms located in strong investor protection countries have less ability to acquire private control benefits, which lowers their incentive to manage earnings. Francis and Wang (2008) show that a strong investor protection regime is associated with higher

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earnings quality only for firms with high audit quality. They contend that as the investor protection regime becomes stricter, the likelihood that client misreporting is detected and auditors are punished, increases, thus weakening auditor incentives to abide by firm earnings management behavior. More recently, Ben-Nasr et al. (2015) find that while state ownership is associated with lower earnings quality, foreign ownership is associated with higher earnings quality. The positive association between foreign ownership and earnings quality is limited to countries with more stable governments and a lower risk of government expropriation.

In this study, we argue that the investor protection regime's strength is likely to affect the association between earnings quality and institutional ownership. On one hand, earnings quality is already high in strong investor protection countries (Leuz et al., 2003); as such, institutional investors have little roles to play in improving earnings quality. Conversely, there is more demand for high quality financial reporting in weak investor protection countries. According to this argument, institutional investors are likely to have a stronger effect on earnings quality in countries with lower investor protection. On the other hand, the ability and incentive of institutional investors to monitor firm managers is unlikely to be uniform across countries. In countries with strong investor protection, institutional investors are endowed with higher incentives and ability to monitor managers, thus resulting in a stronger association between institutional ownership and earnings quality in such countries. Given the above conflicting arguments, it is an empirical question whether the association between institutional ownership and earnings quality is stronger or weaker in countries with better investor protection. We study this research question by examining the effect of strategic institutional ownership, the percentage of total shares in issue held as long term strategic holdings by investment banks or institutions seeking long term return, on earnings quality in a panel of 41 countries.

Following Chaney et al. (2011), we use the standard deviation of the performance-adjusted current accruals (REDCA_5y) as our main proxy of earnings quality, with higher levels indicating lower earnings quality.[1] The method used to derive discretionary accruals is similar to that used by Ashbaugh et al. (2003). Also, similar to Chaney et al. (2011), we focus on the variability of current discretionary accruals instead of their level, for two reasons: (i) we do not have a particular prediction about the direction of the reporting bias in current accruals and (ii) the variability of unexplained accruals is a better measure of earnings quality than their level, for firms with consistently large unexplained accruals (Francis et al., 2005).

Using this earnings quality measure, we find that institutional ownership is positively associated with earnings quality. In particular, our results indicate that a one standard deviation increase in institutional ownership is associated with a 5.1% increase in earnings quality across all countries.[2] More importantly, we distinguish between weak versus strong investor protection regimes, and examine whether the documented association between earnings quality and institutional ownership is different across jurisdictions. We use several proxies of investor protection, namely: (1) country legal origin (common law versus code law); (2) the anti-self-dealing index developed by Djankov et al. (2008); and (iii) a combined index composed of three indices developed by La Porta et al. (2006): i.e., disclosure level, liability standard, and public enforcement of securities laws. We find that the association between institutional ownership and earnings quality is stronger in countries with higher quality investor protection regimes. In fact, a one standard deviation increase in strategic institutional ownership is associated with a 6.1% increase in earnings quality in high investor protection countries, versus only a 1.4% increase in earnings quality in low investor protection countries, where the investor protection is measured by the legal origin.[3] The Chow-test statistic suggests that these estimates are also statistically different from each other at the one percent level.

We perform a battery of robustness checks. Overall, our results reveal that institutional ownership is associated with higher earnings quality, and this association is stronger in jurisdictions with strong investor protection. These findings suggest that institutional investors have more incentive and/or are more able to perform their monitoring role in countries with strong investor protection.

This study makes several contributions to the literature. First, while there is a large body of research on institutional ownership and earnings quality in the U.S. context (e.g., Rajgopal et al., 2002; Bushee, 2001; Burns et al., 2010; Chung et al., 2015), international studies are scarce, partially due to data availability issues. The evidence from the U.S. remains parochial without the ability to generalize to other markets. We fill this void in the literature by exploring this relationship internationally. Second, we add to the growing literature on the importance of reinforcing country level investor protection. We provide evidence that institutional investors exercise a better monitoring role in countries with strong investor protection regimes. Third, Leuz et al. (2003) show that earnings management is lower in countries with strong investor protection. They attribute their findings to the lower incentive for managers to manipulate earnings in strong investor protection countries due to limited ability to acquire private benefits. While their results suggest that the degree of investor protection shapes managerial incentives to manipulate earnings, our results suggest that the degree of investor protection also shapes the ability of institutional investors to perform their monitoring roles. Our findings corroborate Francis and Wang's (2008) argument that the effect of investor protection on earnings quality is an indirect one.

The rest of the paper is organised as follows: the next section briefly reviews the related literature, and develops the hypotheses. Section 3 describes the data and methodology. Sections 4 and 5 present the results and robustness tests, respectively. Finally, the last Section concludes the study.

[1] In Table 6, we report the results using several other earnings quality measures, and our findings still hold.

[2] The mean of earnings quality is 0.10, and the standard deviation of strategic institutional ownership is 0.13, for the full sample. With the most conservative estimated coefficient of −0.0394 (with country fixed effect), a standard deviation increase in strategic institutional ownership is associated with 5.1% (0.13 ∗ (−0.0394)/0.10) increase in earnings quality change.

[3] The standard deviation for strategic institutional ownership is 0.16 and 0.06 for common law and code law markets, respectively. And the mean of earnings quality is 0.12 and 0.08 for common law and code law markets, respectively. With the estimated coefficient of −0.0460 and −0.0184 for these two markets, the impact in common law countries is calculated as 0.16 ∗ (−0.0460)/0.12 = −6.1%, and in code law countries: 0.06 ∗ (−0.0184)/0.08 = −1.4%.

2. Literature review and hypotheses development

2.1. Institutional ownership and accounting quality

The extant literature on accounting offers two contrasting views regarding the association between institutional ownership and earnings management.[4] On one hand, a number of articles in the financial press and research literature suggest that institutional investors pressure managers to achieve short-term profit goals at the expense of long-term value (e.g., Coffee, 1991; Jacobs, 1991), leading to more earnings management in firms with higher institutional ownership. Guthrie and Sokolowsky (2010) find evidence that firms tend to manipulate their earnings around seasoned equity offering in the presence of large outside block holdings. On the other hand, institutional investors are often viewed as better informed than individual investors. They can look beyond current earnings, thus creating less incentive for firms to manipulate earnings. Also, due to their superior access to databases and analytical tools, it is less costly for institutions to engage in in-depth firm analysis (Hope, 2013). Moreover, because of their large stakes in the firm, institutional investors are likely to monitor managers.

There are two main channels through which large institutional investors can affect firm decisions: voice and exit (e.g., McCahery et al., 2016; Schmidt and Fahlenbrach, 2017). Indeed, institutional investors can actively interact with management to voice their preferences (Voice) or leave the firm by selling shares (Exit). McCahery et al. (2016) provide survey evidence that institutional investors use both and that these governance mechanisms are viewed as complementary devices, with intervention typically occurring prior to a potential exit.

Prior literature (Carleton et al. 1998; Becht et al. 2009; Dimson et al. 2015; McCahery et al., 2016) identifies several channels for voice engagements: behind the scenes channel (discussions with management and board of directors), voting against management and shareholders proposals. In a recent survey study by McCahery et al. (2016), 63% of the respondents indicated that they had used the discussion management tool as an engagement channel and 45% had conducted discussions with members of the board in the absence of management. Moreover, 53% of the respondents used voting against management as an engagement channel and 16% submitted shareholders proposals. Building on prior literature, we argue that institutional investors can improve earnings quality mainly through two channels: private discussions with management and board of directors and voting against management.

Consistent with the monitoring role played by institutional investors, Hartzell and Starks (2003), for instance, find that institutional ownership is negatively related to total executive compensation, and positively associated with pay-for-performance sensitivity. Bricker and Markarian (2015) show that institutional owners limit the benefits of insider trading and Chung et al. (2015) provide evidence that ownership by long-term and large institutions improve a firm's financial strength, whereas short-term institutions deteriorate it. More recently, Crane et al. (2016) show that higher institutional ownership causes an increase in the distribution of dividends and Boubaker et al. (2017) find that long term institutional ownership is positively associated with corporate social responsibility.

There is also evidence that the monitoring role played by institutional investors results in higher earnings quality. For example, Rajgopal and Venkatachalam (1997) document a negative association between institutional ownership and discretionary accruals, and Rajgopal et al. (2002) show that as institutional ownership increases, accrual quality increases. The latter study also documents that stock prices tend to reflect a greater portion of future earnings relative to current earnings, consistent with the view that institutions are better able to look beyond current earnings than individual investors, which creates fewer incentives for earnings management.

Several studies show that the association between earnings quality and institutional investors varies with institutional investors categories. Collins et al. (2003) indicate that stock prices reflect the persistence of accruals more accurately in firms with a high level of institutional ownership and a minimum threshold level of active institutional traders, and Burns et al. (2010) find that only short-term oriented institutional investors are associated with more discretionary accruals management. Overall, there is evidence supporting the notion that, in the U.S. context, long-term institutional investors are associated with higher earnings quality.

In this study, we examine whether earnings quality is also positively associated with strategic (long-term) institutional ownership at the international level. Strategic institutional investors' ownership is defined by the Datastream database as, "the percentage of total shares in issue held as long term strategic holdings by investment banks or institutions seeking long term return". While some institutional investors can play a passive role, and decide to exit firms with low performance or governance issues, we argue that strategic institutional investors are likely to play an active role and monitor firm managers. This occurs for two reasons: (i) strategic institutional investors have a large stake in the firm (more than 5%), and (ii) they are long term focussed. The relatively high ownership stake held by such investors is likely to result in low market liquidity concerns, hence fewer incentives for these investors to exit the firm (Brockman et al., 2009). Moreover, strategic investors are long-term oriented and seek long-term returns; thus, they are likely to have incentive to monitor firm managers. While the relatively high ownership stake and long-term orientation of strategic institutional investors are likely to result into an active monitoring role, it is possible that such investors would not be involved in monitoring managers because of the high monitoring costs, for instance. Moreover, assuming that strategic institutional investors have the incentive and ability to monitor, it is possible that the monitoring role does not translate into higher earnings quality. They can monitor the firm through insider communication without requiring high quality reporting. Ball et al. (2003), for

[4] The accounting literature provides several motivations for earnings management, including meeting or beating earnings benchmarks (Burgstahler and Dichev, 1997; Brown and Caylor, 2005), enhancing reputation with stakeholders (Bowen et al., 1995; Brown and Caylor, 2005), increasing bonus compensation, reducing the probability of violating debt covenants (Watts and Zimmerman, 1990) and smoothing earnings (Strong and Meyer, 1987; Elliott and Shaw, 1988; Kinney and Trezevant, 1997).

instance, argue that in code law countries, information asymmetry is resolved through insider communication, resulting in lower demand for high earnings quality in such countries. Thus, our first hypothesis states that:

H1. Strategic institutional ownership is not associated with earnings quality.

