Institutional Ownership and Firm Performance: A Global Analysis

Yusheng Cen

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By: Yusheng Cen

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Signed by the final Examining Committee:

_____ Chair
Chair's name

_____ Examiner
Dr. Saif Ullah

_____ Examiner
Dr. Thomas J. Walker

_____ Supervisor
Dr. Denis Schweizer

Approved by

_____
Dr. Nilanjan Basu, Graduate Program Director

_____
Dr. Anne-Marie Croteau, Dean of Faculty

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Abstract

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In this thesis, I analyze the roles of different institutional investors and how they affect firm performance based on a global dataset of 31 countries (regions) from 2007 to 2016. Breaking down institutions by geographic information (domestic or foreign) and type (such as mutual fund or pension funds), I first find that all institutions share preference for large firms, firms that experienced negative stock returns, and firms with lower leverage and high liquidity. I also find that various types of institutional investors affect firms' operating performance differently. The relation is convex for foreign institutions, while the opposite is true for domestic institutions. This indicates that foreign institutional investors exert better corporate governance when ownership is high, while domestic institutions are subject to business ties with firms when they hold substantial amounts of voting rights. Further analysis reveals a U-shaped relationship between firms' operating performance and the ownership level of investment advisors/bank trusts/pension funds, indicating a monitoring effect with high levels of ownership. However, mutual funds exhibit a concave influence on firm value, signifying negative impact of business ties when ownership is high. The findings for other types of institutions (hedge fund and insurance companies) are inconclusive.

Keywords: Institutional investors, corporate governance, firm performance, business ties

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1. Introduction

Institutional investors play an increasingly important role worldwide, primarily due to globalization. There is also a tremendous increase in the aggregate level of institutional ownership during the past years. According to the World Bank, institutions hold nearly $100 trillion worth of assets under management (AUM) in Organisation for Economic Co-operation and Development (OECD) countries in 2013. McKinsey & Company reports an AUM of $88.5 trillion held by North American asset management companies as of the end of 2017. As one of the largest investment management corporation, BlackRock reported a total of $6.84 trillion AUM in its 2019 second quarter financial statement.

Institutional investors are becoming increasingly dominant in many countries (Gillan and Stark, 2003), not only in developed nations, but also in emerging markets (Khorana, Servaes, and Tufano, 2005; Ferreira and Matos, 2008). Institutional investors are frequently recognized as a mechanism for corporate governance, either by actively interfering with management decisions (Gillan and Stark, 2003) or indirectly "voting with feet" (Parrino, Sias, and Starks, 2003; Admati and Pfleiderer, 2006). In this study, I examine what attracts these institutional investors and how they engage in shareholder-value maximization. Not all institutions, by geographic origin or type, share the same incentive or cost of monitoring. I focus on two groups of institutions for comparison: foreign and domestic, and independent and "grey"[1].

[1] Independent institutions are composed of mutual funds, investment advisors, and hedge funds. Grey institutions include bank trusts, insurance companies, and pension funds (Ferreira and Matos, 2008).

Notably, a significant feature of globalization is the increasing inflow of foreign institutional investment (FII), which provides advantages, such as lower cost of capital (Bekaert and Harvey, 2000), improvements and efficiency in capital markets (MBA Knowledge Base, 2010). The influence of foreign institutional investors has been increasing worldwide. For example, sovereign wealth funds have been found to invest in profitable and financially stable foreign listed firms for increased portfolio diversification (Mietzner, Schiereck, and Schweizer, 2015). Elliott Management Corp., an aggressive US-based hedge fund, was associated with 22 activist campaigns in eight different foreign countries in 2018 (2018 Review of Shareholder Activism, 2019). Mietzner and Schweizer (2011) find that new institutional investments (hedge funds and private equity) not only bring positive abnormal returns to target firms but also have intra-industry effects on rival firms in Germany. Foreign institutional investors are also argued to be beneficial for firms in several ways, such as in helping improve firm performance (Gillan and Starks, 2003; Ferreira and Matos, 2008), enhancing corporate governance (Ferreira, Massa, and Matos, 2010), reducing information asymmetry (Jiang and Kim, 2004), and facilitating cross-border mergers and acquisitions (Ferreira, Massa, and Matos, 2010). Meanwhile, independent institutions, such as mutual funds and investment advisors, are also found to hold a more active attitude toward management, while grey institution, such as bank trusts and insurance companies, are not (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005; Ferreira and Matos, 2008).

However, there is only a small group of researchers who focus on the monitoring role of institutional ownership worldwide. Most studies put heavy emphasis on the US equity market (such as Almazan, Hartzell, and Starks, 2005). Therefore, I present a detailed exploration of corporate governance outside the United States. Moreover, previous literature only examines the monotonic relation between institutional ownership and firm performance. Academic research has

already proven that there is a non-monotonic relation between managerial ownership (Morck, Shleifer, and Vishny, 1988) / CEO ownership (Kim and Lu, 2011) / largest insider ownership (Basu, Paeglis, and Toffanin, 2017) and firm valuation. Thus, this study investigates whether there is also a non-linear relation between institutional ownership and firm performance. Empirical evidence suggests that shareholders would only actively participate in corporate governance when they hold a substantial amount of shares, while small shareholders tend to be free-riders since the cost of monitoring outweighs the benefits (Shleifer and Vishny, 1996; Brickley, Lease, and Smith, 1988; Agrawal and Mandelker, 1990; Gillan and Starks, 2003). Others argue that certain types of institutions with high shareholdings would align with management because of business relations (Davis and Kim, 2007; Ferreira and Matos, 2008). Therefore, it is still unclear which of these effects dominate. To better understand the role these institutional investors play in the global equity market, especially foreign institutional investors, I focus on non-U.S. firms from 31 nations.[2]

I first follow Ferreira and Matos (2008) to analyze what firm-level and country-level characteristics attract institutional investors. Overall, I find that these investors target large firms, firms incorporated in countries with better disclosure qualities, and countries with English as an official language. However, after the financial crisis, institutional investors have been observed to place greater value on firms with higher liquidity and lower leverage. These two characteristics happen to be at the core of the 2008 financial crisis: liquidity and credit risks.

