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SHIRAISHI, Yutaro
Tokyo Institute of Technology

IKEDA, Naoshi
Tokyo Institute of Technology

ARIKAWA, Yasuhiro
Waseda University

INOUE, Kotaro
Tokyo Institute of Technology



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Stewardship Code, Institutional Investors, and Firm Value: International Evidence¹

Yutaro Shiraishi^a, Naoshi Ikeda^b, Yasuhiro Arikawa^c, Kotaro Inoue^{d,*}

^aTokyo Institute of Technology ^bTokyo Institute of Technology ^cWaseda University

^{d,*}Tokyo Institute of Technology

Abstract

This study investigates whether the stewardship code mitigates the free-rider problem of institutional investors. We construct panel data of listed firms in 56 countries and examine the effects of the introduction of stewardship codes in 13 countries using a difference-in-differences approach. Our results show that the introduction of the stewardship code in a country increases the value of firms with high institutional ownership. It also mitigates the free cash flow problem of the portfolio firms with low investment opportunities. To the best of our knowledge, this is the first study that provides international evidence that stewardship codes are effective in enhancing monitoring by institutional investors.

Keywords: Corporate Governance, Institutional Investor, Stewardship Code

JEL classification: G18, G23, G32, G34, G35

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*Corresponding author: Kotaro Inoue, Email address: inoue.k.aq@m.titech.ac.jp

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1. Introduction

Institutional investors can potentially mitigate the agency problem between shareholders and managers and improve firm value (Gillan and Starks, 2003). However, institutional investors do not necessarily monitor their portfolio companies. Many studies argued that the free-rider problem hinders monitoring by investors who hold small stakes in a company (Grossman and Hart, 1980; Shleifer and Vishny, 1986). Even when institutional investors incur costs to monitor the management of firms in their portfolio, benefits from such actions spread to all shareholders. Chen et al. (2007) argued that monitoring incentives increase with the size of the institutional investors' stake, the independence of institutional investors, and the length of time for which institutional investors have invested in the firm. Therefore, we expect that institutional investors with a well-diversified portfolio, such as pension funds and passive funds, are not likely to engage in monitoring activities because of the small size of the stake for each target firm.

In recent years, institutional investors have come to hold significant portions of shares of listed firms in aggregate, although each has a small stake for their investee firms. Therefore, both financial service and reporting agencies and institutional investor communities have begun to consider mechanisms to enhance the responsible roles of institutional investors. In particular, after the financial crisis of 2008, several countries introduced their respective stewardship codes. These codes intend to enhance institutional investors' monitoring, engagement quality, and transparency regarding their governance responsibilities (Ernst & Young, 2017). In the Stewardship Code of the United Kingdom, the Financial Reporting Council (FRC) stated that *"The Stewardship Code aims to enhance the quality of engagement between institutional investors and companies to help improve long-term returns to shareholders and the efficient exercise of governance responsibilities"* (FRC, 2010). This Code also mentioned that *"the goal of Stewardship Code is promoting long-term success of companies."* Thus, the goal of the Stewardship Code is to ensure the long-term success of the invested companies through enhanced monitoring by institutional investors and engagement between firm management and investors.

We argue that stewardship codes should encourage institutional investors with

reputational concerns regarding attracting fund flows to engage in monitoring activities, thereby pursuing a good reputation.² Stewardship codes are soft laws, and some of them are introduced with the “comply or explain” rule. Under this rule, institutional investors are required to explain their non-compliance with the stewardship codes. Additionally, stewardship codes state that an asset owner, such as public pension funds, is also expected to monitor asset managers if they make sufficient efforts to monitor their portfolio companies (FRC, 2010).³ Therefore, if asset managers do not make sufficient monitoring efforts, they lose their reputations and, eventually, their clients. Previous studies argued that the success of money managers relies on the inflow of capital for the institution (Chevalier and Ellison (1997) for mutual funds; Lim et al. (2016) for hedge funds).

In particular, large pension funds deemed to be passive, and long-term investors express greater concern over a lack of monitoring incentives for institutional investors, which negatively affects their investment performance. Large pension funds might consider asset managers’ monitoring activities as a key determinant when allocating their funds to asset managers. This consideration is the case particularly after the introduction of stewardship codes in their respective countries because asset managers are required to disclose their monitoring and engagement activities in largely uniformed formats under the codes, whereas the codes require pension funds to monitor asset managers.

Assuming that the introduction of stewardship codes is exogeneous for institutional investors, we test the effects of stewardship codes on firm value and firms’ financial policies in relation to their institutional ownership by employing a difference-in-differences (DID) approach following Fauver et al. (2017), who examine the impact of country-level board reforms on firm

² Based on the reputational mechanism, Brav et al. (2018) explained how wolf pack activism overcomes the free-rider problem when monitoring activity. In their model, wolf pack members as delegated portfolio managers are incentivized to overcome the free-rider problem related to coordinated engagements to target firms through their reputational concerns over attracting investment flows.

³ UK Stewardship Code on 2010 states that “*However, the responsibility for monitoring company performance does not rest with fund managers alone. Pension fund trustees and other owners can do so either directly or indirectly through the mandates given to fund managers. Their actions can have a significant impact on the quality and quantity of engagement with UK companies.*” (FRC, 2010)

value in the respective countries.. To enable this examination, we construct an international panel data of financial information and institutional ownership of listed firms in 56 countries from fiscal years 2005 to 2016. Our results show that the introduction of stewardship codes increases the value of firms with high institutional ownership. Additionally, we show that the introduction of the codes mitigates the free cash flow problem (Jensen, 1986) of firms with low investment opportunities and high institutional ownership. These results are robust to potential endogeneity issues and potential concerns with our DID design. These results are consistent with the view that stewardship codes contribute to encouraging institutional investors who typically hold a widely diversified portfolio to monitor their portfolio firms. In other words, the introduction of stewardship codes mitigates institutional investors' free-rider problem. To the best of our knowledge, this study is the first that provides international evidence of the effects of the stewardship code.

The remainder of this paper is organized as follows. Section 2 presents an overview of the stewardship code, and Section 3 presents a literature review of articles on the role of institutional investors. Section 4 introduces our hypotheses. Section 5 describes the sample and data. Section 6 introduces the research design. Section 7 provides the empirical results. Section 8 concludes our research.