2.2. Legal environment and earnings quality

Following the work by Shleifer and Vishny (1997), La Porta et al. (1998, 2000, 2006), several studies examine the effect a country's institutional environment has on financial reporting quality. Ball et al. (2000) find that earnings are significantly more timely in common law countries than in code law countries. They argue that information asymmetry in code law countries is likely to be resolved by closer relations with major stakeholders. Ball et al. (2003) examine accounting practices in four East Asian countries, and conclude that, besides accounting standards, managers' and auditors' incentives – which are influenced by the underlying economic and political factors – play a key role in shaping the quality of financial statements. Leuz et al. (2003) examine systematic differences in earnings management across countries; they document a negative association between earnings management and the degree of investor protection. Haw et al. (2004) show that the divergence between control and cash flow rights produces lower quality accounting information in countries with weaker statutory protection of minority rights. Francis and Wang (2008) document that the role of investor protection on earnings quality around the world is mediated by the incentives of high quality auditors to enforce better earnings quality as the investor protection regime becomes stricter. More recently, Houque et al. (2012) examine the joint effect of IFRS adoption and investor protection on earnings quality in 46 countries, and find that earnings quality increases with mandatory IFRS adoption when a country's investor protection regime provides stronger protection.

In summary, several studies show that investor protection strength is central to firms' accounting quality. We argue that the investor protection regime modulates the relationship between institutional ownership and earnings quality. However, the direction this legal environment modulation takes (either strengthening or weakening monitoring) is not clear a priori. First, the degree of investor protection can affect the demand for high earnings quality. Previous findings in the literature show that earnings quality is higher in countries with strong investor protection, compared to those with weak investor protection. Thus, institutional investors have a lesser role to play in improving earnings quality in countries with strong investor protection. Conversely, institutional investors are likely to have a better value-added and assistance in improving earnings quality in countries with low investor protection, where earnings quality is low. This argument leads to a stronger positive association between earnings quality and institutional ownership in countries with weaker investor protection. Second, the degree of investor protection can affect the supply of high quality reporting, by affecting both the incentive and the ability of institutional investors to monitor firm managers. Hartzell and Starks (2003) argue that monitoring by outside shareholders, including institutional investors, is costly. For instance, there are potential liquidity costs (Coffee, 1991; Bhide, 1994; Kahn and Winton, 1998; Maug, 1998; Noe, 2002) and free rider problems arising from the private cost of monitoring (Grossman and Hart, 1980). The costs of gathering information about firms and managers are likely to be higher in low investor protection countries; in such countries, the information environment quality of the firm is low. For instance, Brockman and Chung (2003) find wider bid-ask spreads and thinner depths in low investor protection regimes. Thus, in such countries, institutional investors have to spend more money and effort to monitor managers compared to firms located in countries with strong investor protection. Further, in weak investor protection countries, firm insiders have the ability to manipulate earnings without severe legal consequences, therefore reducing the disciplining role played by institutional investors, and lowering their incentive to monitor. Lastly, in low investor protection countries, institutional investors can resolve information asymmetry problems using insider communications, without requiring higher financial reporting quality. These arguments lead to a stronger positive association between earnings quality and institutional ownership in countries with higher quality investor protection. Given the above conflicting arguments, our second testable hypothesis stated in its null form is:

H2. There is no difference in the association between strategic institutional holdings and earnings quality across different investor protection regimes.

3. Data and methodology

3.1. Data sources

We gather our accounting data from *WorldScope* database, and stock return and institutional holding data from *Datastream* database. We include all companies covered by both databases, except financial firms (SIC 6000-6999). Moreover, to be included in the sample, a firm must have all required variables for data analysis. We further exclude from the analysis countries with less than 20 firms. Finally, we exclude countries in which no single firm has any strategic institutional ownership.[5]

According to the *Datastream manual*, in May 2002, Thomson Reuters provided first class strategic holding information for over 45,000 issues, via the free float data types available in *Datastream*. The free float number of shares represents the total amount of shares available to ordinary investors, and is expressed as a percentage of the total number of shares. Thus, our time period starts in

[5] Among the countries with the necessary required variables for this study, three countries have no single firm with any strategic institutional ownership: Nigeria, Pakistan, and Sri Lanka. Adding these countries back to the sample does not change our results in a material way.

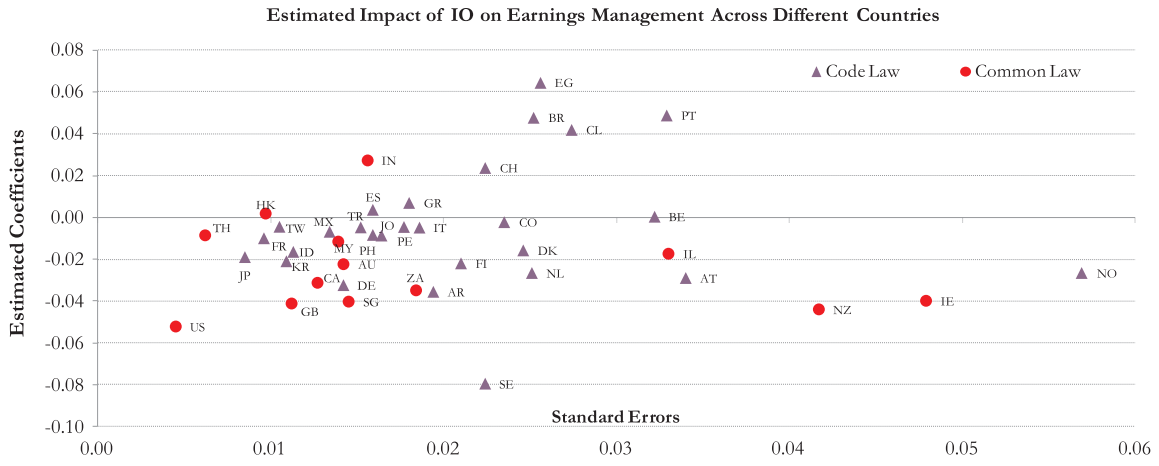

Fig. 1. Estimated relationship between Strategic IOs and Earnings Quality at the individual country level. This figure presents the OLS estimation of the impact of strategic institutional investors on a firm's earnings quality. The y-axis shows the estimated coefficients a_1 of the following regression at the individual country level and the x-axis reports the corresponding standard errors:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

Firm controls are the same as in Table 5. The definition of all the firm control variables can be found in Appendix B. All the regressions are conducted with year and industry fixed effects to control for macro-economic shocks, and industry level fixed effects. Standard errors are clustered at the firm dimension. To make it comparable across individual countries, all the variables are standardized across all the sample years within a country. The corresponding country code is presented in Appendix A.

2004 in order to allow a one-year lag to reduce endogeneity problems, and ends in 2013.[6] *Datastream* database differentiates between several strategic holdings (larger than 5%) by investor type: government holding, cross-holding by other corporations, foreign institutional holdings, employee holdings, and holdings by investment companies.[7] This study's focus is on investment company holdings. *Datastream* defines investment companies' ownership as, "*the percentage of total shares in issue held as long term strategic holdings by investment banks or institutions seeking long term return.*"

3.2. Earnings quality measurement

Following Chaney et al. (2011), we use the 5-year standard deviation of performance-adjusted current accruals (REDCA_5y) as our main proxy of earnings quality. REDCA is computed as the difference between total current accruals[8] (TCA) and expected performance (ROA) adjusted total current accruals (EPTCA):

$$REDCA_{i,t} = TCA_{i,t} - EPTCA_{i,t} \quad (1)$$

where

$$TCA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta(Cash)_{i,t} + \Delta SDCPLD_{i,t} \quad (2)$$

$$EPTCA_{i,t} = \hat{\beta}_1(1/TA_{i,t-1}) + \hat{\beta}_2(\Delta netsales_{i,t} - \Delta AR_{i,t})/TA_{i,t-1} + \hat{\beta}_3 ROA_{i,t-1} + \hat{\beta}_4 Inflation_{i,t-1} + \hat{\beta}_5 GDPgrowth_{i,t-1} \quad (3)$$

where $\hat{\beta}_i$ are the estimated coefficients from the following regression:

$$TCA_{i,t} = \beta_1(1/TA_{i,t-1}) + \beta_2 \Delta netsales_{i,t}/TA_{i,t-1} + \beta_3 ROA_{i,t-1} + \beta_4 Inflation_{i,t-1} + \beta_5 GDPgrowth_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

CA: Current Assets (WC02201) are the sum of cash and equivalents, receivables, inventories, prepaid expenses and other current assets.

CL: Current Liabilities (WC03101) represent debt or other obligations that the company expects to satisfy within one year.

Cash: (WC02001) is the sum of cash and short-term investments.

SDCPLD: Short-term debt and current portion of long term debt (WC03051) is the portion of financial debt payable within one year,

[6] The endogeneity issue relates to the fact that the empirical finding of a positive association between earnings quality and strategic institutional ownership might stem from other sources, i.e., strategic institutional investors tilt their portfolios towards firms with higher earnings quality (selection bias). Taking a one-year lag does not solve this issues completely and we leave the details of addressing such issues in the robustness test section.

[7] The data are derived from 11 primary sources, including SEC filings (such as schedule 13D and form 13FD) and the UK Register, annual and interim reports, stock exchanges, official regulatory bodies, third party vendors, company websites, and approved news source and direct contact with company investor relations departments (Datastream Manual).

[8] We use current accruals instead of total accruals because prior research suggests that management has more discretion over current accruals (e.g., Becker et al., 1998).

Table 1
Country level descriptive statistics.

Nation	No. Firms	No. Insti-Holding	Ratio-of-Holding	Anti-dealing	DIS_REQ	LIT_STD	PUB_ENF	Combined
Code law								
ARGENTINA	76	3	0.04	0.34	0.50	0.22	0.58	0.00
AUSTRIA	71	21	0.30	0.21	0.25	0.11	0.17	0.00
BELGIUM	139	50	0.36	0.54	0.42	0.44	0.15	0.00
BRAZIL	358	107	0.30	0.27	0.25	0.33	0.58	0.00
CHILE	160	80	0.50	0.63	0.58	0.33	0.60	0.00
COLOMBIA	34	6	0.18	0.57	0.42	0.11	0.58	0.00
DENMARK	157	75	0.48	0.46	0.58	0.55	0.37	0.00
EGYPT	68	3	0.04	0.20	0.50	0.22	0.30	0.00
FINLAND	144	104	0.72	0.46	0.50	0.66	0.32	1.00
FRANCE	855	391	0.46	0.38	0.75	0.22	0.77	1.00
GERMANY	817	249	0.30	0.28	0.42	0.00	0.22	0.00
GREECE	315	29	0.09	0.22	0.33	0.50	0.32	0.00
INDONESIA	330	3	0.01	0.65	0.50	0.66	0.62	2.00
ITALY	269	121	0.45	0.42	0.67	0.22	0.48	0.00
JAPAN	4063	2537	0.62	0.50	0.75	0.66	0.00	1.00
JORDAN	25	2	0.08	0.16	0.67	0.22	0.60	0.00
KOREA (SOUTH)	1247	375	0.30	0.47	0.75	0.66	0.25	1.00
MEXICO	127	36	0.28	0.17	0.58	0.11	0.35	0.00
NETHERLANDS	175	112	0.64	0.20	0.50	0.89	0.47	1.00
NORWAY	247	136	0.55	0.42	0.58	0.39	0.32	0.00
PERU	71	2	0.03	0.45	0.33	0.66	0.78	2.00
PHILIPPINES	161	11	0.07	0.22	0.83	1.00	0.83	3.00
PORTUGAL	64	26	0.41	0.44	0.42	0.66	0.58	1.00
SPAIN	137	57	0.42	0.37	0.50	0.66	0.33	1.00
SWEDEN	474	226	0.48	0.33	0.58	0.28	0.50	0.00
SWITZERLAND	223	111	0.50	0.27	0.67	0.44	0.33	0.00
TAIWAN	1606	417	0.26	0.56	0.75	0.66	0.52	1.00
TURKEY	204	8	0.04	0.43	0.50	0.22	0.63	1.00
Common law								
AUSTRALIA	1856	808	0.44	0.76	0.75	0.66	0.90	2.00
CANADA	1698	704	0.41	0.64	0.92	1.00	0.80	3.00
HONG KONG	877	260	0.30	0.96	0.92	0.66	0.87	3.00
INDIA	2090	404	0.19	0.58	0.92	0.66	0.67	3.00
IRELAND	71	45	0.63	0.79	0.67	0.44	0.37	0.00
ISRAEL	158	90	0.57	0.73	0.67	0.66	0.63	2.00
MALAYSIA	991	195	0.20	0.95	0.92	0.66	0.77	3.00
NEW ZEALAND	135	33	0.24	0.95	0.67	0.44	0.33	0.00
SINGAPORE	646	362	0.56	1.00	1.00	0.66	0.87	3.00
SOUTH AFRICA	366	173	0.47	0.81	0.83	0.66	0.25	2.00
THAILAND	456	20	0.04	0.81	0.92	0.22	0.72	2.00
UNITED KINGDOM	2172	1590	0.73	0.95	0.83	0.66	0.68	3.00
UNITED STATES	8631	4650	0.54	0.65	1.00	1.00	0.90	3.00