Using a sample of non-U.S. firms listed in 31 countries from 2007 to 2016[3], I find the relation between (total) institutional ownership and firm performance to be convex, suggesting

[2] I excluded U.S. firms because they are dominant in the dataset. Including U.S. firms would bias the results toward institutional investors' role in the United States. Moreover, unlike in other countries, firms listed in the United States are mainly held by domestic institutional investors.

[3] The sample period chosen is affected by the data limitation, which I explain in detail in the section on Data Description.

that the "free-rider" problem would compromise corporate governance when ownership is low. The positive influence appears beyond a certain level of shareholding. By controlling for the level of ownership concentration, other firm-level, and country-level characteristics, I find a similar relation between foreign institutional ownership and firm performance, and a contrary result for domestic institutional investors.

Previous analyses argue that independent institutions, such as mutual funds and investment advisors, are "more likely to collect information, confront less regulatory and legal restrictions on their investments" (Almazan, Hartzell, and Starks, 2005), or are "less subject to management influence" (Brickley, Lease, and Smith, 1988). On the contrary, grey institutions such as bank trusts and insurance companies are "potentially passive" (Almazan, Hartzell, and Starks, 2005), "pressure-sensitive," or "frequently derive benefits from business relations," as suggested by Brickley et al. (1988), and are detrimental to firm performance (Ferreira and Matos; 2008). Both categories, due to heterogeneity, seem to be ill-suited here. Therefore, I further break down (ungroup) these institutions by their type. I find that investment advisors, bank trusts, and pension funds exhibit clear convex relations with performance. Contrariwise, mutual funds present a concave pattern. Unfortunately, I do not find a significant influence on valuation from hedge funds or insurance companies.

One primary concern in this study is the endogeneity problem: highly valued firms could also attract institutions. This causality problem is especially real regarding foreign institutional investors. Because of different barriers, foreign institutions tend to avoid investing in firms with high information asymmetry (Jiang and Kim, 2004) or in countries with low legal protection (La Porta et al., 1998). I address this problem by reestimating all models with simultaneous regression, specifically, a three-stage least square (3SLS) regression. The results remain robust for the

institutions on which I find unambiguous effects (foreign and domestic institutions, mutual funds, investment advisors, bank trusts, and pension funds). These results are also robust when I: 1) substitute country-fixed effects for country-level control variables, and 2) use Fama–MacBeth regression.

I contribute to previous debates on the role of different institutional investors by: 1) analyzing the non-linear relation between institutional ownership and firm performance, thus revealing the trade-off among different effects (business ties, free-rider, and monitoring) and 2) integrating the impact from each type of institution to better understand the heterogeneity. My study, to the best of my knowledge, is the first to provide a quadratic relation between institutional ownership and firm performance, especially on an international basis.

The remainder of this paper is organized as follows: Section 2 introduces previous literature; Section 3 provides an overview of the data; Section 4 explains the hypotheses; Section 5 discusses the methodology and empirical results, mainly focusing on the analysis of the relations between institutional ownership and firm performance and also presents the robustness checks and alternative model (dynamic model); and Section 6 provides the conclusions.

2. Literature Review

Most of previous research shows that institutional investors can be an effective mechanism for corporate governance. The main reasons are: 1) institutional investors often hold more resources and incur fewer costs, compared with individual investors, or are more "professional" (Barclay and Holderness, 1988); they could accumulate shares to vote against the management group for the interest of shareholders ("active monitoring") and 2) even if institutional investors

do not engage in direct governance, they could potentially "threaten" managers by selling shares, bringing downward pressure on the firm's stock price ("voting with feet" or "exit") (Brown and Brooke, 1993; Admati and Pfleiderer, 2009). Gillan and Starks (2003) suggest that institutional investors could also reveal information that is not easily obtained by individual investors. Chung, Firth, and Kim (2002) argue that managers could manipulate profit to gain opportunistic earnings through discretionary accruals. Chung and Wang (2014) propose a negative relationship between institutional ownership and leverage, suggesting institutions as an alternative to debt-holders with regard to monitoring. The following segments provide support for institutional investor governance from three channels: sizeable institutional ownership, foreign institutional investors, and "independent" institutions. Institutional ownership has also been found to have an association with better disclosure, liquidity, and less information asymmetry (Boone and White, 2015).

2.1 Large Institutional Ownership

Although generally, institutional shareholders are considered to provide better corporate governance, many researchers state that small institutions do not have much incentive for corporate governance due to "free-rider" problems. Regardless of different institution types, Gillan and Starks (2003) point out that when the shareholding is low, institutions are less likely to monitor the behaviors of managers or CEOs as they would bear the entire cost of monitoring, while all other shareholders benefit. The more diffused the ownership structure is the fewer incentive investors have to monitor management. Indeed, Shleifer and Vishny (1986) find evidence of corporate governance from large shareholders. They highlight that even if large shareholders do not engage in monitoring, they could initiate a third-party takeover. They also argue that large shareholders could prompt better-expected profit from the pre-monitoring purchase of shares.