2. Overview of stewardship code

Stewardship codes are designed to enable institutional investors to become active monitors (Hill; 2017) and are expected to work to enhance their monitoring and engagement (Ernst & Young; 2017). These codes also aim to promote the long-term success of investee companies and eventually benefit society and the economy (FRC; 2010).⁴ Stewardship codes require institutional investors to explain how they will conduct their stewardship—how they will deal with conflicts of interest, monitor investee companies, and escalate engagement with investee companies, when institutional investors should act in concert—and periodically report on

⁴ In addition, stewardship codes also aim to be one of the growth strategies to improve companies' profitability in Japan (Financial Services Agency of Japan; 2014).

stewardship (Heineman and Davis, 2011). However, stewardship codes differ from each other. Some codes deal with activism guidelines; collective engagement; and environmental, social, and governance (ESG) criteria. The principle of activism guidelines is that all institutional investors must establish guidelines on when and how they will escalate their intervention in invested firms. In the UK Stewardship Code, FRC (2012) stated that, if institutional investors are dissatisfied with a company's strategy, performance, governance, or approach to the risks arising from social and environmental matters, then they should conduct an initial, confidential discussion regarding the issue with the firm's management. If boards do not respond constructively after the discussion, then institutional investors can consider whether to escalate their actions. These actions may include holding additional meetings with the management specifically to discuss concerns, expressing concerns through the company's advisers, meeting with the chairman or other board members, intervening jointly with other institutions on particular issues, making a public statement in advance of General Meetings, submitting resolutions and speaking at General Meetings, and requisitioning a General Meeting and—in some cases—proposing to change board membership. These points comprise the activism guideline principle, which is included in the stewardship code of six countries, including the United Kingdom. The principle of collective engagement encourages institutional investors to act collectively when considered appropriate. For example, in UK code, FRC (2010) stated, "*Collaborative engagement may be most appropriate at times of significant corporate or wider economic stress, or when the risks posed threaten the ability of the company to continue.*" This collective engagement principle is included in the stewardship code of nine countries, including the United Kingdom. The principle related to ESG and sustainability encourages institutional investors to factor ESG considerations into their stewardship activities (Ernst & Young, 2017). The Stewardship Code of South Africa includes the following principle: "*An institutional investor should incorporate sustainability considerations, including ESG, into its investment analysis and investment activities as part of the delivery of superior risk-adjusted returns to the ultimate beneficiaries*" (CRISA, 2011). The principle related to ESG and sustainability is included in the stewardship code of five countries, including the United Kingdom.

Tables 1 and 2 provide a summary of the details of these components. Our interpretation is that the principle of the activism guideline and collective engagement promotes interventions to improve shareholder value, whereas the principle related to ESG encourages the creation of multistakeholder benefits. This situation provides us with an opportunity to examine which direction of institutional investors' behavior affects corporate value.

[Insert Table1 around here]

[Insert Table2 around here]

The introduction of the stewardship codes is one of the corporate governance reforms implemented after the financial crisis to address criticisms for institutional investors' short-termism and activism (Hill, 2017)⁵. In 2010, the United Kingdom became the first country to adopt a stewardship code. Following the recommendation by Sir David Walker in 2009—the Walker Review on corporate governance in financial institutions—and the government's request, the FRC has taken responsibility of the Stewardship Code. After its introduction in the United Kingdom, many countries followed the United Kingdom's actions and introduced stewardship codes. As of 2016, 13 countries introduced stewardship codes.

Major institutional investors seemed to quickly accept the codes after their introduction. For example, in the UK, after the FRC introduced the Stewardship Code in July 2010 and it was implemented on a “comply or explain” basis with appropriate independent monitoring, 74 major institutional investors had signed the Code by October 2010. The FRC stated in its report of December 19, 2012, that “there are now over 250 signatories to the Code, including most major institutional investors.” In Japan, the Stewardship Code was introduced by the Financial Service Agency (FSA) in February 2014. The FSA reported that 160 institutional investors signed the Code by the end of August 2014 and more than 200 by the end of 2015. In both countries, the signatories included major pension funds (asset owners) and major foreign

⁵ In the Stewardship Code of Brazil, AMEC mentioned that “*The crisis of the international financial market in 2008 has given rise to intense debates about the best ways to prevent events that significantly impact on the real economy*” (AMEC, 2016).

asset managers who operate in the respective countries. The FSA studied the introduction of the Code in the United Kingdom and reported that, in this country in anticipation of the formulation of the Stewardship Code in 2010, from the initial stage, major institutional investors enhanced their organizational structure to meet the Code's requirements (FSA, 2013). Thus, the codes are expected to have immediate effects on both major asset owners of the countries and major asset managers who operate in those countries.

3. Hypothesis development

We argue that the stewardship codes exogenously lead asset managers, who are concerned with being evaluated by asset owners when determining their asset allocations, to enhance the monitoring effort by raising the cost of omission of monitoring activities by asset managers against their investee firms. Stewardship codes are soft laws, and some of them are introduced with the “comply or explain” rule. Under this rule, institutional investors are required to explain their non-compliance with stewardship codes.

Furthermore, stewardship codes state that an asset owner is also expected to monitor asset managers if the asset managers make enough efforts to monitor their portfolio companies. For example, the Stewardship Code of the United Kingdom states that “*Asset owners should be better equipped to evaluate asset managers, and asset managers should be better informed, enabling them to tailor their services to meet asset owners' requirements*” (FRC, 2012). Similarly, the Stewardship Code of Japan states that “*The institutional investors as asset owners are expected to disclose their policies on fulfilling their stewardship responsibilities and contribute to the enhancement of the corporate value of investee companies through their own actions and/or the actions of the asset managers, to which they outsource their asset management activities.*” Therefore, if asset managers do not make enough efforts to monitor, they damage their reputations and eventually lose clients.

Once stewardship codes are embraced by a certain proportion of market participants in investors' communities, their self-enforcing mechanisms work: the more that institutional investors share the concept in stewardship codes, the higher will be their reputational risk if they

do not follow these codes. In other words, stewardship codes are designed to enable institutional investors to become active monitors (Hill, 2017). As mentioned in Section 2, stewardship codes seem to be quickly and widely accepted by major institutional investors, including asset managers and asset owners.

Ferreira and Matos (2008) and Kang et al. (2018) found that active monitoring by institutional investors improves their investees' firm values. Therefore, we predict that enhanced monitoring by institutional investors after the introduction of stewardship codes improves the shareholder value of firms with high institutional ownership. Our first hypothesis is as follows.

H1: The shareholder value of firms with higher institutional ownership improves after the introduction of stewardship codes in respective countries.

Next, we examine why shareholder value improves after stewardship codes are introduced. Institutional investors can mitigate the agency problem between shareholders and managers and improve firm values (Gillan and Starks, 2003). Jensen (1986) argued that payouts to shareholders reduce a firm's free cash flows. Ferreira and Matos (2008) found that enhanced monitoring by independent and foreign institutional investors mitigates the free cash flow problem. Subsequently, we predict that enhanced institutional investors' monitoring after stewardship code introductions mitigates the free cash flow problem. Then, our second hypothesis is as follows.

H2: Firms with higher institutional ownership increase their payout ratios and decrease cash holdings after the introduction of the stewardship code.