This table displays descriptive statistics at the country level. The second column provides the number of firms in each country. The third and fourth columns report the number of firms and ratio of firms that have institutional ownership, respectively. Columns 5–9 present investor protection indices at the country level; in column 5, investor protection is proxied by the anti-self-dealing index (Anti-dealing), which is taken from Djankov et al. (2008) (http://post.economics.harvard.edu/faculty/shleifer/dataset). In columns 6–8, we report the disclosure (DIS_REQ), liability (LIT_STD) and public enforcement (PUB_ENF) indices, which are taken from La Porta et al. (2006). The last column reports a combined index of disclosure, litigation and public enforcement indices. The combined index takes the value of 0 if the three indices are all below the sample median, the value of 1 if only one index is larger than the sample median, the value of 2 if only 2 indices are greater than the sample medians, and the value of 3 if the 3 indices are all above the sample medians. The sample is segmented into code-law markets and common-law markets.

including current portion of long-term debt and sinking fund requirements of preferred stock or debentures.

TA: Total Assets (WC02999) are total assets.

netsales (WC01001) are defined as gross sales and other operation revenues less discounts, returns, and allowances.

ROA: Return on Asset (ROA) is computed as operating income after taxes (WC08326) scaled by total assets (TA).

Δ *AR* represents the change in accounts receivables (WC04825).

Following Chaney et al. (2011), we use the inflation rate (*inflation*) and the growth in real per capita GDP (*GDPgrowth*)[9] as controls for the business cycle in each country. The model is estimated for each of the 49 Fama-French industries (Fama and French, 1997).

[9] The GDP and Inflation data is retrieved from the International Monetary Fund's World Economic Outlook Database.

Table 2
Spearman correlation between country level factors and Institutional Ownership levels.

	Insti-Own	Common law	Anti-dealing	DIS_REQ	LIT_STD	PUB_ENF
Common Law	0.29					
	(0.05)					
Anti-dealing	0.27	0.72				
	(0.08)	(< 0.01)				
DIS_REQ	0.23	0.50	0.61			
	(0.13)	(< 0.01)	(< 0.01)			
LIT_STD	0.30	0.32	0.35	0.46		
	(0.05)	(0.04)	(0.02)	(< 0.01)		
PUB_ENF	0.27	0.39	0.39	0.31	0.35	
	(0.08)	(< 0.01)	(< 0.01)	(0.04)	(0.02)	
Combined	0.37	0.52	0.59	0.46	0.72	0.67
	(0.01)	(< 0.01)	(< 0.01)	(< 0.01)	(< 0.01)	(< 0.01)

This table presents the Spearman correlation matrix between different measures of country level institutional factors, as well as institutional ownership. Each country has only one observation to construct the correlation table (N = 41). Insti-Own is the median value of institutional ownership in a particular country. Common law is a dummy variable, which equals 1 for common law countries. Anti-dealing is the anti-self-dealing index developed by Djankov et al. (2008). DIS_REQ, LIT_STD and PUB_ENF are the disclosure, the liability, and the public enforcement indices developed by La Porta et al. (2006). Combined is the combination of DIS_REQ, LIT_STD, and PUB_ENF.

3.3. Regression model

To test our first hypothesis, we regress earnings quality on strategic institutional holdings after controlling for a number of variables based on prior research. The regression model is as follows:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t} \quad (5)$$

$REDCA5y_{i,t}$: the 5 year standard deviation of REDCA.
Strategic IO: the ownership by strategic institutional investors.
Firm controls are variables that have been shown to affect earnings quality.
f_i stands for year fixed, industry fixed, or country fixed effect, and their different combinations.

First, we control for firm size as prior research documents lower levels of accruals for larger firms (Gaio, 2010). Firm size is proxied by the natural log of market capitalization (WC07210). Second, we control for the operating cycle because firms with longer operating cycles have larger accrual accounts, and a longer period for accruals to reverse, and hence have greater flexibility for accrual management (Francis et al., 2004; Gaio, 2010). The operating cycle is computed as the log of the sum of days in receivable (WC08131) and days in inventory (WC08126). Third, we control for leverage, as firms with more debt have more incentives to manage earnings to avoid violation of debt covenants. *Leverage* is defined as total debt to total assets (WC08236). Fourth, we control for growth opportunities because firms with more growth opportunities have more incentive to manage earnings (e.g., Barth et al., 1999; Skinner and Sloan, 2002). Growth opportunities are proxied by market to book ratio, measured as the ratio of market capitalization (WC07210) to common shareholders' equity (WC03501). We also control for annual growth of sales. Finally, we control for volatility (Hribar and Nichols, 2007; Gaio, 2010) using: (i) the volatility of cash flows to total assets over the past 5 years ($\sigma(CFO/TA)$), and (ii) the volatility of sales to total assets over the last 5 years $\sigma(Sale/TA)$. We measure CFO as follows:

$$CFO_{i,t} = IBEI_{i,t} - TCA_{i,t} + DA_{i,t} \quad (6)$$

where

IBEI: Income before extraordinary items is defined as income before extraordinary items and preferred common dividends, but after operating and non-operating income and expense, reserves, income taxes, minority interest, and equity in earnings (WC01551).

TCA: is calculated according to Eq. (2).

DA: Depreciation and Amortization (WC01151) is the sum of depreciation, depletion, and amortization expenses.

As stated above, our primary measure of earnings quality is the 5-year standard deviation of *REDCA*. A higher value indicates a lower earnings quality.

We winsorize all the continuous variables at the 1% level, and add year, industry, and country-fixed effects to our regression model. Also, we cluster the standard errors at the country level in order to control for the common variance among observations within a particular country.[10]

To test our second hypothesis, we split our sample into strong versus weak investor protection jurisdictions, and test our regression model separately for each subsample. We examine the difference in the association between institutional ownership and

[10] Clustering at the firm dimension does not change our results in a material way.

Table 3
Summary statistics.

Variables	No. of Obs	Mean	SD	P10	P50	p90
Full sample						
REDCA_5y	120,337	0.10	0.12	0.02	0.06	0.21
Strategic IO	120,337	0.07	0.13	0.00	0.00	0.23
Code law						
REDCA_5y	58,313	0.08	0.09	0.02	0.05	0.16
Strategic IO	58,313	0.02	0.06	0.00	0.00	0.08
Market Cap ($MM)	58,313	1155433.00	3467417.00	15799.01	131122.00	2381185.00
Market/Book	58,313	1.75	2.79	0.44	1.17	3.48
Leverage	58,313	1.90	2.03	0.00	1.44	4.55
Operating Cycle	58,313	417.67	40542.40	56.00	140.00	275.00
σ(CFO/TA)	58,313	0.10	0.17	0.02	0.06	0.19
σ(Sales/TA)	58,313	0.16	0.17	0.04	0.11	0.34
Sales growth (%)	58,313	7.96	43.15	−17.36	3.91	29.14
IFRS Dummy	58,313	0.28	0.45	0.00	0.00	1.00
Big 4 Dummy	58,313	0.71	0.45	0.00	1.00	1.00
Common law						
REDCA_5y	62,024	0.12	0.15	0.02	0.06	0.27
Strategic IO	62,024	0.11	0.16	0.00	0.00	0.36
Market Cap ($MM)	62,024	1493654.00	4153004.00	7870.00	135017.10	3377966.00
Market/Book	62,024	2.39	5.01	0.34	1.64	5.53
Leverage	62,024	1.95	2.96	0.00	0.93	4.80
Operating Cycle	62,024	1273.16	234610.40	44.00	120.00	298.00
σ(CFO/TA)	62,024	0.22	0.46	0.03	0.09	0.42
σ(Sales/TA)	62,024	0.24	0.29	0.04	0.15	0.52
Sales growth (%)	62,024	20.38	80.90	−22.28	7.58	51.07
IFRS Dummy	62,024	0.64	0.48	0.00	1.00	1.00
Big 4 Dummy	62,024	0.62	0.49	0.00	1.00	1.00

This table presents summary statistics of the primary dependent and independent variables used in the regression analysis by legal origin. REDCA_5y is the 5-year standard deviation of current discretionary accruals. *Strategic IO* is the percentage of strategic institutional ownership. *Market Cap* is the market capitalization in Millions of U.S. Dollars. *Market/Book* is the ratio of Market capitalization to Book value of Equity. *Leverage* is total debt as a percentage of total assets. *Operating Cycle* is the log of the sum of days in receivable, and days in inventory. *σ(CFO/TA)* is the 5-year standard deviation of CFO over total assets, where $CFO_{i,t} = IBEI_{i,t} - TCA_{i,t} + DA_{i,t}$. σ(Sales/TA) is the 5-year standard deviation of Sales over total assets. *Sales growth* is the annual growth of sales. IFRS Dummy is a dummy variable, which equals 1 if a firm uses IFRS accounting standards, and zero otherwise. Big 4 Dummy is a dummy variable, which equals 1 if the firm is audited by one of the Big Four auditors and zero otherwise.

earnings quality between the two subsamples using the Chow test (Chow, 1960). We use different proxies to distinguish between strong and weak investor protection. First, we use the country legal origin: common versus code law. Investor protection is greater in common law countries compared to code law countries (La Porta et al., 1998). Second, we use the anti-self-dealing index developed by Djankov et al. (2008).[11] The index ranges between 0 and 1, with 1 reflecting stronger investor protection. Third, we use a combined measure of three indices developed by La Porta et al. (2006): the disclosure index, the liability index, and the public enforcement index. The three individual indices range between 0 and 1, with larger values reflecting stronger investor protection. The combined index takes the value of 0 if the three indices are all below their respective sample medians, the value of 1 if only one index is larger than its sample median, the value of 2 if 2 indices are greater than their respective sample medians, and the value of 3 if the 3 indices are all above their respective sample medians.