Hartzell and Starks (2003) point out that a more concentrated institutional ownership structure could increase managers' sensitivity of pay-for-performance practices and reduce the overall level of compensation. Shleifer and Vishny (1997) provide a theoretical survey of corporate governance. They suggest three alternative corporate governance mechanisms other than insider management: large shareholders, takeovers, and large creditors. Franks and Mayer (1994) also find some "indirect" evidence when studying German firms. They indicate that concentrated ownership structures are prevalent in the Continental European capital market. They also find evidence in Germany that poor corporate performance is associated with board turnover. Furthermore, they argue that the control benefits in Germany are less secured compared with those from the United Kingdom and the United States. Similarly, in Japan, Kaplan and Minton (1994) and Kang and Shivdasani (1995) provide the view that this "monitoring and disciplinary role" is attributable to banks and other corporate shareholders, who are usually associated with high management turnover after poor performance, which in turn reduces agency costs and aligns management's incentives with those of shareholders (posting restrictions on management's entrenchment activities).

However, there also exist some problems with large shareholders. Shleifer and Vishny (1997) point out that one primary concern is that large shareholders may only care about their own interests, especially when their control rights are superior to cash flow rights, thus expropriating other stakeholders in the firm, such as employees, other minority shareholders, and sometimes even managers. They also suggest that there might be large institutions that are rich enough such that they seek for control rather than benefits. Burns, Kedia, and Lipson (2010) indicate that there is a co-movement between institutional ownership and financial misreporting. However, they point

out that the likelihood of misreporting is offset by the level of concentration. Their conclusion indirectly supports the "free-rider" concern.

Therefore, it is yet unclear whether large shareholders do have a positive impact on firm performance on a global basis, and whether this positive effect is monotonic.

2.2 Foreign and Domestic Institutional Investors

Foreign investors nowadays play a vital role in equity markets, especially in emerging markets (Gillan and Starks, 2003; Ferreira and Matos, 2008; Ferreira, Massa, and Matos, 2010). Many studies reveal that foreign institutional investors have a robust disciplinary and monitoring effect on management groups or insider ownership. They usually affect governance through direct involvement or indirect supply-demand structures (Gillan and Starks, 2003). Jiang and Kim (2004), with evidence from the Japanese market, propose that there is an inverse relationship between information asymmetry and international investors. Ferreira and Matos (2008), based on 2000–2005 data from 27 countries, state that on a global basis, foreign institutional investors enhance firm valuation, while domestic institutions do the opposite.

Similarly, using a sample from 23 emerging markets, Loncan (2018) find that foreign institutional ownership reduces the overall cash balance but increases the proportion of cash that is attributable to firm valuation. Aggarwal, Erel, Ferreira, and Matos (2011) also find (based on 2003–2008 data from 23 countries) a connection between better corporate governance and foreign institutional ownership outside the United States. Further analysis from Aggarwal et al. (2011) reveals that foreign institutional ownership increases the likelihood of an independent board structure, yet domestic institutions have no such relation. The authors also state that institutions from common-law countries prompt better governance than those from civil-law countries. Deng,

Li, and Li (2018) analyze firms from 39 countries and conclude that foreign institutional investors reduce stock liquidity commonality, through which they can improve firm valuation. The authors also find direct evidence that foreign institutional investors are associated with better corporate transparency and information quality. Ferreira, Massa, and Matos (2010) study mergers and acquisition activities and find that foreign institutions facilitate cross-border M&A by reducing bargaining costs and information gap between bidders and target firms.

Meanwhile, other researchers oppose the above views by stating that foreign institutional investors are associated with information asymmetry and more considerable monitoring costs, which are mainly triggered by cultural differences, geographic distance, different legal systems, and restrictions on activities (La Porta et al., 1998; Gillan and Starks, 2003; Kang and Kim, 2010; Deng, Li, and Li, 2018). For example, Shleifer and Vishny (1997) state that managers can apply a variety of defenses against corporate shareholders, especially foreign investors. They give an example wherein Russian domestic investors are only required 25% ownership to assume control, while Western investors are required 75% ownership. Similar constraints are also seen in Thailand (Bailey and Jagtiani, 1994) and South Korea (Jiang and Kim, 2004). From another perspective, Kang and Kim (2010) find that foreign institutions, who share the same language and similar cultures, are more likely to participate in governance ex-ante mergers and acquisitions.

On the contrary, domestic institutions suffer less from information asymmetry, but they usually have more business relations with the firm they invest in, are more likely to share the benefits of control, and are less "willingly" to vote against the incumbent management group (Gillan and Starks, 2003; Ferreira and Matos, 2008; Ferreira et al., 2010; Bena et al., 2017). In particular, Aggarwal et al. (2011) use the phrase "more loyal to management" when referring to domestic institutional ownerships.

Overall, a high level of ownership by foreign institutions seems to generate better firm performance due to fewer business relations. However, they are more susceptible to the free-rider problem. Domestic institutional investors are the exact opposite: they suffer less from information asymmetry but are more likely to be compromised by business ties when they hold a substantial number of voting rights.