4. Sample and data

We collect financial data from Thomson Reuters EIKON for 2005 through 2016 and institutional ownership data from S&P Capital IQ for 2005 through 2015. Institutional ownership data are as of the end of the year. We exclude firms in regulated industries (financial firms and

utility firms) and firms with negative assets. Our final sample includes 110,894 firm years from 56 countries.

We collect information on the stewardship code from 2005 to 2016 for all countries in our sample. Our primary sources are the original versions of the stewardship codes. We also use reports from a local financial regulator (Ernst & Young, 2017; Hill, 2017). We check the credibility of the information using each source. Table 2 provides a summary of the introductions years and types of stewardship codes. For the five countries that introduced the codes in 2016, we analyzed Tobin's q and financial results of only one fiscal year, 2016, subsequent to the introduction of the codes.

Appendix 1 provides the details of the definitions and data sources for all variables. Table 3 provides the summary statistics of the institutional ownership and firm- and country-level control variables. The variables for institutional ownership, Tobin's q, cash holding, payout ratio, R&D, and leverage are winsorized at the 1% level to mitigate the influence of outliers. Table 3 indicates that the mean (median) Tobin's q is 1.9 (1.28), and the mean (median) institutional ownership is 25.2% (13.64%).

[Insert Table 3 around here]

5. Research design

We use a DID approach to test whether enhanced institutional monitoring effects from the introduction of stewardship codes increase firm value. We use the introduction of the stewardship codes in a country as the exogenous event for institutional investors investing in that country. This approach was taken because the stewardship codes are typically introduced exogenously by a finance service agency, the stock market, or committees. As described in Section 2, many of the major asset owners and asset managers signed the codes within a few months of their introduction, at least in the United Kingdom and Japan.

In this study, we regress financial variables, such as firm value, payout ratio, and cash holding of the firms, on a variable that captures the effect of institutional ownership in the post-

introduction period of stewardship codes in respective countries.

We use Tobin's q for the dependent variable and as the proxy variable of firm value. For independent variables, we set the dummy variable, PostSC, to test the effects of the introduction of the stewardship code. PostSC equals 1 for years from the year during which the stewardship codes were introduced in the country to the end of fiscal year 2016 and 0 otherwise. We include control variables at the firm and country levels following Fauver et al. (2017). We include size, cash holding, CAPEX, R&D, and leverage as firm-level control variables. We also include GDP, FDI, and the Rule of Law as country-level control variables. Appendix 1 provides the definitions of all the variables used in this study. We use institutional ownership and control variables with one year lags to mitigate endogeneities. We also include the country fixed or firm fixed effect and year fixed effect.

The regression model to test whether enhanced monitoring by institutional investors after the introductions of the stewardship codes improves the firm value of invested companies is as follows:

$$\begin{aligned}
 \text{Tobin's } q_{i,t} = & \beta_0 + \beta_1(\text{PostSC})_{j,t} * (\text{Institution})_{i,t-1} \\
 & + \beta_2(\text{PostSC})_{j,t} + \beta_3(\text{Institution})_{i,t-1} + \sum \beta(\text{Control})_{i,j,t-1} \\
 & + (\text{Firm fixed effect}) + (\text{year fixed effect}) + \varepsilon_{i,t} \quad (1)
 \end{aligned}$$

Our variable of interest is the interaction variable of PostSC and institutional ownership. Hypothesis 1 predicts a positive coefficient for β_1 , which implies that enhanced monitoring by institutional investors after the introductions of stewardship codes positively affects firm value. We use the robust standard error by firms in all regression estimates.

We conduct several robustness checks to treat potential concerns in our approach. First, we address the endogeneity issue of institutional ownership with firm value. Even if institutional ownership is an endogenous variable, Bun and Harrison (2018) showed that the OLS estimator of a coefficient of this type of interaction between endogenous and exogenous variables is consistent, and a standard OLS inference can be applied. Nevertheless, to check the robustness of

the results by OLS, we conduct a two-stage least squares (2SLS) analysis using the instrument variables: year-, country-, and industry-level's average of institutional ownership. Second, we examine the effects of years surrounding the introduction year separately to address the concern over the causality between introductions of the stewardship codes and firm value. Third, we check whether our DID design fulfills the parallel trend assumption by conducting placebo tests. Fourth, we exclude US firms from our sample because the United States introduced ERISA prior to the period that we analyzed.

Next, we examine why firm value improves after the introductions of the stewardship codes from the perspective of the free cash flow problem of Jensen (1986). The regression model for analyzing this question is as follows:

$$\begin{aligned} \text{Payout ratio or Cash holding}_{i,t} = & \beta_0 + \beta_1(\text{PostSC})_{j,t} * (\text{Institution})_{i,t-1} + \\ & \beta_2(\text{PostSC})_{j,t} + \beta_3(\text{Institution})_{i,t-1} + \sum \beta(\text{Control})_{i,j,t-1} + (\text{Firm fixed effect}) + \\ & (\text{Year fixed effect}) + \varepsilon_{i,t} \quad (2) \end{aligned}$$

We set the dependent variable for the payout ratio and cash holding. We include size, CAPEX, R&D, and leverage as firm-level control variables. We also include GDP, FDI, and the Rule of Law as country-level control variables. Appendix 1 provides definitions for all of the variables used in this study. Again, our variables of interest are PostSC and institutional ownership for the subsample of firms with fewer investment opportunities. When we set the dependent variable for the payout ratio (cash holding), we predict a positive (negative) coefficient for β_1 . If this prediction holds true, then firms with higher institutional ownership will increase their dividends and decrease their cash holdings after introducing the stewardship code in respective countries, which suggests that enhanced institutional monitoring mitigates the free cash flow problem. We also conduct a subsample analysis by splitting our sample into two based on the investment opportunity of the firms in our sample. Based on the free cash flow problem of Jensen (1986), the introduction of the codes should have a stronger effect on firms with lower investment opportunities.

6. Empirical results

6.1. Enhanced monitoring effects after the introduction of the stewardship code

Table 4 presents the results of the DID analysis on whether enhanced monitoring by institutional investors after the introductions of stewardship codes improves the firm value of invested firms. In the table, columns (1) to (4) represent OLS models, and columns (5) to (8) represent 2SLS models. Among the OLS models, we show models that include the country fixed effect in columns (1) and (2) and all other models that include the firm-fixed effect. Columns (1) and (3) provide the results of the regression model, including the post stewardship code dummy (PostSC), institutional ownership, and all control variables. Columns (2) and (4) add the interaction of the institutional ownership and post stewardship code dummy.

Columns (2) and (4) report that the interaction variable, $\text{Institution} \times \text{PostSC}$, is positive and significant. These results show that the stewardship codes improve invested companies' firm values when their institutional ownership is high. Based on the sum of the coefficients of $\text{Institution} \times \text{PostSC}$ and Institution , as in column (4), we find that Tobin's q increases by approximately 0.15 when institutional ownership increases by one standard deviation (28% for all countries). These findings are consistent with H1. In columns (2) and (4), the coefficients of PostSC are insignificant. This result suggests that the stewardship codes do not have an effect on Tobin's q without institutional ownership, which is reasonable because these codes are expected to affect only the activities of institutional investors.