4. Empirical results and discussions

4.1. Sample characteristics

Table 1 presents summary statistics at the country level. We include all nations that have at least one firm having strategic institutional investors. The sample includes 28 code law countries and 13 common law countries. Code law countries have dramatically fewer observations than common law countries. There are also large variations in the sample across all the country level measures tabulated. For example, Argentina, Egypt, Indonesia, Jordan, and Peru have less than four firms with non-zero institutional ownership. On the other hand, there are countries where institutional investors have large stakes in companies, such as Finland, Ireland, Japan, Netherlands, and the U.K. In an un-tabulated result, a *t*-test of the difference in mean in institutional ownership shows that common law countries have significantly higher institutional investor holdings (11.0%) than code law countries (2.0%). This result suggests that, in better investor protection markets, institutional investors are more attracted by equities.

Table 2 provides correlations between institutional ownership and our proxies for investor protection. It confirms that

[11] The index measures the strength of minority shareholder protection against self-dealing by the controlling shareholder.

Table 4
Regression results of the association between earnings quality and institutional ownership.

Variables	REDCA_5y	REDCA_5y	REDCA_5y	REDCA_5y	REDCA_5y
Constant	0.0203	0.0136	0.0160	0.0129	0.0213
	(1.56)	(0.95)	(0.97)	(0.87)	(1.67)
Strategic IO	−0.0312***	−0.0414***	−0.0328***	−0.0389***	−0.0394***
	(−4.29)	(−10.02)	(−5.76)	(−8.05)	(−6.78)
Log (Mktcap)	−0.0056***	−0.0054***	−0.0055***	−0.0054***	−0.0053***
	(−9.64)	(−7.89)	(−8.70)	(−8.36)	(−6.66)
Market/Book	0.0008***	0.0008***	0.0008***	0.0008***	0.0007***
	(2.75)	(2.75)	(2.76)	(2.72)	(2.84)
Leverage	0.0024***	0.0024***	0.0024***	0.0024***	0.0024***
	(2.92)	(2.98)	(2.95)	(2.96)	(2.86)
Operating Cycle	0.0145***	0.0145***	0.0144***	0.0146***	0.0133***
	(9.21)	(10.16)	(9.47)	(9.76)	(12.15)
σ(CFO/TA)	0.1955***	0.1943***	0.1953***	0.1947***	0.1945***
	(21.02)	(21.26)	(21.09)	(21.01)	(21.12)
σ(Sales/TA)	0.1104***	0.1090***	0.1102***	0.1097***	0.1052***
	(39.22)	(44.19)	(40.21)	(42.31)	(41.66)
Sales growth	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(10.92)	(10.99)	(11.16)	(11.13)	(10.37)
Common Law		0.0073			
		(1.55)			
Anti-dealing			0.0052		
			(0.57)		
Combined				0.0024	
				(1.32)	
Observations	120,337	120,337	120,337	120,337	120,337
R^2	0.596	0.596	0.596	0.596	0.601
Year fixed	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes
Country fixed	No	No	No	No	Yes

This table presents the pooled multivariate regression results of the following model:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

The definition of all the variables can be found in Appendix B. Columns (2)–(4) include country level institutional features while column (5) reports results with country fixed effects in a pooled regression. All the regressions are conducted with year and industry fixed effects to control for macro-economic shocks, and industry level fixed effects. The numbers in brackets are the t-statistics after controlling for the heteroskedasticity, and clustering the standard errors by country. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

institutional investors have more ownership stakes in countries with stronger investor protection. It also shows that common law markets: (i) have a higher anti-self-dealing rights index, (ii) have a higher disclosure requirements index, (iii) are more stringent on liability index, and (iv) have stronger public enforcement index. All the correlations among investor protection variables are significant at the 5% level, or lower.

Table 3 provides summary statistics of the main dependent and independent variables by legal origin. In total, there are 120,337 firm-year observations with non-missing key variables to test hypotheses 1 and 2, while 58,313 observations in code law markets and 62,024 observations in common law markets. The median (mean) of the main independent variable, strategic institutional ownership, is 0% (2.0%) in code law markets, and 0% (11%) in common law markets. This indicates that more than 50% of sample firms do not have strategic institutional investors in both types of markets. On average, there are less (more) than 50% of firm years for which IFRS accounting standards are applied in code law markets (common law markets), and more than 50% of the firms are audited by one of the Big Four auditors in both markets. When comparing the earnings quality, common law markets seem to have lower average earnings quality than code law markets. However, we argue that this might stem from other firm characteristics which can materially impact a firm's earnings quality on top of legal origin. For example, based on the summary statistics, common law firms have higher growth rate, much longer operating cycle, higher sales growth rate, and higher cash flow volatility and sales volatility. All of these factors can increase the incentives of manipulating earnings figures. Without a proper control of these firm level characteristics, it is premature to conclude that in general, common law markets have lower or higher earnings quality than code law markets.

4.2. Multivariate regression results

Table 4 reports the results of our first hypothesis testing: the association between earnings quality and institutional holdings across all countries using different model specifications as suggested in Eq. (5). In all models, we use year and industry fixed effects to control for macro-economic shocks. Model 1 is the base model. In models (2)–(5), we add country level control variables. Across all models, we find a consistent negative and statistically significant coefficient on our main independent variable, suggesting that earnings quality is positively associated with strategic institutional ownership. For example, the results presented in the last column

Table 5
Comparison of the association between institutional ownership and earnings quality in strong versus weak investor protection regimes.

Variables	Common law	Code law	High anti-dealing index	Low anti-dealing index	High combined index	Low combined index
Constant	0.0600***	0.0502**	0.0124	0.0706***	0.0543***	0.0528
	(4.46)	(2.70)	(0.82)	(4.12)	(4.35)	(1.13)
Strategic IO	−0.0460***	−0.0184**	−0.0451***	−0.0212**	−0.0429***	−0.0175
	(−11.91)	(−2.66)	(−11.26)	(−2.22)	(−8.65)	(−1.21)
Log (Mktcap)	−0.0062***	−0.0041***	−0.0050***	−0.0059***	−0.0051***	−0.0055***
	(−10.87)	(−5.64)	(−5.01)	(−9.34)	(−5.43)	(−7.62)
Market/Book	0.0005**	0.0014***	0.0007**	0.0007**	0.0007**	0.0005*
	(2.70)	(4.31)	(2.47)	(2.83)	(2.54)	(2.01)
Leverage	0.0034***	0.0002	0.0028***	0.0001	0.0027***	−0.0000
	(5.79)	(0.60)	(3.44)	(0.21)	(3.37)	(−0.06)
Operating cycle	0.0135***	0.0116***	0.0137***	0.0106***	0.0135***	0.0112***
	(8.22)	(11.55)	(10.20)	(7.13)	(10.42)	(8.54)
σ(CFO/TA)	0.1797***	0.2826***	0.1881***	0.2689***	0.1910***	0.2391***
	(39.83)	(17.43)	(25.56)	(13.77)	(22.26)	(11.37)
σ(Sales/TA)	0.1057***	0.0909***	0.1061***	0.0947***	0.1057***	0.0961***
	(43.82)	(10.64)	(47.33)	(9.13)	(45.10)	(8.96)
Sales growth	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(8.83)	(7.09)	(8.96)	(7.61)	(9.03)	(7.67)
Observations	62,024	58,313	99,117	21,220	101,497	18,840
R^2	0.610	0.570	0.613	0.549	0.611	0.529
Year Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Chow Test (p-value)	(< 0.01)		(< 0.01)		(< 0.01)	

This table presents regression results for the sub-sample of strong and weak investor protection regimes of the following model:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

The sample is separated into: (i) common-law versus code-law markets, (ii) high versus low anti-dealing index, and (iii) high versus low combined index. High anti-dealing nations are those with an anti-self-dealing index above the median (0.46), and low anti-self-dealing nations are those with anti-self-dealing index below or equal to the median. High combined nations are those nations with combined index equal to 3 (the median value), and low combined nations are those nations with combined index below 3. The definition of the other variables can be found in Appendix B. All the regressions include year, industry and country fixed effects. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the country level. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test on the difference in the Strategic IO coefficient between strong and weak investor protection countries are reported in the last row.

of Table 4 show that a one standard deviation increase in strategic institutional ownership level is associated with about 5.1% increase in accrual quality.[12] Such impact is not only statistically significant, but also economically meaningful. In addition, and consistent with the extant literature, we find that firm size is positively associated with earnings quality, while market to book ratio, leverage, operating cycle, and cash flow volatilities, sales volatilities, and sales growth are all negatively associated with earnings quality. Similar to the findings of Francis and Wang (2008) and Gaio (2010), the investor protection proxy is not significant.[13] The results from Table 4 suggest that on average strategic institutional ownership is positively associated with earnings quality across our international markets sample.

Our second hypothesis states that the association between strategic institutional ownership and earnings quality is not the same in strong versus weak investor protection jurisdictions. To investigate how the impact varies through different jurisdictions, we first estimate our model for each country separately and plot the point estimates of the impact coefficient (OLS coefficient a_1 in Eq. (5)) and their standard errors in Fig. 1. To make the coefficient comparable across countries, we standardize all the continuous variables within each country across the sample years. Consequently, each coefficient represents the number of standard deviation changes associated with a corresponding one standard deviation change of strategic institutional ownership within that country. For all the estimates, we run OLS Eq. (5) with both industry and year fixed effects, and cluster the standard errors at the firm dimension. Three empirical facts can be derived from Fig. 1: first, for most of the countries, the impact of strategic ownership on earnings quality is largely positive (as shown by negative coefficients for the majority of the countries); second, the estimated coefficient is larger in magnitude in common law countries compared to code law countries, suggesting that the association between institutional ownership and earnings quality is stronger when the investor protection is higher. In untabulated results, we run a regression with the estimated coefficients as the dependent variable and a common law dummy variable as the independent variable, we obtain an estimated coefficient of −0.0191 and a t statistic of −2.32 for common law dummy.[14] This suggests that the impact of strategic ownership on

[12] The percentage effect of strategic institutional ownership can be calculated as the standard deviation of strategic ownership (0.13) × the OLS coefficient (−0.0394)/Mean of REDCA_5y (0.10) = 5.1%.

[13] Gaio (2010) proxies investor protection by the product of 'anti-director rights' and the 'rule of law'.

[14] With 41 countries, we have 41 observations for this estimation. The t-statistic indicates that the estimated coefficient is significant at 5% level.

Table 6
Regression results using different measures for earnings quality.