2.3 "Independent" and "Grey" Institutions

Even though large or foreign institutional investors facilitate good corporate governance, not all types of institutions are efficient in doing so. Several researchers (such as Hartzell and Starks, 2003; Ferreira and Matos, 2008) suggest that the costs related to governance vary across different types of institutions. By analyzing the votes on anti-takeover amendments, Brickley, Lease, and Smith (1988) find that institutional investors and outside blockholders tend to vote more actively than non-blockholders. The authors also conclude that mutual funds, endowments, foundations, and public pension funds are more likely to oppose management decisions than banks, insurance companies, and trusts, which are institutions that usually have more business relations with the firm. Almazan, Hartzell, and Starks (2005) extend the research of Hartzell and Starks (2003) and conclude that the positive connection between pay-for-performance practices and ownership of institutional investors is associated with the concentration of active investors. They also suggest a negative relation between pay-for-performance practices and cost of monitoring and a negative association between ownership concentration (regardless of type) and level of executive compensation. Ferreira and Matos (2008) categorize institutions by their type into "independent" (mutual funds and investment advisors) and grey (banks, insurance companies, and others). They argue that independent institutions have a positive impact on firm performance, while grey

institutions have a negative effect. Independent institutions, as they suggest, also promote better operation performance and reduce managers' capital expenditure. De-la-Hoz and Pombo (2016) find a similar positive influence from independent institutions and a negative impact from grey institutions by studying firms from six Latin American countries. Chen, Harford, and Li (2007) focus on U.S. M&As and find that independent and long-term institutions can improve "three-year buy-and-hold post-merger abnormal returns (BHARs), the post-merger change in industry-adjusted return on assets (ΔROA), and post-merger changes in analyst earnings forecasts (ΔEPS)." These institutions are also more likely to withdraw from bad deals instead of selling shares, while grey institutions do not have such power.

Nevertheless, the roles of different institutional investors seem to contradict. Interestingly, the above authors do not even have a universal definition of "independent" and "grey" institutions. For example, Ferreira and Matos (2008) categorize pension funds as "pressure-sensitive" institutions, while Brickley, Lease, and Smith (1988), and Almazan, Hartzell, and Starks (2005) instead suggest that public pension funds tend to be "active" on corporate issues. Cremers and Nair (2005) state that public pension funds are usually neutral with regard to corporate pressure and conflicts of interest and are thus active shareholders. Dittmar and Mahrt-Smith (2007) use pension fund ownership as an alternative corporate governance indicator (substitute for blockholders). Becht, Franks, Mayer, and Rossi (2010) study Hermes UK Focus Fund (HUKFF)'s activism, which is a U.K. pension fund, and find that the intervention brings about positive outcomes. By contrast, Wahal (1996) finds no significant results (as measured by stock return and accounting performance) when studying activism from nine public pension funds in the United States. A recent study conducted by Sonza and Granzotto (2018) also finds no monitoring role of pension funds in the Brazilian capital market. Instead of analyzing outcomes from activism, Jiao and Ye

(2013) examine the level of pension funds' ownership and firm performance. They find an inverted-U shaped relation, indicating that there exists a dynamic trade-off between "effective monitoring" and "public interest."

Moreover, Davis and Kim (2007) also state that public pension funds are less correlated with conflicts of interest and are therefore, more active on corporate governance. They also find evidence that several large mutual fund companies generate profits from corporate benefit plans and conclude that mutual funds that have more business ties with respective companies tend to be more reluctant to vote against management. Mutual funds have been considered many times as "passive" investors. Indeed, unlike hedge funds, which actively benefit from mergers and acquisitions, most mutual funds are index-trackers. However, Appel, Gormley, and Keim (2016) proved that although mutual funds are considered "passive investors," they are not "passive owners." They find that increased ownership of mutual funds is associated with greater board independence, more opposition on anti-takeover protection and staggered board structure.

Hedge funds are probably the institutional investors that engage the most in activities of shareholder activism. Numerous studies prove a positive abnormal return around the date of hedge fund activism, and this positive return usually persists (Klein and Zur, 2009; Brav, Jiang, Partnoy, and Thomas, 2008; Bebchuk, Brav, and Jiang, 2015; Denes, Karpoff, and McWilliams, 2016). Mietzner and Schweizer (2014) also find a positive abnormal announcement return for German firms after a hedge fund has acquired at least 5% of shares. However, this positive return does not hold for the long term. Becht, Franks, Grant, and Wagner (2017) find similar results in a global analysis, although the level of announcement return varies across regions (with Japan as an exception). Jory, Ngo, and Susnjara (2017) find evidence of wealth transfer from bond returns to stock returns. Meanwhile, Cremers, Masconale, and Sepe (2016) argue that the incremental effects

of risk-taking after hedge fund activism is not in line with management incentive and thus, is detrimental for firms' long-term performance. Recently, deHaan, Larcker, and McClure (2019) express doubt on previous studies and propose two drawbacks of past methodologies: 1) researchers focus only on equal-weighted abnormal returns, and several rare cases might drive the results; and 2) studies that focus on firms' long-term operating performance ex-post do not take into consideration ex-ante performance. They scrutinize 1,455 target firms and find that the smallest tier of firms biases the "positive" short-term abnormal return. Further analysis reveals no significant improvement of accounting-based operating performance or any significant post-event long-term value-weighted stock return.

Bank ownership is probably related to the most controversial opinions. Zemzem, Guesmi, and Ftouhi (2017) study 86 non-financial firms listed in the Euronext 100 index and find a positive impact from banks, either as creditors or shareholders. Others document that bank ownership could improve firms' liquidity by facilitating access to bank loans (Kang and Shivdasani, 1995; Lin, Zhang, and Zhu., 2009), for instance, in terms of lower cost of capital (Petersen and Rajan, 1994). As previously mentioned, Kaplan and Minton (1994) and Kang and Shivdasani (1995) find support for governance from bank directors in Japan. Oppositely, also in the Japanese market, Morck and Nakamura (1999) conclude that dual responsibility (as both creditors and shareholders) diminishes banks' incentives for value-maximization. Qian and Yeung (2015) also find that in China, relations with banks render firms less in need of equity markets. These firms thus face fewer restrictions from the equity market and are usually associated with deteriorated corporate governance. However, Petersen and Rajan (2009) and Qian and Yeung (2015) focus more on the creditor role of banks instead of the shareholder.