In columns (5) to (8), we address the potential endogeneity issue of institutional ownership with firm value. Institutional investors might choose firms with a higher firm value when they allocate their assets. To address this problem, we use the 2SLS even though we can obtain a consistent estimator of the coefficient of the interaction variable, $\text{Institution} \times \text{PostSC}$, using OLS (Bun and Harrison, 2018). To estimate institutional ownership, we use the following instrumental variable: year-, country-, and industry-level's average of institutional ownerships. We also use this instrumental variable for the interaction variable, $\text{Institution} \times \text{PostSC}$. Columns (6) and (8) show that the coefficients of $\text{Institution} \times \text{PostSC}$ are positive and significant. These results indicate that our results are robust to the potential endogeneity issue.

[Insert Table 4 around here]

In all of the models, we include either country fixed effect or firm-fixed effect, and our main results do not change. In the following analysis, we discuss our results based on regression models with the firm-fixed effect in which we can more effectively minimize the missing variable problem.

6.2. Robustness tests

We separately examine the effects of years surrounding the introduction year in greater detail to analyze whether the introductions of the stewardship codes actually drive the results presented in Panel A of Table 5. We replace PostSC with timing variables that identify timings in the pre- and post-introduction periods, following the method employed by Bertrand and Mullainathan (2003) and Fauver et al. (2017). In the regression model, we include PreSC, which is a dummy variable that takes the value of 1 for the year prior to the introductions of stewardship codes and 0 otherwise. We also include PostSC0, which takes the value of 1 for the year in which the codes are introduced; PostSC1, which takes the value of 1 for the 1 year after the introduction of the stewardship codes; and PostSC2, which takes the value of 1 for the 2 and subsequent years after the introduction of the stewardship codes. Again, our variables of interest are the interaction variables between institutional ownership and the timing variables. In column (1) of Panel A of Table 5, only PostSC0 is positive and significant. Column (2) shows that PostSC1×Institution and PostSC2×Institution are both positive and significant, but PostSC0×Institution and PreSC1×Institution are insignificant. Column (4) shows the results of 2SLS. We find positive and statistically significant coefficients on the interactions of PostSC0, PostSC1, and PostSC2 and institutional ownership, but not on the interactions of PreSC1 and institutional ownership. In all of the models, we find no significant difference in firm value prior to the introductions. The results suggest that the increase in firm value happens on or after the introduction of stewardship codes in respective countries. These results are consistent with H1.

Next, to confirm the parallel trend assumption underlying our DID analysis, we conduct placebo tests following Fauver et al. (2017). If our DID design meets the parallel trend assumption, then the average change would be the same for both the treatment and reference groups in the absence of the treatment effect. We restrict our sample period before the introduction of the stewardship codes and set the pseudo introduction as 5 years before the actual timing of the introduction. Panel B of Table 5 shows the results of the placebo test. In column (1), the coefficient of PseudoSC is insignificant, and in column (2), the coefficient of Institution×PseudoSC is also insignificant. These results suggest that our treatment and benchmark groups have similar Tobin's q trends in the absence of the treatment. Thus, we can find that our DID design meets the parallel trend assumption.

Finally, we exclude US firms from our sample because the United States introduced ERISA in 1974. ERISA imposes fiduciary duties on institutional investors who operate corporate pensions to urge them to expand their corporate governance responsibilities. Thus, the United States has special settings relative to other countries that have already introduced a legal rule to force pension funds to be responsible monitors. To address this issue, we use a subsample that excludes US firms from our sample. Panel C of Table 5 provides the results, which are mostly the same as those of Table 4. Thus, our results support H1.

All of our robustness tests support the results presented in Table 4 in an important sense. Thus, we can interpret that our main results in Table 4 are robust and that the shareholder value of firms with higher institutional ownership improves after the introduction of stewardship codes in respective countries.

[Insert Table 5 around here]

An interesting question is whether a specific type of institutional investor makes stronger monitoring efforts. Unfortunately, because our database does not allow us to classify types or locations of institutional investors in detail, we cannot answer this question. Instead, we use country-level institutional ownership data collected from the OECD institutional investor

database and examine whether a specific type of investor plays a stronger monitoring role after the introduction of the codes. OECD Institutional Investors' statistics provide annual country-level institutional ownership data on 20 countries and contains variables for the total financial assets held by 3 investors, pension funds, investment funds, and insurance corporations as a percentage of GDP. Given the assumptions that the compositions of institutional ownerships are uniformly distributed in their respective countries, we calculate firm-level institutional ownership of the three types of institutional investors. By using estimations for these three types of institutional holdings, we assess their effects on Tobin's q with a model similar to that presented in Table 4. Although we do not show the results in the table, among the three types of institutional investors, only the interaction variable of pension fund and PostSC has a positive and significant coefficient. This result implies that the introductions of the stewardship codes enhance monitoring by pension funds. Previous studies argued that pension funds are not likely to make much of an effort to monitor because of their diversified portfolios and political concerns (Roe, 1990; Romano, 1993; Gillan and Starks, 2007). We interpret that monitoring efforts by pension funds changed after the introductions of the stewardship codes because pension funds as asset owners not only comply with the stewardship codes but also instruct asset managers who manage their assets to enhance the monitoring role. One limitation of the result is that, among the 20 countries in the sample of this analysis, only three countries—Canada, Italy, and Japan—introduced their respective stewardship codes. Thus, these results might be specific to the three countries.

6.3. Introductions of stewardship codes and the free cash flow problem of invested firms

An interesting question is what type of change do the stewardship codes bring to the invested companies through enhanced monitoring effects by institutional investors? To address this question, we examine H2. To test whether the introductions of stewardship codes mitigate the free cash flow problem of invested firms, we examine changes in the payout ratios and cash holdings of the invested firms after the introductions of stewardship codes.