Variables	Common law	Code law	High anti-dealing index	Low anti-dealing index	High combined index	Low combined index
Panel A: PADCA_5y measure						
Strategic IO	−0.0421***	−0.0166**	−0.0451***	−0.0212**	−0.0429***	−0.0175
	(−9.99)	(−2.49)	(−11.26)	(−2.22)	(−8.65)	(−1.21)
Observations	62,219	58,378	99,117	21,220	101,497	18,840
R^2	0.598	0.555	0.613	0.549	0.611	0.529
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes	Yes	Yes
Chow test (p-value)	(< 0.01)		(< 0.01)		(< 0.01)	
Panel B: Jones (1991) *measure*						
Strategic IO	−0.0388***	−0.0171***	−0.0453***	−0.0199*	−0.0431***	−0.0178
	(−12.29)	(−2.78)	(−11.68)	(−2.03)	(−8.82)	(−1.24)
Observations	68,930	62,056	107,086	22,118	109,536	19,668
R^2	0.544	0.514	0.612	0.549	0.611	0.529
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes	Yes	Yes
Chow test (p-value)	(< 0.01)		(< 0.01)		(< 0.01)	
Panel C: McNichols (2002) *measure*						
Strategic IO	−0.0287***	−0.0137**	−0.0344***	−0.0166	−0.0326***	−0.0118
	(−9.86)	(−2.28)	(−12.51)	(−1.70)	(−9.40)	(−0.83)
Observations	47,730	44,966	75,836	16,284	77,648	14,472
R^2	0.521	0.512	0.603	0.546	0.602	0.522
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes	Yes	Yes
Chow test (p-value)	(< 0.01)		(< 0.01)		(< 0.01)	
Panel D: Absolute value of discretionary accruals						
Strategic IO	−0.0311***	−0.0128	−0.0316***	−0.0037	−0.0307***	0.0014
	(−9.53)	(−1.35)	(−6.74)	(−0.33)	(−6.85)	(0.09)
Observations	97,615	77,277	121,175	24,573	123,743	22,005
R^2	0.382	0.258	0.332	0.220	0.332	0.212
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes	Yes	Yes
Chow test (p-value)	(< 0.01)		(< 0.01)		(< 0.01)	

This table presents sub-sample comparisons between strong and weak investor protection regimes using different measures of earnings quality. The dependent variable in Panel A is the 5-year standard deviation of the portfolio performance adjusted measure of discretionary accruals (PADCA_5y). In Panel B, we use the 5-year standard deviation of discretionary accruals estimated from the Jones (1991) model. In panel C, we use the 5-year standard deviation of discretionary accruals estimated based on McNichols (2002). In panel D, we use the absolute value of the portfolio performance adjusted measure of discretionary accruals. The sample is separated into: (i) common-law versus code-law markets, (ii) high anti-self-dealing versus low anti-self-dealing markets, and (iii) high combined index countries versus low combined index countries. High anti-self-dealing nations are those with anti-self-dealing index above the median (0.46), and low anti-self-dealing nations are those nations with anti-self-dealing index below or equal the median. High combined nations are those nations with a combined index equal to 3 (the median value), and low combined nations are those nations with combined index below 3. In all the regressions, we control for firm level characteristics, as in Table 5, without being reported. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the country level. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test on the difference in the Strategic IO coefficient between strong and weak investor protection countries are reported in the last row. All the regressions include year, industry, and country fixed effects.

earnings quality is significantly different between code law and common law countries. In common law countries, the impact is 0.0191 higher than in code law countries.[15] Fig. 1 also suggests that the positive association between strategic ownership and earnings quality is not solely driven by firms located in the United States (US). Among the common law markets, there is a statistically significant association between strategic ownership and earnings quality in the following countries: Canada (CA), Singapore (SG),

[15] Specifically, the mean impact across common law countries is −0.0244, while the mean impact across code law countries is −0.0053.

Table 7
Regression results using the different components of the Combined Index.

Variables	High disclosure index	Low disclosure index	High liability index	Low liability index	High pub-enforcement	Low pub-enforcement
Constant	0.0257*	0.0797***	0.0220	0.0597***	0.0292**	0.0545***
	(2.05)	(5.87)	(1.69)	(2.99)	(2.44)	(2.81)
Strategic IO	−0.0439***	−0.0165	−0.0445***	−0.0183	−0.0423***	−0.0227**
	(−9.26)	(−1.23)	(−10.65)	(−1.60)	(−7.45)	(−2.70)
Log (Mktcap)	−0.0051***	−0.0055***	−0.0050***	−0.0055***	−0.0061***	−0.0042***
	(−5.23)	(−8.19)	(−5.17)	(−7.70)	(−10.54)	(−4.98)
Market/Book	0.0007**	0.0007**	0.0007**	0.0007***	0.0006**	0.0015***
	(2.52)	(2.32)	(2.49)	(3.10)	(2.83)	(3.82)
Leverage	0.0028***	0.0003	0.0028***	0.0005	0.0032***	0.0000
	(3.34)	(0.54)	(3.36)	(0.86)	(5.41)	(0.10)
Operating cycle	0.0136***	0.0114***	0.0135***	0.0119***	0.0132***	0.0125***
	(10.18)	(9.38)	(10.28)	(8.32)	(8.81)	(11.07)
σ(CFO/TA)	0.1905***	0.2419***	0.1893***	0.2545***	0.1851***	0.2478***
	(22.41)	(12.22)	(24.42)	(11.03)	(30.63)	(12.47)
σ(Sales/TA)	0.1052***	0.1005***	0.1046***	0.1064***	0.1064***	0.0909***
	(44.51)	(10.08)	(42.58)	(13.34)	(44.55)	(11.57)
Sales growth	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(8.74)	(8.94)	(8.93)	(7.26)	(9.13)	(5.92)
Observations	99,314	21,023	98,475	21,862	67,593	52,744
R^2	0.614	0.522	0.613	0.544	0.606	0.555
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes	Yes	Yes
Chow test (p-value)	(< 0.01)		(< 0.01)		(< 0.01)	

This table presents regression results for the sub-samples of strong and weak investor protection regimes. The regression model is as follows:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

We measure investor protection strength using the components of the combined index, namely: (i) the disclosure index, (ii) the liability index, and (iii) the public enforcement index. The definition of the other variables can be found in Appendix B. The numbers in brackets are the t-statistics after controlling for the heteroskedasticity, and clustering the standard errors at the country level. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test of the difference in the Strategic IO coefficient between strong and weak investor protection countries are reported in the last row. All regressions include year, industry, and country fixed effects.

South Africa (ZA), and United Kingdom (GB); while among the code law markets, Argentina (AR), Germany (DE), Japan (JP), South Korea (KR), and Sweden (SE) show a positive association between strategic ownership and earnings quality.[16]

To summarize, the estimation results by country reveal that there is strong evidence of a positive association between strategic institutional ownership and earnings quality and such association is shaped by the country level investor protection. However, with only 41 observations, the above method suffers from the small sample bias and lack of power. Hence, we also perform a formal regression analysis to test our hypothesis. We first split the sample into high versus low investor protection sub-samples and run our regression model separately for each subsample. We run the Chow test to examine whether the difference is statistically significant.[17] The sample is separated into: (i) common-law versus code-law markets, (ii) high versus low anti-self-dealing markets, and (iii) high versus low combined index countries. High anti-self-dealing countries are those with an anti-self-dealing index above the median (0.46), and low anti-self-dealing countries are those with an anti-self-dealing index below or equal to the median. High combined index nations are those with a combined index equal to 3 (the median value), and low combined index nations are those with combined index below 3. The results reported in Table 5 show that the association between institutional ownership and earnings quality is stronger for firms located in: (i) common law countries, (ii) countries with high anti-self-dealing scores, and (iii) countries with a high combined index. These findings suggest that the association between strategic institutional ownership and earnings quality is stronger in better investor protection regions. Specifically, the coefficient of strategic institutional ownership is around −0.05 in countries with strong investor protection, while it is around −0.02 only for firms located in countries with weak investor protection. The results of the Chow test indicate that the difference between these two coefficients is statistically significant at the 1% level. The difference is not only statistically significant, but also economically significant. Using a similar calculation as in Table 4, our results portrayed in Table 5 indicate that in common law countries, a one standard deviation increase in strategic institutional ownership is associated with a 6.1% decrease in REDCA_5y. However, in code law countries, a one standard deviation increase in

[16] Details of the coefficients among different countries are available from the authors upon request.

[17] We have also performed a different test by adding an interaction term between high investor protection dummy with the strategic institutional ownership, and controlling for other level effects. Our results are the same. Results are available from the authors upon request. However, in this study, we focus on the sub-sample analysis for two reasons: first, we want to explore the pervasiveness/limits of strategic institutional investor's monitoring effect across the nations on top of the impact of investor protection strength on such monitoring role; second, adding interaction terms may result in multicolinearity problems.

Table 8
Additional robustness tests.

Variables	Common law (1)	Code law (2)	Common law (3)	Code law (4)	Common law (5)	Code law (6)
Panel A: Additional controls						
Constant	0.0529***	0.0509**	0.0447***	0.0497**	0.0437***	0.0455*
	(4.17)	(2.49)	(3.13)	(2.46)	(4.20)	(1.74)
Strategic IO	−0.0443***	−0.0176**	−0.0408***	−0.0147*	−0.0407***	−0.0165*
	(−12.16)	(−2.24)	(−10.75)	(−1.95)	(−10.08)	(−2.05)
Government_Own	0.0914*	−0.0199	0.0846	−0.0195	0.0822	−0.0377
	(1.96)	(−0.50)	(1.68)	(−0.57)	(1.54)	(−0.80)
Foreign_Own	0.0114	−0.0068	0.0109	−0.0067	0.0114	−0.0001
	(1.09)	(−1.59)	(1.15)	(−1.60)	(1.14)	(−0.02)
Employee_Own	0.0163**	−0.0020	0.0154**	−0.0015	0.0156*	0.0019
	(2.43)	(−0.35)	(2.33)	(−0.28)	(2.18)	(0.31)
Corp_Own	0.0040	0.0001	0.0045	0.0009	0.0044	−0.0003
	(0.99)	(0.06)	(1.15)	(0.40)	(0.99)	(−0.09)
Log (Mktcap)	−0.0060***	−0.0041***	−0.0049***	−0.0036***	−0.0046***	−0.0042***
	(−12.00)	(−5.16)	(−11.32)	(−4.67)	(−6.32)	(−3.25)
Market/Book	0.0005**	0.0014***	0.0005**	0.0013***	0.0005**	0.0010**
	(2.59)	(4.37)	(2.42)	(4.26)	(2.37)	(2.42)
Leverage	0.0034***	0.0002	0.0034***	0.0002	0.0036***	−0.0000
	(5.87)	(0.60)	(5.67)	(0.62)	(6.65)	(−0.04)
Operating cycle	0.0136***	0.0115***	0.0132***	0.0114***	0.0131***	0.0111***
	(8.22)	(11.51)	(8.42)	(11.77)	(8.39)	(9.97)
σ(CFO/TA)	0.1797***	0.2826***	0.1791***	0.2820***	0.1778***	0.2762***
	(40.33)	(17.31)	(40.20)	(17.26)	(39.68)	(15.42)
σ(Sales/TA)	0.1055***	0.0909***	0.1047***	0.0908***	0.1040***	0.0872***
	(43.47)	(10.55)	(42.88)	(10.44)	(45.56)	(7.25)
Sales growth	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(8.90)	(7.09)	(9.09)	(7.06)	(8.99)	(9.17)
IFRS			0.0074*	−0.0066***	0.0070*	−0.0056
			(2.11)	(−2.81)	(2.04)	(−1.73)
Big 4			−0.0104***	−0.0043***	−0.0113***	−0.0039***
			(−3.79)	(−3.18)	(−4.08)	(−3.86)
ADR					0.0031	0.0008
					(1.10)	(0.60)
Log(Analysts)					−0.0010	0.0011
					(−0.64)	(0.83)
Log(DailyCirc)					0.0015*	0.0014
					(2.17)	(0.96)
Creditor Rights					0.0004	0.0012
					(0.65)	(1.52)
Observations	62,024	58,313	62,024	58,313	59,251	42,274
R^2	0.611	0.570	0.612	0.570	0.613	0.593
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes	Yes	Yes
Chow test (p-value)	(< 0.01)		(< 0.01)		(< 0.01)	