Overall, independent institutions seem to have a positive impact on firm performance and grey institutions have a negative one. However, there is no clear conclusion from the previous contradictory studies. There seems to be more heterogeneity among different types of institutions that requires further scrutiny.

3. Hypotheses

Previous literature only focuses on the monotonic relation between institutional ownership and firm performance. However, researchers have already introduced a non-linear relation between ownership and firm performance. For example, Morck, Shleifer, and Vishny (1988) developed the piecewise regression and found a non-monotonic impact from managerial ownership. Basu, Paeglis, and Toffanin (2017) find a convex relation between the largest individual ownership and firm performance. Kim and Lu (2011) suggest that at a low level of (CEO) ownership, CEOs' incentive alignment effect dominates. However, beyond a certain level of shareholding, CEOs tend to pursue non-pecuniary benefits at the cost of firm performance.

As mentioned above, institutional investors are more active in corporate governance than individual investors since they hold more resources and possess better knowledge of the equity market (Barclay and Holderness, 1988). However, when institutional ownership is low, these investors are less willing to monitor management's performance since they would bear all the monitoring costs, while all investors benefit (Gillan and Starks, 2003). Meanwhile, large institutional shareholders generate less marginal monitoring costs, have more voting powers, and are more willing and more effective in terms of monitoring (Shleifer and Vishny, 1986; Shleifer and Vishny, 1997; Hartzell and Starks, 2003). Thus, I expect that when institutional ownership is

low, institutional investors are compromised by the "free-rider" problem, thereby negatively affecting firm performance. When the ownership level is high, they actively participate in the monitoring, and the positive effect dominates. Based on these assumptions, I develop the first hypothesis on total (average) institutional ownership:

Hypothesis 1: The relationship between institutional ownership and firm performance is convex.

Foreign institutional investors, due to cultural difference, geographic distance, different legal systems, and restrictions on activities (La Porta et al., 1998; Gillan and Starks, 2003; Kang and Kim, 2010; Deng, Li, and Li, 2018), usually encounter higher monitoring costs due to more severe information asymmetry. Thus, foreign institutional investors, as compared with average (of the total) institutional investors, would encounter more "free-rider" problems since they are less willing to take an active stand. Instead, they would remain "passive" and be detrimental to other shareholders. However, investors that hold a substantial level of ownership have the ability and incentive to monitor, as large shareholders are found to be active on corporate governance issues (Shleifer and Vishny, 1986; Shleifer and Vishny, 1997; Hartzell and Starks, 2003). Moreover, it is well-known that foreign institutional investors are beneficial for firm performance in several ways (Gillan and Starks, 2003; Ferreira and Matos, 2008; Ferreira, Massa, and Matos, 2010), in terms of reducing information asymmetry (Jiang and Kim, 2004), cutting excessive cash expenditure (Loncan, 2018), generating a more independent board structure (Aggarwal et al., 2011), and lowering stock commonality (Deng, Li, and Li, 2018). Foreign institutions are also suggested to have fewer business relations with local firms (Ferreira and Matos, 2008; Aggarwal et al., 2011). Taken together, large foreign institutional investors are deemed to be more effective (than average institutional investors) on corporate governance and able to prompt better firm performance.

Therefore, I anticipate foreign institutional ownership to exhibit a similar (convex) pattern on firm performance as total institutional ownership does, while the inflection point would be higher (flatter U-shape), since investors with low ownership would be more reluctant to monitor.

Meanwhile, domestic institutional investors face less monitoring costs because they share the same culture, have better knowledge of policies, and are more familiar with the business. Nonetheless, these investors might have more business ties with the firm they invest in and share the benefits of control (Gillan and Starks, 2003; Ferreira and Matos, 2008; Ferreira et al., 2010; Bena et al., 2017). Therefore, when ownership is not too high, domestic institutional ownership would have a positive effect. When ownership is beyond a certain level, due to stronger business ties, they tend to form a coalition with management in ways that harm minority shareholders.

Based on the assumptions above, I present the second hypothesis on foreign and domestic institutional investors:

Hypothesis 2a: The relationship between foreign institutional ownership and firm performance is convex.

Hypothesis 2b: The ownership–value structure is concave for domestic institutional investors.

The effects from a breakdown by institution type (independent and grey) would be less precise than that by geography. There is not much literature related to grouping different types of institutions, especially on a global basis. Independent institutions (mutual funds and investment advisors), which researchers suggest to have a positive effect on firm value (Ferreira and Matos, 2008; De-la-Hoz and Pombo, 2016), are more likely to oppose management decisions (Brickley, Lease, and Smith, 1988), prompt higher pay-for-performance sensitivity (Almazan, Hartzell, and

Starks, 2005), and improve accounting-based and stock performance (Chen, Harford, and Li, 2007). However, there are reasons to suspect that independent institutional ownership is not always positively correlated to firm performance. When ownership is low, independent institutional investors, though credited to be active, could remain passive to "free-ride" from the monitoring of other shareholders. Therefore, I also expect a convex relation between independent institutional ownership and firm performance. Specifically, when ownership is low, independent institutional ownership is negatively associated with firm performance due to the "free-rider" problem; when ownership increases beyond a certain threshold, the relation becomes positive due to active and effective monitoring.

Grey institutions, as suggested, are detrimental to firm performance (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005; Ferreira and Matos, 2008). However, it is debatable whether pension funds "actively monitor" or are "passively pressure-sensitive." Brickley, Lease, and Smith (1988) and Almazan, Hartzell, and Starks (2005) instead suggest that public pension funds tend to be "active" on corporate issues, while Ferreira and Matos (2008) classify group pension funds into grey institutions. Since Brickley, Lease, and Smith (1988) and Almazan, Hartzell, and Starks (2005) only focus on U.S. firms, the study of Ferreira and Matos (2008) are comparably the latest, and the database I use is built by Ferreira and Matos (2008); thus, I also consider pension funds as "grey." Moreover, I expect that grey institutions would harm firm performance. When ownership is high, grey institutions, as suggested (e.g., by Ferreira and Matos, 2008), would be less likely to oppose management decisions due to higher monitoring costs or business ties. When ownership is low, there is no reason to anticipate better corporate governance from them. On the contrary, due to the free-rider problem, they would be less willing to monitor.