The free cash flow problem is predicted to be severe for firms with poor investment

opportunities. Subsequently, we split our sample into two based on the investment opportunity of the firms in our sample. We use PriorQ, which is defined as year-, country-, and industry-level's average Tobin's q of one previous year, as a proxy for a firm's investment opportunity. We split our sample into two subsamples using the median of PriorQ. We name the subsamples with a higher PriorQ than the median as High PriorQ and the other as Low PriorQ. We predict that the free cash flow problem is more severe in firms with a Low PriorQ for which the investment opportunity is relatively poor in the sample. Table 6 presents the results. Columns (1) to (4) present the results of OLS, and columns (5) to (8) present the results of 2SLS. Columns (1) ,(2), (5) and (6) analyze the Low Prior Q subsample, and columns (3) , (4),(7) and (8) analyze the High Prior Q subsample. The dependent variables are the payout ratio in columns (1) ,(3), (5) and (7) whereas the dependent variables are the cash holding of the firms in columns (2) ,(4), (6) and (8). We find that the coefficients of the interaction variables are significant only in the Low PriorQ subsample for the results of OLS; the coefficient of the interaction variable is positive and significant in column (1) and negative and significant in column (2). In contrast, the coefficient of the interaction variables in columns (3) and (4) is insignificant. The results of 2SLS in columns (5), (6), and (7) are essentially the same as those in columns (1), (2), and (3). Only column (8), which shows that the interaction variable becomes negative and significant, is different from the result in column (4) but is not inconsistent with the free cash flow problem. Overall, these results are consistent with H2, which states that enhanced monitoring by institutional investors after the introduction of the codes mitigates the free cash flow problem of invested firms (Ferreira and Matos, 2008).

[Insert Table 6 around here]

6.4. Additional analyses

6.4.1. Contents of stewardship codes

To this point, we treated the introductions of the stewardship codes in different countries as events that have the same influence on the monitoring of institutional investors.

However, differences might exist in the influence attributable to the differences in the contents of the codes of different countries. To explore this question, in addition to the interaction variable of PostSC and institutional ownership, we add three interaction variables between the institutional ownership and unique content dummies: activism guideline, collective engagement guideline, and ESG and sustainability guideline. We explain these three content items in Section 2 and Table 2. We separately assess them with respect to firm value by adding the three institutional ownership \times PostSC \times unique content dummy variables to Eq. (1). The respective contents' dummy equals 1 when the stewardship code of a country includes one of the three content items. We can assess whether a unique content item has an additional effect on that of the common contents of the codes through the coefficients of the interaction variables that contain each unique content dummy.

Table 7 reports the results. Column (1) contains the interaction variables of the three unique content dummies altogether, and columns (2), (3), and (4) contain the interaction variable of the three unique content dummies separately. We find that the coefficients of Institution \times PostSC \times Activism Guideline in columns (1) and (2) are positive and significant. However, the coefficients of Institution \times PostSC \times Collective Engagement and Institution \times PostSC \times ESG and Sustainability in columns (1), (3), and (4) are insignificant. In columns (5) to (8), we show the results of 2SLS, which are almost the same as those of OLS. These results imply that stewardship codes with the principle of the activism guideline improve the monitoring effects by institutional investors. One possible explanation for this result is that the principle of the activism guideline requires institutional investors to actively monitor the firms in their portfolio when they are dissatisfied with the management. Such monitoring requires additional effort by institutional investors relative to their regular monitoring activities. Therefore, the principles related to the activism guideline enhance monitoring by institutional investors.

[Insert Table 7 around here]

6.4.2. Enforcement environment of law and effects of stewardship codes

We next examine the relationship between the enforcement environment of the law and the effects of stewardship codes. Because the stewardship codes are soft laws, their impact on the financial market might differ among countries that depend on the degree to which the rule of law is respected in a country. To explore this question, we employ the Rule of Law index (Kaufmann, et al. 2009) as the proxy variable for the extent to which stewardship codes are respected by institutional investors in respective countries. This index captures the perceptions of the extent to which agents have confidence in and abide by the rules of society and, in particular, the quality of the contract enforcement, property rights, police, and courts.

Although we include the variable as a control variable in all of the presented regressions, in this section, we introduce the interaction term, $\text{Institution} \times \text{PostSC} \times \text{Rule of Law}$. Table 4 shows that the interaction variable, $\text{Institution} \times \text{PostSC}$, is positive and significant, suggesting that the stewardship codes improve the firm value of invested companies when their institutional ownership is high. Then, we examine whether the coefficient of this interaction variable, $\text{Institution} \times \text{PostSC}$, is higher for countries in which the rule of law is respected. If so, the coefficient of the interaction variable, $\text{Institution} \times \text{PostSC} \times \text{Rule of Law}$, is expected to be positive.

Table 8 provides the result. We find that the coefficient of the interaction variable, $\text{Institution} \times \text{PostSC} \times \text{Rule of Law}$, is significantly positive, whereas the coefficient of the interaction variable, $\text{Institution} \times \text{PostSC}$, is not significant regardless of the models employed. These results imply that the introduction of stewardship codes notably enhances monitoring by institutional investors in countries in which the quality of contract enforcement is high. The stewardship codes have no significant impact on firm value when the rule of law is not highly respected.

[Insert Table 8 around here]

6.4.3. Institutional investors' myopic and stewardship code

Does enhanced monitoring by institutional investors force firms to employ a myopic investment policy? Bushee (1998) reported that institutional investors with short-term

investments induce managerial myopia; however, institutional investors with long-term investments reduce this myopic behavior. To analyze this concern, we examine whether enhanced monitoring by institutional investors leads firms to make myopic investments. As a dependent variable, we employed R&D as a proxy variable for long-term investment. Table 9 presents the results, and we find that the coefficient of the interaction of Institution and PostSC is insignificant. Additionally, the coefficient of Institution is positive and significant. These results imply that the introductions of codes do not induce myopic behavior in invested companies' management.

[Insert Table 9 around here]

7. Conclusion

In this study, we analyze the effect of the introductions of the stewardship codes on the effectiveness of monitoring by institutional investors. The presented results support our hypothesis that stewardship codes enhance monitoring by institutional investors, and the enhanced monitoring in the post-code-introduction period improves the value of firms with high institutional ownership. These results are robust to endogeneity concerns and the potential concerns of the DID design. We also find that the enhanced monitoring by institutional investors after the introductions of codes reduces the free cash flow problem of firms with a low investment opportunity.

Additionally, we find that a stewardship code with principles related to the activism guideline enhances the monitoring effects of institutional investors. We also find that stewardship codes enhance the monitoring effects of pension funds.

This study contributes to the literature on the role of institutional investors in corporate governance. Stewardship codes can be an effective mechanism to make institutional investors commit to the monitoring role. We interpret that the codes increase costs for asset managers that are lacking in monitoring activities. Thus, this study contributes to the literature related to the free-rider problem in corporate governance. Although previous studies are skeptical of the role of institutional investors whose portfolios are widely diversified given the free-rider problem, our

results indicate that stewardship codes succeed in mitigating the problem to a significant extent.

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Table 1: Representative Principles of Stewardship Codes

This table reports the representative principles of the stewardship codes. These explanations are collected by each countries' stewardship codes. We categorize the contents of stewardship codes of respective countries in the sample into common contents and additional three groups of contents.