Variables	Ex-US (1)	Ex-GB (2)	Ex-AU (3)	Ex-CA (4)
Panel B: Excluding countries with large number of observations.				
Constant	0.0033	0.0121	0.0108	0.0137
	(0.15)	(1.05)	(0.87)	(1.16)
Strategic IO	−0.0315***	−0.0471***	−0.0446***	−0.0462***
	(−7.96)	(−14.88)	(−10.82)	(−11.21)
Log (Mktcap)	−0.0053***	−0.0062***	−0.0062***	−0.0062***
	(−7.22)	(−9.11)	(−9.60)	(−10.30)
Market/Book	0.0010***	0.0005**	0.0005**	0.0006**
	(3.42)	(2.65)	(2.84)	(2.59)
Leverage	0.0018**	0.0036***	0.0032***	0.0036***
	(2.64)	(7.20)	(4.82)	(6.86)
Operating Cycle	0.0147***	0.0141***	0.0143***	0.0139***
	(5.67)	(7.55)	(7.94)	(7.94)
σ(CFO/TA)	0.1753***	0.1803***	0.1835***	0.1794***
	(16.23)	(37.42)	(48.60)	(37.15)
σ(Sales/TA)	0.1041***	0.1064***	0.1072***	0.1058***

(*continued on next page*)

Table 8 (*continued*)

	(24.99)	(39.65)	(43.23)	(42.49)
Sales growth	0.0001***	0.0001***	0.0001***	0.0001***
	(6.36)	(7.92)	(18.21)	(8.61)
Observations	33,336	55,206	58,021	58,298
R^2	0.523	0.620	0.623	0.614
Year fixed	Yes	Yes	Yes	Yes
Industry fixed	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes
Chow Test (p-value)	(0.04)	(< 0.01)	(< 0.01)	(< 0.01)

Panel A presents sub-sample comparisons between common and code law nations, with additional controls. The regression model is as follows:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

In columns (1) and (2), we add government ownership (Government_Own), foreign ownership (Foreign_Own), employee ownership (Employee_Own) and corporation ownership (Corp_Own) as control variables. In columns (3) and (4), we control for reporting standards (the dummy variable IFRS) and audit quality (the dummy variable Big 4). In Columns (5) and (6), we further control for cross-listing (ADR), analyst following (Log (Analysts)), media coverage (Log (DialyCirc)), ad creditor rights. The definition of the variables can be found in Appendix B. All regressions include year, industry and country fixed effects. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the country level. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test of the difference in the Strategic IO coefficient between strong and weak investor protection countries are reported in the last row.

Panel B presents sub-sample analysis after excluding countries that have large number of observations in Common Law regions. The regression model is as follows:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

The definition of the variables can be found in Appendix B. Column (1) presents the results after excluding U.S. firms, Column (2) presents the results after excluding U.K. firms, Column (3) presents the results after excluding firms in Australia, and Column (4) presents the results after excluding firms in Canada. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the country level. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test of the difference in the Strategic IO coefficient between the subsample of Common Law regions and Code Law regions are reported in the last row. All regressions include year, industry, and country fixed effects.

strategic institutional ownership is associated with only 1.4% increase in earnings quality. This result suggests that institutional investors in countries with strong investor protection have more incentives and/or are better able to perform their monitoring role, thereby improving earnings quality. The control variables are largely consistent between higher versus lower investor protection countries, with the exception of leverage. We find that leverage is positively associated with REDCA_5y in strong investor protection countries but no such relationship exists in weaker investor protection regions. Such difference might stem from the different legal enforcement of high versus low investor protection regions. A higher leverage has been found to be associated with closeness to debt covenant violation (Press and Weintrop, 1990). In strong investor protection regions, a debt covenant violation has severe legal consequences, while in weak investor protection regions, the legal consequence of a debt covenant violation might not be as serious. Consequently, to avoid a possible debt covenant violation and the subsequent legal course, corporate managers in better investor protection regions are more likely to manipulate their earnings. Despite such difference, we document a positive association between strategic institutional ownership and earnings quality, and the association is shaped by the level of investor protection, consistent with the monitoring hypothesis we propose.

4.3. Robustness tests

We conduct a battery of tests to check the validity and robustness of our results. First, we use alternative proxies for earnings quality. The results are reported in Table 6. In Panel A, we use the 5-year standard deviation of the portfolio-adjusted measure of discretionary accruals (PADCA). PADCA is estimated from Eqs. (1)–(4), after excluding ROA terms in Eqs. (3) and (4), and subtracting the industry median discretionary accruals based on ROA decile ranks for each industry from the previous year. In Panel B, discretionary accruals are estimated using the Jones (1991) model. In Panel C, we estimate discretionary accruals using the modified Dechow and Dichev (2002) model (McNichols, 2002) by supplementing the basic Jones model with the lead, concurrent, and lagged cash from operating activities. The 5-year standard deviation of discretionary accruals is used to measure earnings quality in Panels B and C. Finally, in Panel D, we use the absolute value of the portfolio-adjusted measure of discretionary accruals (PADCA) to measure earnings quality, instead of the standard deviation. The results reported in Table 6 show that our findings remain the same: higher institutional ownership is associated with better earnings quality, and the association is weaker in weak investor protection regimes. The Chow test of the difference in the coefficient of institutional ownership between the two subsamples is significant at the 1% level.

Second, the combined index proxy is a combination of three indices: disclosure index, liability index, and the public enforcement index. In Table 7, we run 3 separate sets of regressions to check whether the difference between high investor protection regions and low investor protection regions is driven solely by one particular dimension. Table 7 results show that all three different components of the combined index yield the same conclusion: in stronger investor protection regions, as shown by higher index values, institutional investors have a stronger effect on earnings quality than in weak investor protection regions. The difference is statistically significant at the 1% level.

Table 9
Endogeneity issues.

Variables	Common Law (1)	Code Law (2)	High Anti-dealing Index (3)	Low Anti-dealing Index (4)	High Combined Index (5)	Low Combined Index (6)
Panel A: Change regression						
Constant	−0.0036***	−0.0008**	−0.0035***	−0.0011**	−0.0035***	−0.0012**
	(−9.97)	(−2.10)	(−8.42)	(−2.15)	(−8.13)	(−2.26)
Chg (Strategic IO)	−0.0096**	−0.0008	−0.0103***	−0.0003	−0.0109***	0.0019
	(−2.95)	(−0.30)	(−3.54)	(−0.15)	(−4.35)	(0.62)
Chg (Log(Mktcap)	0.0027***	0.0002	0.0027***	0.0005	0.0026***	0.0007
	(4.11)	(0.25)	(3.71)	(0.74)	(3.65)	(1.05)
Chg (Market/Book)	−0.0001	0.0002**	−0.0000	0.0001	−0.0001*	0.0002**
	(−1.40)	(2.47)	(−0.70)	(1.01)	(−1.93)	(2.27)
Chg (Leverage)	0.0012***	0.0001	0.0012***	0.0003	0.0012***	0.0003
	(11.26)	(0.61)	(10.96)	(1.30)	(10.56)	(1.34)
Chg (Operating cycle)	0.0057***	0.0103***	0.0059***	0.0096***	0.0066***	0.0080***
	(4.29)	(11.45)	(3.95)	(12.48)	(3.66)	(4.82)
Chg (σ(CFO/TA))	0.0909***	0.2157***	0.0895***	0.1874***	0.0930***	0.1517***
	(8.59)	(11.59)	(8.48)	(7.17)	(7.07)	(4.70)
Chg (σ(Sales/TA))	0.0221***	0.0228***	0.0207***	0.0282***	0.0193***	0.0276***
	(4.53)	(3.81)	(4.52)	(4.59)	(4.74)	(5.12)
Chg (Sales growth)	0.0000***	0.0001***	0.0000***	0.0001***	0.0000***	0.0001***
	(10.76)	(7.93)	(10.07)	(8.98)	(12.53)	(4.99)
Observations	48,791	47,321	44,930	51,182	42,547	53,565
R^2	0.115	0.246	0.112	0.222	0.117	0.179
Chow Test (p-value)	(0.03)		(< 0.01)		(< 0.01)	

	Common law		Code law		Interaction
Variables	1st Stage	2nd Stage	1st Stage	2nd Stage	2SLS
Panel B: Two stage least squares with instrumental variables					
Constant	−0.0507	0.0439***	−0.0182	0.0325	0.0691***
	(−1.45)	(3.34)	(−1.04)	(1.30)	(12.16)
Illiquidity	−0.0482***		−0.0064***		
	(−8.88)		(−2.62)		
Strategic IO (predicted)		−0.4624***		−1.6210	
		(−3.97)		(−1.49)	
Commlaw * IO (Predicted)					−0.9566***
					(−4.97)
Strategic IO					0.8054***
					(4.90)
Common Law					−0.0031
					(−0.41)
Log (Mktcap)	0.0050***	−0.0010	0.0009***	−0.0010	−0.0031***
	(9.47)	(−1.29)	(3.81)	(−0.83)	(−18.39)
Market/Book	−0.0001	0.0004**	−0.0001	0.0007	0.0006***
	(−0.63)	(2.23)	(−0.94)	(1.66)	(7.12)
Leverage	−0.0014***	−0.0010	0.0017***	0.0028	−0.0009***
	(−2.94)	(−1.44)	(8.17)	(1.40)	(−3.98)
Operating cycle	0.0040***	0.0074***	0.0009*	0.0067***	0.0058***
	(4.47)	(4.53)	(1.74)	(4.17)	(17.26)
σ(CFO/TA)	−0.0237***	0.2087***	−0.0086***	0.3525***	0.2523***
	(−5.45)	(13.12)	(−2.64)	(8.72)	(137.53)
σ(Sales/TA)	−0.0004	0.0671***	−0.0070***	0.0525***	0.0718***
	(−0.10)	(8.83)	(−2.90)	(3.77)	(42.73)
Sales growth	0.0000	0.0001***	0.0000*	0.0001***	0.0001***
	(0.09)	(4.27)	(1.78)	(4.27)	(11.21)
Observations	30,810	30,810	32,898	32,898	63,708
R-squared	0.443	0.477	0.073	0.579	0.245
Year Fixed	Yes	Yes	Yes	Yes	Yes
Industry Fixed	Yes	Yes	Yes	Yes	Yes
Country Fixed	Yes	Yes	Yes	Yes	Yes
Cragg-Donald Wald F statistic					74.0
Chow Test (p-value)		(0.03)			N/A

Panel A presents change regression results for the sub-sample of strong and weak investor protection regimes of the following model:

$$Chg\,(REDCA_{5y})_{i,t} = a_0 + a_1 Chg\,(Strategic\ IO)_{i,t-1} + \sum_{j>1} a_j Chg\,(Firm\ Controls)_{j,t-1} + \varepsilon_{i,t}$$

The sample is separated into: (i) common-law versus code-law markets, (ii) high versus low anti-dealing index, and (iii) high versus low combined index. High anti-dealing nations are those with an anti-self-dealing index above the median (0.46), and low anti-self-dealing nations are those with anti-self-dealing index below or equal to the median. High combined nations are those nations with combined index equal to 3 (the median value), and low combined nations are those nations with combined index below 3. The definition of other variables can be found in Appendix B. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the country level. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test on the difference in the Strategic IO coefficient between strong and weak investor protection countries are reported in the last row.
Panel B presents the two stage least square regression results for the sub-sample of common law and code law markets of the following model in columns (1)–(4):

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

Illiquidity is the instrumental variable in the first stage and it is measured as a firm's percentage of zero return days in the total trading days for a year. The definition of the other variables can be found in Appendix B. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the country level. Column (5) presents the results using the interaction term approach & the two step efficient generalized methods of moment (GMM) estimator using the following model:

$$\mathrm{REDCA}_{5y_{i,t}} = a_0 + a_1 \mathrm{CommLaw} * \mathrm{Strategic\ IO}_{i,t-1} + a_2 \mathrm{Strategic\ IO}_{i,t-1} + a_3 \mathrm{CommLaw} + \sum_{j>3} a_j \mathrm{Firm\ Controls}_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

All the regressions include year, industry and country fixed effects. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test on the difference in the Strategic IO coefficient between strong and weak investor protection countries are reported in the last row (difference between columns 2 and 4).