Thus, the effect from low grey institutional ownership is also expected to be harmful or utterly insignificant.

Based on the assumptions above, I propose the following:

Hypothesis 3a: The relationship between firm performance and independent institutions is convex.

Hypothesis 3b: Grey institutional ownership is negatively related to firm performance.

4. Data Description

4.1 Institutional Ownership Data

I collect all institutional holdings data from FactSet Ownership (LionShares) via Wharton Research Data Services. FactSet database is a leading provider of equity and fixed-income information for global institutional and non-institutional investors. FactSet (LionShares) collects stock-holding information from different sources, such as 13F filings from the Securities and Exchange Commission (SEC), regulatory authorities from different countries (for example, SEDAR system for Canadian firms), or sometimes directly from annual financial statements and local mutual fund associations (the majority of the European and Asian funds). "The FactSet Ownership database (LionShares) contains global equity ownership data for approximately 13,000 institutions, 33,000 unique mutual fund portfolios, and 280,000 non-institutional insider/stakeholders with history going back to 1999."[4]

[4] Wharton Research Data Services, LionShares Research Overview, retrieved from https://wrds-www.wharton.upenn.edu/pages/support/manuals-and-overviews/factset/ownership-lionshares/lionshares-research-overview/#database-issues.

The FactSet stock ownership summary database (from WRDS) is provided quarterly by Ferreira and Matos (2008), which contains the ownership of ordinary shares, preferred shares, American depositary receipts (ADRs), global depositary receipts (GDRs), and dual listings (Ferreira and Matos, 2008). I collect data from 2007 to 2016, which is the maximum available period due to limitations from some control variables (which I explain in the next section). The ownership data are matched on the calendar date of each firm's fiscal year-end. For firms that have a fiscal year-end different from any quarter-end, I match the equity holding to the closest quarter end before the fiscal year-end. For example, for a firm whose fiscal year-end is in May, institutional ownership information is matched in March (first quarter). Total institutional ownership (*IO_TOTAL*) is defined as the total institutional ownership as a percentage of the market capitalization of a firm at the end of each (calendar month of) fiscal year. I also incorporate the quadratic form of institutional ownership square (IO_TOTAL^2), which is total institutional ownership (*IO_TOTAL*) squared, as explained in the hypotheses section.

Following Ferreira and Matos (2008) and Aggarwal et al. (2011), I first break down total institutional ownership (*IO_TOTAL*) by geographic characteristics. I define domestic institutional ownership (*IO_DOMESTIC*) as the sum of the holdings of institutions (that are domiciled in the same country as where the stock is issued) as a percentage of market capitalization. Similarly, foreign institutional ownership (*IO_FOREIGN*) is the international portion of total institutional ownership (*IO_TOTAL*) and equals total holdings of foreign institutions in a firm's stock divided by market capitalization. I also split foreign institutional ownership (*IO_FOREIGN*) into two sub-portions: U.S. foreign institutional ownership (*IO_FOREIGN_US*) if the foreign institution is incorporated in the United States and non-U.S. institutions (*IO_FOREIGN_NUS*) otherwise. Figure 1 in the appendix demonstrates the total institutional ownership as a percentage of total

market capitalization (*IO_TOTAL*) for each country in my sample, with a breakdown into domestic institutional ownership (*IO_DOMESTIC*) and foreign institutional ownership (*IO_FOREIGN*). By the end of 2016, the United States and Ireland are the two countries associated with the highest total institutional ownership, at 74% and 72%, respectively. While in the United States, most institutional investors are domestic with 85% domiciled in the same country, Ireland has nearly all its investors from another country. For most of the countries, foreign institutional investors dominate in terms of firm ownership. Canada and Sweden relatively have the highest percentage of domestic institutions (both around 54% of total ownership). Figure 2 in the appendix depicts the trend of institutional ownership for five well-known countries: the United States, Canada, the United Kingdom, France, and Germany. We can see an increasing trend of ownership from foreign institutional investors. In the United Kingdom, foreign institutional ownership has increased from 19% in 2007 to 28% to 2016. Even in the United States, where domestic institutional investors own the majority of shareholdings, foreign institutional ownership almost doubled from 2007 to 2016.

Furthermore, I follow Ferreira and Matos (2008); Almazan, Hartzell, and Starks (2005); and Brickley, Lease, and Smith (1988) and divide the institutions into "independent" and "grey" institutions. However, there is a disagreement among these authors. As explained in the previous section, Ferreira and Matos (2008) categorize pension funds as "pressure-sensitive" institutions and group them under "grey" institutions, while Brickley, Lease, and Smith (1988) and Almazan, Hartzell, and Starks (2005) argue that pension funds participate actively in daily governance. Since the database is constructed by Ferreira and Matos (2008) and their study is comparably the most recent, I also consider pension funds as passive institutions. Figure 3 in the appendix illustrates the same institutional ownership information by all countries as in Figure 1, with the breakdown by

type of institutional investor. We can see from Figure 3 that a large proportion of institutional holding is related to mutual funds and investment advisors. Among all the countries, bank trusts and insurance companies demonstrate extremely low shareholding.