Contents	Principle
Common contents	
Conflicts of interests	Institutional investors should have a clear policy on how they manage conflicts of interest in fulfilling their stewardship responsibilities and publicly disclose it(Japan)
Voting rights	Institutional investors should have a clear policy on voting and disclosure of voting activity.(UK2010)
Obligation of reports about Stewardship activity	Institutional investors should publicly disclose their policy on how they will discharge their stewardship responsibilities.(UK 2010)
Monitoring and engage with investee companies	Institutional investors should monitor their investee companies.(UK 2010)
Different contents	
Collective Engagement	Institutional investors should be willing to act collectively with other investors where appropriate.(UK 2010)
Activism Guideline	Institutional investors should establish clear guidelines on when and how they will escalate their activities as a method of protecting and enhancing shareholder value.(UK 2010)
ESG and Sustainability	An institutional investor should incorporate sustainability considerations, including ESG, into its investment analysis and investment activities as part of the delivery of superior risk-adjusted returns to the ultimate beneficiaries.(South Africa)

Table 2: Introduction Year and Contents of Stewardship Codes

This table reports that years of introductions of the stewardship codes. These data are collected by each countries' stewardship codes, corporate governance codes, and Ernst & Young (2017). Column 2-4 reports whether the stewardship codes deal with the activism guideline, collective engagement, ESG and sustainability, respectively. We categorize the contents of stewardship codes of respective countries in the sample into common contents and additional three groups of contents.

country	Year (1)	Activism guidline (2)	Collective engagement (3)	ESG and Sustainability (4)
United Kingdom	2010	1	1	0
Netherland	2010	1	1	1
Canada	2010	1	1	0
SouthAfrica	2011	0	1	1
Switzerland	2013	0	0	0
Italy	2013	1	1	0
Japan	2014	0	0	1
Malaysia	2014	0	0	1
Hong Kong	2016	1	1	0
Taiwan	2016	0	0	0
Brazil	2016	0	1	1
Singapore	2016	0	1	0
Denmark	2016	1	1	0

Table 3: Descriptive Statistics of Sample Firms

This table reports summary statistics of variables for all samples. All variables are as defined in the Appendix. The sample period is from 2005 to 2016. Financial and utility industries are omitted. N is the number of firm-year observations. The variables of Institution, Tobin's q, Cash holding, Payout ratio, R&D and Leverage are winsorized at 1% level.

Variable	N	Mean	Q1	Median	Q3	Standard Deviation
Institution	97685	25.201	4.490	13.640	34.610	28.510
Tobins'q	99271	1.903	0.930	1.289	2.082	1.990
Cash Holdings	110204	0.191	0.054	0.129	0.261	0.193
Payout Ratio	70743	0.687	0.177	0.360	0.683	1.219
Size	110266	19.267	17.942	19.232	20.543	2.087
CAPEX	108585	0.058	0.016	0.037	0.074	0.067
R&D	110894	0.486	0.000	0.000	0.015	2.255
Leverage	108469	2.237	1.295	1.728	2.490	1.813
GDP	110894	9.828	8.915	10.492	10.778	1.197
FDI	110894	0.052	0.014	0.025	0.039	0.097
Rule of Law	110894	0.884	-0.063	1.335	1.627	0.910

Table 4: Introduction of Stewardship Codes and Firm Value

The dependent variable is Tobin's q. In Columns 5-8, the system of equations is estimated using 2SLS to conduct the robustness check. The instrumental variable is year-, industry-, and country-level's average of Institution. Definitions of all variables are shown in the appendix. All independent variables are lagged by one year, except for PostSC. Country-fixed effects or Firm-fixed effects and Year-fixed effects are included in every Column. The standard errors, in parentheses, are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Regression type Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS				2SLS			
	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q
Institution×PostSC		0.00429*** (0.00163)		0.00230** (0.000988)		0.00648*** (0.00194)		0.00473*** (0.00142)
PostSC	0.0496 (0.0303)	-0.0492 (0.0440)	0.0489* (0.0272)	-0.00582 (0.0332)	0.0509* (0.0303)	-0.0984* (0.0505)	0.0476* (0.0273)	-0.0651* (0.0392)
Institution	0.00375*** (0.000648)	0.00327*** (0.000661)	0.00333*** (0.000751)	0.00303*** (0.000769)	0.00143 (0.00139)	0.000560 (0.00142)	0.00112 (0.00149)	0.000245 (0.00152)
Size	-0.155*** (0.00959)	-0.155*** (0.00960)	-0.740*** (0.0301)	-0.742*** (0.0301)	-0.145*** (0.0115)	-0.145*** (0.0115)	-0.733*** (0.0304)	-0.735*** (0.0305)
Cash Holding	2.366*** (0.0906)	2.368*** (0.0906)	0.556*** (0.0990)	0.560*** (0.0992)	2.374*** (0.0910)	2.378*** (0.0910)	0.563*** (0.0989)	0.574*** (0.0992)
CAPEX	1.124*** (0.159)	1.130*** (0.159)	0.293** (0.145)	0.297** (0.145)	1.137*** (0.158)	1.147*** (0.158)	0.309** (0.145)	0.320** (0.145)
R&D	0.0569*** (0.00740)	0.0567*** (0.00740)	0.0120 (0.00823)	0.0121 (0.00823)	0.0564*** (0.00742)	0.0560*** (0.00743)	0.0122 (0.00824)	0.0123 (0.00824)
Leverage	0.0280*** (0.00682)	0.0278*** (0.00681)	0.0258*** (0.00723)	0.0258*** (0.00723)	0.0263*** (0.00687)	0.0260*** (0.00685)	0.0253*** (0.00724)	0.0252*** (0.00725)
GDP	0.233*** (0.0553)	0.238*** (0.0555)	0.405*** (0.0539)	0.409*** (0.0540)	0.217*** (0.0565)	0.222*** (0.0566)	0.388*** (0.0550)	0.396*** (0.0552)
FDI	-0.297*** (0.0924)	-0.254*** (0.0917)	-0.0985 (0.0765)	-0.0749 (0.0747)	-0.310*** (0.0929)	-0.245*** (0.0908)	-0.108 (0.0764)	-0.0607 (0.0737)
Rule of Law	-0.115 (0.0882)	-0.0825 (0.0881)	-0.127* (0.0772)	-0.111 (0.0775)	-0.109 (0.0882)	-0.0592 (0.0880)	-0.118 (0.0774)	-0.0836 (0.0777)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Country fixed effects	YES	YES	NO	NO	YES	YES	NO	NO
Firm fixed effects	NO	NO	YES	YES	NO	NO	YES	YES
Observations	80,714	80,714	80,714	80,714	80,714	80,714	79,794	79,794
R-squared	0.197	0.198	0.112	0.112	0.197	0.197	0.111	0.111
Number of firm	12,830	12,830	12,830	12,830	12,830	12,830	11,910	11,910

Table 5: Robustness Tests on the Stewardship Codes and Firm Value

This table reports that robustness check of results of Table 4. Panel A reports results of using the model with timing variables. Panel B reports results using the pseudo adoption years. Panel C reports results of using the sample excluding the United States of America.