Third, empirical evidence suggests that IFRS adoption and higher audit quality result in higher earnings quality. In addition, prior studies show that other types of shareholders, such as foreigners (Ben-Nasr et al. 2015) are active monitors of manager's actions that may limit the ability of manager's earnings manipulation. Thus, we add a host of other control variables, that include different types of ownership (government, foreign, employee, other corporations), IFRS adoption, BIG4/non BIG4 dichotomous variables, analyst following, cross-listing, country level media coverage, and creditor rights to examine whether our main findings hold. The results reported in Panel A of Table 8 show that strategic institutional ownership is associated with higher earnings quality, and the association is much stronger in better investor protection regimes.

Fourth, our sample is composed of a large number of observations from some particular countries especially in better investor protection markets, such as US, GB, AU, and CA. In order to rule out the potential that our results are solely driven by one particular large country, we exclude each of the above mentioned countries one at a time, and rerun our regressions. The results in Panel B of Table 8 show that our findings continue to hold.

Fifth, we examine whether endogeneity concerns are biasing our results. In our case, endogeneity can arise because strategic investors might self-select to firms with better earnings quality ex-ante, resulting in a positive association ex-post (hence selection bias). Such association has been documented by Stulz (1999), Lang et al. (2003a, 2003b), and Leuz et al. (2010). To address this issue, we perform two types of analysis: a change regression and a two stage least square regression (2SLS). In the change regression analysis, we examine whether changes in strategic IO are positively associated with changes in earnings quality. We report our results in Panel A of Table 9. We find that changes in strategic institutional ownership are all positively associated with next period changes in earnings quality, and such impact is much stronger in high investor protection regimes.

Further, we use a two-stage least square regression to deal with the self-selection concern. The key issue in this approach is to identify an instrumental variable which can strongly affect strategic institutional investor's portfolio selection, but does not impact a firm's earnings quality. We argue that stock liquidity is a proper instrument for this purpose for the following economic reasoning: as large shareholders, strategic institutional investors are especially concerned about the selling costs when situations of a company become undesirable (Maug, 1998). For a highly liquid stock, such selling costs are much lower. Hence, strategic investors are likely to hold more shares in highly liquid stocks. On the other hand, there is no clear economic causal link from market liquidity to a firm's future earnings quality.[18] Thus, we run a two stage least square regression using liquidity as an instrumental variable to strategic institutional ownership. To measure liquidity in the international market, we follow Lesmond et al. (1999), Bekaert et al. (2007), and Lee (2011) by using the proportion of zero daily firm returns in a year for a firm. Lesmond et al. (1999) argue that if the value of an information signal is insufficient to outweigh the costs associated with a transaction, then market participants will elect not to trade, which will result in an observed zero return. Based on this definition, the higher the percentage of zero return days, the higher the illiquidity.[19] Panel B of Table 9 reports the regression results. Columns (1) and (3) report the first stage regression results with strategic institutional ownership as the key dependent variable, and illiquidity with one year lag as the instrumental variable. The

[18] However, this does not mean that there is no statistical significant association between earnings quality and future/concurrent stock liquidity, as earnings quality can impact a firm's information environment, which will affect a firm's concurrent liquidity. But such causal direction is likely from earnings quality to liquidity, not the other way around. Hence, liquidity as an instrumental variable in our setting satisfies the exclusion requirement.

[19] There are also other measures for liquidity. However, as Bekaert et al. (2007) argue the data in international markets are of relatively poor quality. Specifically, detailed transaction data (bid-ask spread, for example) are not widely available, and volume data are plagued by trends and outliers. These problems are likely intensified in emerging markets. Because both Amihud (2002)'s ratio and the Pástor and Stambaugh (2003)'s Gamma measure require positive volume during the sampling interval, it might be problematic for some emerging markets where non-trading problems are particularly severe. Therefore, zero-return-days measure is an attractive empirical alternative to traditional liquidity measures in our context.

Table 10
Different Estimation Methods: Country-Year Fixed and Industry-Year Fixed Effect.

Variables	Full-sample	Common law	Code law	High anti-dealing index	Low anti-dealing index	High combined index	Low combined index
Strategic IO	−0.0448***	−0.0520***	−0.0194**	−0.0518***	−0.0249**	−0.0487***	−0.0241
	(−5.91)	(−15.36)	(−2.53)	(−10.57)	(−2.34)	(−7.58)	(−1.55)
Log (Mktcap)	−0.0054***	−0.0062***	−0.0042***	−0.0050***	−0.0060***	−0.0052***	−0.0056***
	(−7.04)	(−11.31)	(−5.52)	(−5.29)	(−9.51)	(−5.73)	(−7.77)
Market/Book	0.0007**	0.0005**	0.0014***	0.0007**	0.0006***	0.0007**	0.0005*
	(2.70)	(2.61)	(4.19)	(2.34)	(2.86)	(2.42)	(1.91)
Leverage	0.0024***	0.0035***	0.0002	0.0029***	0.0002	0.0028***	−0.0000
	(2.88)	(5.98)	(0.57)	(3.44)	(0.28)	(3.40)	(−0.00)
Operating cycle	0.0132***	0.0134***	0.0114***	0.0136***	0.0104***	0.0134***	0.0111***
	(12.17)	(8.10)	(11.61)	(10.21)	(7.19)	(10.42)	(8.85)
σ(CFO/TA)	0.1932***	0.1787***	0.2810***	0.1868***	0.2678***	0.1897***	0.2382***
	(21.13)	(39.60)	(17.12)	(25.74)	(13.50)	(22.36)	(11.33)
σ(Sales/TA)	0.1052***	0.1056***	0.0916***	0.1060***	0.0943***	0.1056***	0.0963***
	(44.67)	(46.61)	(10.65)	(50.93)	(8.87)	(48.38)	(8.73)
Sales growth	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(10.46)	(8.72)	(7.13)	(9.01)	(7.34)	(9.15)	(7.27)
Observations	120,337	62,024	58,313	99,117	21,220	101,497	18,840
R^2	0.604	0.614	0.574	0.616	0.557	0.614	0.539
Country * Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chow test (p-value)		(< 0.01)			(< 0.01)		(< 0.01)

This table presents regression results with different estimation methods of the following model:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

The sample is separated into: (i) common-law versus code-law markets, (ii) high versus low anti-self-dealing index, and (iii) high versus low combined index. High anti-self-dealing nations are those with an anti-self-dealing index above the median (0.46), and low anti-self-dealing nations are those with anti-self-dealing index below or equal to the median. High combined nations are those nations with combined index equal to 3 (the median value), and low combined nations are those nations with combined index below 3. The definition of other variables can be found in Appendix B. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the country level. All the regressions include country-year fixed effects and industry-year fixed effects. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test on the difference in the Strategic IO coefficient between strong and weak investor protection countries are reported in the last row.

results indicate that the higher the illiquidity, the lower the ownership level of strategic institutional investors, and such association is significant at the 1% level for both types of markets. The second stage regression results, reported in columns 2 and 4 of Table 9, show that the impact of strategic investors' ownership on earnings quality is significant only in common law countries. The Chow test confirms that such difference is statistically significant at the 5% level. To provide further robustness checks, we also run another regression model using an interaction approach. The results reported in Column 5 of Table 9, Panel B show that the interaction approach yields similar results, i.e., strategic investors have stronger impact on earnings quality in common law countries. Unreported results show similar findings when anti-self-dealing and combined index are used to distinguish between countries with high versus low investor protection. Thus, our findings are unlikely to be driven by strategic institutional investors self-selecting to better earnings quality firms.

Sixth, we address the concern that our results are driven by an unobservable omitted variable. In our main regressions, we control for country, year and industry fixed effects. Thus, any country level, industry level, and year level fixed unobservable variables cannot drive our results. However, there might be concerns that some time-varying country level and industry level variables can be the underlying driving force. To deal with this concern, we re-run our regression with country times year fixed effects, and industry times year fixed effects. By creating a dummy variable for each country at each year, and each industry at each year, we control for the time-varying shocks at both country and industry levels. The results reported in Table 10 indicate that our inferences remain unchanged. On average across the full sample, there is a positive association between strategic ownership and earnings quality, and such association is stronger in better governed countries.

Finally, we run our model with firm and year fixed effects. By adding these fixed effects, we exclude all the cross-sectional variation and purely investigate how the change in strategic institutional ownership impacts the change in earnings quality through time. We report the results in Table 11. First, most of the estimated coefficients drop in magnitude due to the exclusion of cross-sectional variations.[20] Market to book ratio even loses its statistical significance, suggesting that the previously documented association is mainly stemming from cross-sectional variation for this variable. Second, our key variable, the strategic ownership level, is still significant for the overall sample, moreover, it is more significant in strong investor protection regions than in weak investor

[20] To compare the coefficient with the previous tables, the benchmark for the full sample (Column 1) is the last column of Table 4; the benchmark for the subsample (Columns 2–7) is Table 5. Except for the variable sales growth, all the estimated coefficients drop in magnitude due to the exclusion of cross-sectional variations.

Table 11
Firm fixed effects.

Variables	Full-sample	Common law	Code law	High anti-dealing index	Low anti-dealing index	High combined index	Low combined index
Constant	−0.0374***	−0.0358***	−0.0373***	−0.0392***	−0.0247	−0.0398***	−0.0122
	(−4.03)	(−2.92)	(−2.94)	(−3.79)	(−1.29)	(−3.88)	(−0.63)
Strategic IO	−0.0135***	−0.0208***	−0.0057	−0.0143***	−0.0055	−0.0151***	−0.0022
	(−5.55)	(−6.61)	(−1.24)	(−5.24)	(−1.05)	(−5.64)	(−0.37)
Log (Mktcap)	0.0040***	0.0047***	0.0030***	0.0042***	0.0026**	0.0042***	0.0027**
	(6.89)	(6.08)	(4.30)	(6.61)	(2.30)	(6.59)	(2.36)
Market/Book	−0.0001	−0.0001	−0.0000	−0.0001	−0.0001	−0.0001	−0.0002
	(−1.05)	(−1.14)	(−0.04)	(−0.88)	(−0.43)	(−0.91)	(−0.68)
Leverage	0.0006*	0.0009**	0.0000	0.0008**	−0.0005	0.0007**	−0.0006
	(1.73)	(2.14)	(0.08)	(2.15)	(−0.77)	(2.09)	(−0.95)
Operating cycle	0.0085***	0.0080***	0.0081***	0.0084***	0.0071***	0.0087***	0.0057**
	(7.20)	(5.60)	(4.21)	(6.50)	(2.66)	(6.70)	(2.11)
σ(CFO/TA)	0.1439***	0.1259***	0.2468***	0.1355***	0.2298***	0.1387***	0.2055***
	(31.54)	(26.64)	(15.69)	(29.19)	(11.64)	(29.99)	(9.45)
σ(Sales/TA)	0.0505***	0.0499***	0.0450***	0.0494***	0.0546***	0.0489***	0.0571***
	(12.43)	(9.70)	(8.13)	(11.14)	(5.65)	(11.05)	(6.20)
Sales growth	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(8.63)	(6.71)	(5.06)	(7.56)	(3.73)	(7.55)	(4.23)
Observations	120,337	62,024	58,313	99,117	21,220	101,497	18,840
R^2	0.233	0.221	0.326	0.225	0.321	0.229	0.290
Firm Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chow Test (p-value)		(< 0.01)			(< 0.01)		(< 0.01)

This table presents regression results with different estimation methods of the following model:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + \sum_{j>1} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

The sample is separated into: (i) common-law versus code-law markets, (ii) high versus low anti-self-dealing index, and (iii) high versus low combined index. High anti-self-dealing nations are those with an anti-self-dealing index above the median (0.46), and low anti-self-dealing nations are those with anti-self-dealing index below or equal to the median. High combined nations are those nations with combined index equal to 3 (the median value), and low combined nations are those nations with combined index below 3. The definition of the other variables can be found in Appendix B. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the firm level. All the regressions include firm fixed effects and year fixed effects. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively. The p-values of the Chow test on the difference in the Strategic IO coefficient between strong and weak investor protection countries are reported in the last row.

protection regions. For example, for a given firm in the common law region, a one standard deviation increase in strategic ownership, is associated with 2.7% increase in earnings quality in the subsequent year for that firm. But such relationship diminishes in code law markets. These results are consistent with a monitoring role of strategic investors modulated by country level investor protection.