4.2 Firm and Country Level Control Variables

First, I use the Herfindahl index as a measure of ownership concentration, which is from the same database I collect the institutional ownership data. The higher the index is, the less the dispersion of institutions. I incorporate the concentration ratio to control for the free-rider problem (Hartzell and Starks, 2003; Gillan and Starks, 2003). A total institutional ownership of 30% held by one large investor would generate a different monitoring effect compared with the same level of ownership held by ten investors.

Next, I obtain most of the other firm-level control variables from Compustat – Capital IQ. There are two sub-databases in Compustat: Compustat North America and Compustat Global. The former contains only firms that are listed in the United States, Canada, or Mexico; the latter provides data of firms listed in the rest of the countries. Since financial statement data and stock price data in Compustat are based on the currency of the country where the firm is located, I convert all the currency to U.S. dollars according to the foreign exchange rate obtained from the Federal Reserve H10 report. For each observation, I match the exchange rate on the last business day of the month to the calendar month of the respective firm's fiscal year-end. I acquire the MSCI All Country World Index (ACWI) list from the iShare website, which is presented by BlackRock. One challenge here is identifying companies that are cross-listed (*ADR*) on the U.S. stock exchange. I use two different methods to determine which firms are cross-listed. Firms with an ADR ratio in Compustat (North America) or firms that are incorporated both in Compustat (North America) and

Compustat (Global) are considered cross-listed (*ADR*) companies. All firm-level control variables (except dummy variables) are winsorized at the 1st and 99th percentile to minimize the noise by outliers.

Furthermore, I follow Ferreira and Matos (2008) by incorporating country-level control variables to substitute for country-fixed effects. I manually collect the firms' legal information based on anti-director rights and the rule of law index from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)[5]. Disclosure strength and GDP per capita data are from the Global Competitiveness Reports. However, the 2006 report is not available anywhere. Therefore, the sample period starts from 2007. I obtain market capitalization to GDP information from CEIC Data[6] and official language information from CIA World Factbook[7]. Table A1 in the appendix presents a more detailed explanation of all variables and the sources from which they are obtained.

I match firm-level control variables to institutional ownership data based on several identifiers: ISIN and SEDOL (Compustat Global firms, whichever is available), CUSIP (Compustat North American firms), and GVKEY (in case other identifiers are missing). I exclude all utility and financial firms (SIC 4900−4999 and SIC 6000−6999) due to different regulations and financial statement formats. The final sample includes 14,527 non-U.S. firms across 31 different countries (regions) from 2007 to 2016. Table 1 provides the summary statistics for all variables. Total institutional ownership, on average, is 11.5%, 6.3% foreign and 5.2% domestic.

[5] The anti-director rights index (ADRI), which was first introduced by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998), is doubted by several studies. Spamann (2010) re-examine the legal data and offer a correction for thirty-three of the forty-six countries of the original ADRI. There are also alternatives, such as the anti-self-dealing index, which are suggested to work better than the original ADRI (Djankov, La Porta, Lopez-de-Silanes, and Sheleifer, 2008; Spamann, 2010). In this thesis, I mainly use the legal information as a country level control variable. Thus, the improved legal data does not necessarily improve or change the outcomes of the regressions. Moreover, as we will see in the robustness test section, I substitute the country dummy variables for country-level control variables and obtained similar results.

[6] CEIC Data (from https://www.ceicdata.com/en)

[7] From https://www.cia.gov/library/publications/the-world-factbook/fields/402.html

Investment advisors hold comparably the highest shares (average 7.8%); while bank trusts barely invest in companies as shareholders (with a maximum of only 8.2%). Moreover, among the sample, 3.4% of the observations are members of the MSCI All Country World Index (ACWI); 49.4% do not have research and development (R&D) data available; 3.3% are cross-listed on a U.S. stock exchange; and nearly one-third are from countries where English is (one of) the official language(s).

5. Empirical results

5.1 Determinants of Institutional Ownership

I begin by re-examining Ferreira and Matos' (2008) model on what characteristics attracts different types of institutional investors worldwide. The regression framework is shown in the following equation:

$$Institutional\ Ownership = \alpha + \sum_{i=1}^{a} \beta_i (Firm\ Controls) + \sum_{i=i}^{b} \gamma_i (Year\ FEs) + \varepsilon_i$$

The next two subsections present the analysis broken down by geography and institution types.

5.1.1 Determinants of Foreign and Domestic Institutions

Table 2 demonstrates the determinants of total institutional ownership, as well as the breakdown by foreign (further broken down between U.S. and non-U.S.) and domestic institutions. The results indicate that foreign and domestic institutions share some preferences on the stock they invest in. Consistent with Ferreira and Matos (2008), *SIZE* is the most significant attribute that attracts all institutional investors. Moreover, both domestic and foreign institutional investors are prone to investing in firms with lower annual return (*RET*), higher share turnover (*TURN*), and

lower leverage (*LEV*); firms located in countries (regions) with better disclosure (*DISC*) and shorter average distance to other markets (*DISTANCE*); and countries (regions) whose official language(s) includes English (*ENGLISH*), those with higher GDP per capita (*GDP*), and those with lower market capitalization as a percentage of GDP (*MCAP*). One significant discrepancy between my results and Ferreira and Matos' (2008) is that all institutional investors have stronger preference for lower leverage (*LEV*) and higher share turnover (*TURN*), which are credit and liquidity measures. One probable reason is that Ferreira and Matos (2008) use a sample from 2001 to 2005, which is before the 2008 financial crisis. The 2008 financial crisis is mainly associated with credit and liquidity crises. Thus, it is reasonable for institutions after the financial crisis to put more emphasis on firms with better liquidity (higher share turnover) and lower debt (lower leverage).