Panel A: Robustness Tests on Timing variables

Regression type Dependent variable	(1)	(2)	(3)	(4)
	OLS		2SLS	
	Tobin's q	Tobin's q	Tobin's q	Tobin's q
Institution×PreSC		-0.000384 (0.00119)		-0.000567 (0.00174)
Institution×PostSC0		0.00103 (0.00136)		0.00549*** (0.00210)
Institution×PostSC1		0.00358*** (0.00117)		0.00583*** (0.00176)
Institution×PostSC2		0.00270* (0.00139)		0.00458** (0.00200)
PreSC	-0.0406 (0.0253)	-0.0339 (0.0342)	-0.0405 (0.0253)	-0.0299 (0.0437)
PostSC0	0.0634** (0.0310)	0.0405 (0.0395)	0.0622** (0.0311)	-0.0520 (0.0469)
PostSC1	-0.00830 (0.0364)	-0.0982** (0.0445)	-0.00915 (0.0364)	-0.152*** (0.0589)
PostSC2	0.0270 (0.0456)	-0.0530 (0.0606)	0.0255 (0.0458)	-0.105 (0.0667)
Institution	0.00333*** (0.000751)	0.00302*** (0.000774)	0.00119 (0.00149)	0.000263 (0.00154)
Control	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES
Observations	80,714	80,714	79,794	79,794
R-squared	0.112	0.112	0.112	0.111
Number of firm_num	12,830	12,830	11,910	11,910

Table 5: (Continued)

Panel B: Robustness Test on Parallel Trend Assumption

Dependent variable	Placebo test	
	(1)	(2)
	Tobin's q	Tobin's q
Institution×PseudoSC		-0.00143 (0.00105)
PseudoSC	0.0247 (0.0237)	0.0460* (0.0273)
Institution	0.00326*** (0.000814)	0.00345*** (0.000851)
Contorl	YES	YES
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Observations	71,111	71,111
R-squared	0.115	0.115
Number of firm	12,301	12,301

Panel C: Robustness Test on Exclusion of the US Sample

Dependent variable	Excluding US sample	
	(1)	(2)
	Tobin's q	Tobin's q
Institution×PostSC		0.00274*** (0.00100)
PostSC	0.0935*** (0.0275)	0.0293 (0.0336)
Institution	0.00351*** (0.000858)	0.00303*** (0.000885)
Contorl	YES	YES
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Observations	69,011	69,011
R-squared	0.126	0.126
Number of firm	11,102	11,102

Table 6: Introduction of Stewardship Codes and Free Cash Flow Problem

The dependent variables are Payout or Cash holding. We split our sample into two subsamples using the median of PriorQ, where PriorQ is defined as industry, year, country-level average of Tobin's q on one previous year. We name the subsamples with a higher PriorQ than the median as High PriorQ and the other as Low PriorQ. In Columns 5-8, the system of equations is estimated using 2SLS to conduct the robustness check. The instrumental variable is year-, industry-, and country-level's average of Institution. Definitions of all variables are shown in appendix. All independent variables are lagged by one year except for PostSC. Firm-fixed effects and Year-fixed effects are included in every Column. The standard errors, in parentheses, are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Regression type	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS				2SLS			
Sample	Low PriorQ	Low PriorQ	High PriorQ	High PriorQ	Low PriorQ	Low PriorQ	High PriorQ	High PriorQ
Dependent variable	Payout Ratio	Cash Holding	Payout Ratio	Cash Holding	Payout Ratio	Cash Holding	Payout Ratio	Cash Holding
Institution×PostSC	0.00293*** (0.000977)	-0.000190** (9.08e-05)	0.000234 (0.00148)	-0.000196 (0.000140)	0.00527*** (0.00154)	-0.000429*** (0.000128)	-8.53e-06 (0.00233)	-0.000793*** (0.000232)
PostSC	-0.131*** (0.0393)	0.0184*** (0.00312)	0.0188 (0.0722)	0.0175** (0.00699)	-0.183*** (0.0475)	0.0235*** (0.00340)	0.0276 (0.0906)	0.0363*** (0.00867)
Institution	-0.00167* (0.000999)	0.000172** (7.48e-05)	-0.00697*** (0.00122)	0.000311*** (9.00e-05)	-0.00493** (0.00218)	0.000202 (0.000139)	-0.00829*** (0.00272)	0.000378 (0.000243)
Size	0.320*** (0.0405)	-0.0304*** (0.00316)	0.262*** (0.0347)	-0.0357*** (0.00270)	0.324*** (0.0403)	-0.0302*** (0.00316)	0.266*** (0.0365)	-0.0355*** (0.00279)
CAPEX	0.291 (0.221)	-0.135*** (0.0151)	-0.290 (0.202)	-0.231*** (0.0175)	0.309 (0.221)	-0.136*** (0.0152)	-0.282 (0.203)	-0.232*** (0.0176)
R&D	0.0195** (0.00925)	-0.00156 (0.00116)	-0.00662 (0.00711)	0.000216 (0.000678)	0.0203** (0.00915)	-0.00156 (0.00116)	-0.00688 (0.00716)	0.000220 (0.000679)
Leverage	-0.0439*** (0.0117)	-0.00217*** (0.000527)	0.0416*** (0.0146)	-0.00354*** (0.000894)	-0.0444*** (0.0118)	-0.00216*** (0.000529)	0.0412*** (0.0146)	-0.00355*** (0.000897)
GDP	0.188** (0.0871)	0.0168*** (0.00566)	-0.111 (0.0678)	-0.00275 (0.00611)	0.181** (0.0880)	0.0156*** (0.00559)	-0.122* (0.0701)	-0.00350 (0.00634)
FDI	0.0299 (0.159)	0.00675 (0.00684)	0.292 (0.227)	0.0332** (0.0168)	0.0310 (0.160)	0.00550 (0.00685)	0.283 (0.229)	0.0214 (0.0161)
Rule of Law	0.100 (0.104)	-0.0145* (0.00806)	-0.211* (0.118)	0.0546*** (0.0130)	0.126 (0.104)	-0.0157** (0.00802)	-0.207* (0.120)	0.0515*** (0.0130)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	29,699	43,193	26,576	42,186	28,170	41,327	25,035	40,291
R-squared	0.015	0.037	0.025	0.056	0.014	0.036	0.024	0.055
Number of firm	7,117	10,004	6,821	9,952	5,588	8,138	5,280	8,057