4.4. Additional analysis

Our sample period covers the 2008–2009 financial crisis. Thus, we investigate how the identified relationship between earnings quality and investor protection is affected by the 2008–2009 financial crisis.[21] To do so, we create a dummy variable (*FinCris*) that equals 1 for the years 2008 and 2009, and 0 otherwise. In addition, we create an interaction term between FinCris and Strategic IO to examine the incremental impact of institutional investors on earnings quality during the financial crisis period. We present our results in Table 12 for different investor protection regimes. First, we find that during the financial crisis period, earnings quality is significantly lower than during other years (Columns (1) and (3)), regardless of the quality of the investor protection regime. This suggests that across all countries, firms manipulate earnings figures to a larger extent during economic downturns. Second, the interaction term is significant and negative only in better investor protection regimes (Column (2)), suggesting that institutional investors were able to curb managers' opportunistic behavior during the crisis period only when the investor protection regime is strong. This analysis further corroborates the importance of institutional investors in better investor protection markets.[22]

[21] We would like to thank an anonymous referee for suggesting to examine the effect of the financial crisis.

[22] In untabulated analysis, we stratify the sample into high vs low investor protection regimes according to the anti-dealing index and combined index, our results are very similar. The results are available upon requests.

Table 12
The impact of the 2008–2009 crisis.

	Common law		Code law	
Variables	(1)	(2)	(3)	(4)
Constant	0.0600***	0.0600***	0.0502**	0.0503**
	(4.46)	(4.51)	(2.70)	(2.71)
FinCris * Strategic IO		−0.0413**		0.0061
		(−2.92)		(0.66)
FinCris	0.0197***	0.0227***	0.0136***	0.0135***
	(6.64)	(9.22)	(3.30)	(3.18)
Strategic IO	−0.0460***	−0.0395***	−0.0184**	−0.0205***
	(−11.91)	(−12.93)	(−2.66)	(−3.20)
Log (Mktcap)	−0.0062***	−0.0062***	−0.0041***	−0.0041***
	(−10.87)	(−10.72)	(−5.64)	(−5.64)
Market/Book	0.0005**	0.0005**	0.0014***	0.0014***
	(2.70)	(2.71)	(4.31)	(4.30)
Leverage	0.0034***	0.0034***	0.0002	0.0002
	(5.79)	(5.77)	(0.60)	(0.61)
Operating Cycle	0.0135***	0.0135***	0.0116***	0.0116***
	(8.22)	(8.22)	(11.55)	(11.54)
σ(CFO/TA)	0.1797***	0.1796***	0.2826***	0.2826***
	(39.83)	(39.87)	(17.43)	(17.44)
σ(Sales/TA)	0.1057***	0.1057***	0.0909***	0.0909***
	(43.82)	(43.88)	(10.64)	(10.64)
Sales growth	0.0001***	0.0001***	0.0001***	0.0001***
	(8.83)	(8.86)	(7.09)	(7.09)
Observations	62,024	62,024	58,313	58,313
R^2	0.610	0.611	0.570	0.570
Year Fixed	Yes	Yes	Yes	Yes
Industry Fixed	Yes	Yes	Yes	Yes
Country Fixed	Yes	Yes	Yes	Yes

This table presents regression results to examine the impact of the 2008–2009 crisis on the association between institutional ownership and earnings quality using the following model:

$$REDCA5y_{i,t} = a_0 + a_1 Strategic\ IO_{i,t-1} + a_2 \text{FinCris} + a_3 \text{FinCris}^* Strategic\ IO_{i,t-1} + \sum_{j>3} a_j Firm\ Controls_{j,t-1} + \psi_i f_i + \varepsilon_{i,t}$$

The sample is separated into common-law versus code-law markets. The definition of the other variables can be found in Appendix B. The numbers in brackets are the t-statistics after controlling for heteroskedasticity, and clustering the standard errors at the country level. All the regressions include industry, nation and year fixed effects. ***, **, * denotes significance at the 1%, 5%, and 10% level, respectively.

5. Conclusion

Prior literature indicates that higher institutional ownership is associated with better earnings quality, and evidence is mostly confined to the U.S. In this paper, we explore this relationship in a broader sample. We document a positive association between strategic institutional ownership and earnings quality across 41 countries. More importantly, we find that this association is stronger in countries with strong investor protection. Our results indicate that a one standard deviation increase in institutional ownership is associated with a 6.1% increase in earnings quality in countries with high investor protection, while a similar increase in institutional ownership is associated with only 1.4% increase in earnings quality in countries with low investor protection. We conclude that institutional investors have more incentives and/or are better able to exercise their monitoring role in countries with strong investor protection, thereby improving earnings quality. Future research can try to disentangle between these two explanations. Another possible avenue of future research would be to examine whether and how other country level variables, such as national culture, shape the relationship between strategic institutional ownership and earnings quality.

Our results have some policy implications. They suggest that in countries with low investor protection, regulatory changes that provide greater latitude to investors to monitor managers have to take place. In such countries, policymakers should prioritize the improvement of the legal and regulatory environment to reduce agency problems. Regulators of countries with high investor protection are encouraged to maintain a high level of investor protection as it helps in governing firms and disciplining managers.

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errors are our own.

Appendix A. Country code and the corresponding country full name

Code law		Common law	
Country code	Country name	Country code	Country name
AR	ARGENTINA	AU	AUSTRALIA
AT	AUSTRIA	CA	CANADA
BE	BELGIUM	HK	HONG KONG
BR	BRAZIL	IN	INDIA
CL	CHILE	IE	IRELAND
CO	COLOMBIA	IL	ISRAEL
DK	DENMARK	MY	MALAYSIA
EG	EGYPT	NZ	NEW ZEALAND
FI	FINLAND	SG	SINGAPORE
FR	FRANCE	ZA	SOUTH AFRICA
DE	GERMANY	TH	THAILAND
GR	GREECE	GB	UNITED KINGDOM
ID	INDONESIA	US	UNITED STATES
IT	ITALY		
JP	JAPAN		
JO	JORDAN		
KR	KOREA (SOUTH)		
MX	MEXICO		
NL	NETHERLANDS		
NO	NORWAY		
PE	PERU		
PH	PHILIPPINES		
PT	PORTUGAL		
ES	SPAIN		
SE	SWEDEN		
CH	SWITZERLAND		
TW	TAIWAN		
TR	TURKEY		

Appendix B. Variable definitions

Variables	Definition	Sources
Panel A: Earnings Quality Measure (Measured at the firm-year level) and the corresponding variables required for the construction of such measure		
REDCA_5y	5-year standard deviation of performance-adjusted current accruals	Authors calculation
CA	Current Assets: the sum of cash and equivalents, receivables, inventories, prepaid expenses and other current assets (WC02201).	Worldscope
CL	Current Liability: debt or other obligations that the company expects to satisfy within one year (WC03101)	Worldscope
Cash	The sum of cash and short-term investments (WC02001)	Worldscope
SPCPLD	Short-term debt and current portion of long term debt (WC03051)	Worldscope
TA	Total assets (WC02999)	Worldscope
Netsales	Gross sales and other operation revenues less discounts, returns, and allowances (WC01001)	Worldscope
ROA	Return on Assets: Operating income after taxes (WC08326) divided by total assets (WC02999)	Worldscope
Inflation	Inflation rate	IMF World Economic Outlook database
GDP growth	The growth in real per capita GDP	IMF World Economic Outlook database

Panel B: Ownership Measures (Measured at the firm year level)		
Strategic IO	Percentage of shares held by investment banks or institutions seeking long term return	Datastream
Government_Own	Percentage of shares held by governments	Datastream
Foreign_Own	Percentage of shares held by foreign institutions	Datastream
Employee_Own	Percentage of shares held by employees	Datastream
Corp_Own	Percentage of shares held by other corporations	Datastream
Panel C: Firm Level Control Variables (Measured at the firm-year level)		
ADR	Dummy variable that indicates whether a firm has an ADR program	Bank of New York Website
Big 4	Dummy variable that indicates whether a firm has a big 4 auditor	Wordscope
Log(Analysts)	Logarithm of Maximum monthly number of analysts in the previous year	I/B/E/S
Log(DailyCirc)	Logarithm of newspapers and periodicals circulation per thousand inhabitants in the year 2000	Djankov et al. (2010)
IFRS	Dummy variable that equals 1 if a firm adopts International Accounting Standards and 0 otherwise	Worldscope
Leverage	Ratio of total debt to total assets (WC08236)	Worldscope
Log(Mktcap)	Logarithm of Market capitalization denominated in USD at the preceding year end (in $MM) (WC07210)	Worldscope
Market/Book	Ratio of market capitalization (WC07210) to book value (WC03501) at the preceding year end (all denominated in USD)	Worldscope
Operating Cycle	Logarithm of the sum of days in receivable (WC08131) and days in inventory (WC08216)	Worldscope
σ(CFO/TA)	The volatility of cash flows to total assets over the past 5 years	Worldscope
σ(Sales/TA)	The volatility of sales to total assets over the past 5 years	Worldscope
Sales growth	Annual growth of sales	Worldscope
Panel D: Country Level Control Variables (Measured at the country level)		
Anti-dealing	Anti-self-dealing index	Djankov et al. (2008)
Common Law	Dummy variable that equals 1 if a firm is listed in a country that has a common-law origin and 0 otherwise	La Porta et al. (2000)
Combined	Combined Index that is the combination of the following three indices	La Porta et al. (2006)
DIS_REQ	Disclosure index: the extent to which there is required disclosure of information for firms issuing securities through the prospectus	La Porta et al. (2006)
LIT_STD	Liability index: liability standards for investors to recover damages from issuers of securities, company directors, investment banks, and auditors when there have been misleading disclosures in the process of security issuance	La Porta et al. (2006)
PUB_ENF	Public enforcement index: the extent of the regulatory agency's investigative authority and the ability to punish firms and auditors that violate security laws.	La Porta et al. (2006)
Panel E: Market Level Variables (Measured at the market-year level)		
FinCris	Dummy variable that is set to 1 if year = 2008 or 2009 and 0 otherwise	

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