Table 7: Effects of Contents in Stewardship Codes

The dependent variable is Tobin's q. In Columns 5-8, the system of equations is estimated using 2SLS to conduct the robustness check. The instrumental variable is year-, industry-, and country-level's average of Institution. Definitions of all variables are shown in appendix. All independent variables are lagged by one year except for PostSC. Firm-fixed effects and Year-fixed effects are included in every Column. The standard errors, in parentheses, are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Regression type Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS				2SLS			
	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q
Institution×PostSC×Activism Guideline	0.00525* (0.00273)	0.00249* (0.00130)			0.00491 (0.00322)	0.00327* (0.00190)		
Institution×PostSC×Collective Engagement	-0.00267 (0.00174)		0.00130 (0.00131)		-0.00303 (0.00260)		0.00133 (0.00210)	
Institution×PostSC×ESG and Sustainability	0.00101 (0.00255)			-0.00141 (0.00143)	-0.000359 (0.00268)			-0.00240 (0.00187)
Institution×PostSC	0.000317 (0.00236)	0.000401 (0.00105)	0.00120 (0.00118)	0.00264** (0.00110)	0.00325 (0.00320)	0.00150 (0.00212)	0.00326 (0.00252)	0.00491*** (0.00144)
PostSC	0.00585 (0.0333)	0.0101 (0.0332)	0.00256 (0.0333)	0.000736 (0.0337)	-0.0420 (0.0476)	-0.0264 (0.0450)	-0.0483 (0.0471)	-0.0443 (0.0431)
Institution	0.00305*** (0.000769)	0.00306*** (0.000769)	0.00304*** (0.000769)	0.00304*** (0.000770)	0.000358 (0.00153)	0.000373 (0.00153)	0.000283 (0.00153)	0.000293 (0.00153)
Control	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	80,714	80,714	80,714	80,714	79,794	79,794	79,794	79,794
R-squared	0.112	0.112	0.112	0.112	0.111	0.111	0.111	0.111
Number of firm	12,830	12,830	12,830	12,830	11,910	11,910	11,910	11,910
F test								
Institution×PostSC								
+ Institution×PostSC×Activism Guideline= 0	0.00557***	0.00289**			0.00816**	0.00477***		
Institution×PostSC								
+ Institution×PostSC×Collective Engagement= 0	-0.00235		0.00250**		0.00022		0.00459***	
Institution×PostSC								
+ Institution×PostSC×ESG and Sustainability= 0	0.00133			0.00123	0.00289			0.00251

Table 8: Enforcement Environment of law and the Effect of the Stewardship Codes

The dependent variable is Tobin's q. In Columns 3 and 4, the system of equations is estimated using 2SLS to conduct the robustness check. The instrumental variable is year-, industry-, and country-level's average of Institution. Definitions of all variables are shown in the appendix. All independent variables are lagged by one year, except for PostSC. Firm-fixed effects and Year-fixed effects are included in every Column. The standard errors, in parentheses, are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Regression type Dependent variable	(1)	(2)	(3)	(4)
	OLS		2SLS	
	Tobin's q	Tobin's q	Tobin's q	Tobin's q
Institution×PostSC×Rule of Law		0.00216** (0.000898)		0.00265** (0.00112)
Institution×PostSC		-0.000811 (0.00117)		0.000849 (0.00170)
PostSC	0.0489* (0.0272)	-0.00217 (0.0330)	0.0476* (0.0273)	-0.0590 (0.0388)
Rule of law	-0.127* (0.0772)	-0.132* (0.0782)	-0.118 (0.0774)	-0.110 (0.0788)
Institution	0.00333*** (0.000751)	0.00301*** (0.000770)	0.00112 (0.00149)	0.000296 (0.00152)
Control	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES
Observations	80,714	80,714	79,794	79,794
R-squared	0.112	0.112	0.111	0.111
Number of firm	12,830	12,830	11,910	11,910

Table 9: Introduction of Stewardship Codes and R&D investment

The dependent variable is R&D. In Column 2, the system of equations is estimated using 2SLS to conduct the robustness check. The instrumental variable is year-, industry-, and country-level's average of Institution. Definitions of all variables are shown in appendix. All independent variables are lagged by one year except for PostSC. Firm-fixed effects and Year-fixed effects are included in every Column. The standard errors, in parentheses, are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Regression type Dependent variable	(1)	(2)
	OLS R&D	2SLS R&D
Institution×PostSC	-0.000333 (0.000845)	0.000346 (0.00109)
PostSC	-0.0508 (0.0414)	-0.0729 (0.0474)
Institution	0.00223** (0.000972)	-0.000586 (0.00149)
Size	-0.0219 (0.0302)	-0.0583* (0.0300)
Leverage	-0.00796 (0.00636)	0.00120 (0.00594)
GDP	-0.00244 (0.0454)	0.0133 (0.0464)
FDI	0.0862 (0.0716)	0.0654 (0.0685)
Rule of law	0.401*** (0.0837)	0.215** (0.0842)
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Observations	89,259	88,309
R-squared	0.003	0.002
Number of firm	13,963	13,013

Appendix

Appendix 1: Variable definition

Variable	Definition	Data source
Dummy variable		
PostSC	Equals to one in the years that the Stewardship Code are introduced in the country and zero otherwise	Earnst & Young(2017), Reports from local financial regulator
PreSC	Equals one in the one year before the Stewardship Code is introduced in the country and zero otherwise	
PostSC0	Equals one in the year when the Stewardship Code is introduced in the country and zero otherwise	
PostSC1	Equals one in the one year after the Stewardship Code is introduced in the country and zero otherwise	
PostSC2	Equals one in the second year and subsequent years after the introduction of Stewardship Code and zero otherwise	
Activism guideline	Equals to one when the contents related to Activism guideline are included in the Stewardship Code of a country	
Collective engagement	Equals to one when the contents related to collective engagement are included in the Stewardship Code of a country	
ESG and Sustainability	Equals to one when the contents related to ESG and Sustainability are included in the Stewardship Code of a country	
Institutional holding variable		
Institution	Total institutional ownership ratio	Capital IQ
Pension funds	Pension funds ownership ratio	Capital IQ, OECD
Investment funds	Investment funds ownership ratio	Capital IQ, OECD
Insurance corporation	Insurance corporation ownership ratio	Capital IQ, OECD
Firm-level financial variables		
Tobin's Q	Sum of total assets plus market value of equity minus bookvalue of equity divided by total assets	Thomson EIKON
Cash holding	Cash and short-term investment divided by total assets	Thomson EIKON
CAPEX	Capital expenditures divided by total assets	Thomson EIKON
Payout ratio	Dividend divided by net profit	Thomson EIKON
R&D	R&D divided by sales (setting zero when R&D is null)	Thomson EIKON
Leverage	Total assets divided by book value of equity	Thomson EIKON
Size	Log of total assets (in millions of USD)	Thomson EIKON
Country-level variables		
GDP	Log of GDP per capita	World Bank
FDI	Annual net inflows of foreign direct investment measured as a percent of GDP	World Bank
Rule of law	The annual rule of law index compiled by World Governance Indicators (WGI). (Rule of Law (RL) – capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence)	World Bank