Notwithstanding the homogeneity, foreign and domestic institutional investors differ in many ways. Even U.S. and non-U.S. foreign institutions differ. Similar to what Ferreira and Matos (2008) find, domestic institutional investors favor firms that pay higher dividends (*DY*), while foreign institutions avoid these firms. Foreign investors (both U.S. and non-U.S.) have strong preference for firms that are members of the MSCI ACWI and that are cross-listed on the U.S. stock exchange, while domestic institutions demonstrate an opposite pattern (with negative coefficients for the MSCI and ADR dummy variables). Although all institutions are in favor of firms listed in English-speaking countries, U.S. foreign institutional investors show stronger preference compared with non-U.S. institutional investors. U.S. foreign institutions are also biased toward value stocks (with higher book-to-market ratio), while domestic institutions present a contradictory preference. Non-U.S. foreign institutions seem to be indifferent with regard to firms' book-to-market ratio. One interesting finding is that both types of foreign institutions do not favor

stocks listed in countries (regions) with strong legal protection, while the opposite is true for domestic institutional investors. This finding contradicts that of La Porta et al. (1998), while consistent with that of Ferreira and Matos (2008). The latter two authors explain that this weak protection is balanced by strong investment prospects or diversification benefits.

5.1.2 Determinants of Independent and Grey Institutions

Next, I examine whether these determinants also affect independent and grey institutional investors. To better understand the heterogeneity and homogeneity among all types of institutions, I follow Ferreira and Matos (2008) and further break them down into specific types of institutions. Table 3 illustrates the determinants of institutions with detailed breakdown by type. Similar to domestic and foreign institutions, independent and grey institutions also share many things in common. Both institutions prefer larger firms (*SIZE*), firms with negative annual stock return (*RET*), more liquid stocks (*TURN*), firms that are members of the MSCI ACWI (*MSCI*), firms with lower leverage (*LEV*), and those with less cash (*CASH*). They also share the same preferences as foreign and domestic institutions in terms of country-level characteristics: better disclosure (*DISC*), lower average distance to other markets (*DISTANCE*), English-speaking countries (*ENGLISH*), higher GDP per capita (*GDP*), and countries (regions) with lower overall stock overvaluation (*MCAP*). Among grey institutions, bank trusts and insurance companies have several statistically significant determinants, but those coefficients are too trivial and are barely economically significant.

Moreover, the R^2 for bank trusts and insurance companies are extremely low, that is, the explanatory power for these two types of institutions is weak. Such a problem is highly likely due to the overall low holdings from bank trusts and insurance companies. As we have seen in Figure

3 and Table 2, these two institutions are associated with a maximum holding of 8.2% (the firm that has the highest bank ownership in the sample) and 24% (the firm that has the highest insurance ownership in the sample), respectively. Thus, the determinants of grey institutions are mainly driven by pension funds.

Furthermore, heterogeneity exists among the three independent institutions. For example, investment advisors prefer value stocks (higher *BM*) while mutual funds do not, and hedge funds are indifferent. Both mutual funds and investment advisors prefer firms with higher dividend payout (*DY*), while hedge funds dislike this attribute. These results are also consistent with the findings of Ferreira and Matos (2008), except for the strong preference for high share turnover and low leverage.

Overall, the preferences of all institutional investors remain nearly the same as before the financial crisis, compared with what Ferreira and Matos (2008) have found from the period 2000–2005. What significantly altered after the 2008 financial crisis is that institutional investors place more value on stocks with higher share turnover and lower leverage.

5.2 Institutional Ownership and Firm Performance

In this section, I examine how institutional investors affect firm performance. The regression framework is shown in the following equation:

$$\text{Tobin's } Q = \alpha + \beta_1(Institutional\ Ownership) + \beta_2(Institutional\ Ownership)^2 + \sum_{i=1}^{a} \gamma_i(Firm\ Controls) + \sum_{i=a+1}^{b} \gamma_i(Country\ Controls) + \sum_{i=b+1}^{c} \gamma_i(Year\ FEs) + \sum_{i=c+1}^{d} \gamma_i(Industry\ FEs) + \varepsilon_i$$

The dependent variable in the equation above is Tobin's Q (median regression), which is calculated as the sum of total assets plus market value of equity minus book value of equity divided by total assets. Nevertheless, it is well-known that such a measurement of Tobin's Q is imperfect. Gompers, Ishii, and Metrick (2006) argue that the most difficult part of calculating Tobin's Q relates to reflecting the actual replacement cost. Thus, the calculation I use is measured with noise, which, as Gompers, Ishii, and Metrick (2006) mention, "is not symmetric around the mean." Therefore, I follow Gompers, Ishii, and Metrick (2006) and Ferreira and Matos (2008) and use median regressions and two transformations of Tobin's Q for robustness check: log (Q) and $-1/Q$. Another problem related to the regression is the cross-sectional and time-series dependence. I follow Petersen (2009) and use industry- and year-fixed effects to alleviate this dependency. However, endogeneity is probably the most common and severe challenge in the estimation of ownership structure–firm valuation relation. I address this problem by re-estimating the structure using 3SLS regression (discussed in the next section).

Table 4 presents the results of the median Q regression for firms that are listed outside the U.S. stock market. I find a statistically significant convex relation between total institutional ownership and firm performance (Column (1)). This is consistent with Hypothesis 1 that when ownership is low, institutional investors tend to be "free-riders," which is not beneficial for value-maximization and for minority shareholders, among others. When the institutional investors' shareholding is substantial enough, their marginal monitoring cost becomes lower, and they begin to participate actively in corporate governance. Columns (2) and (3) show results on the ownership–performance relation as broken down between foreign and domestic institutions. Again, consistent with Hypothesis 2, I find a significant convex relation between foreign institutional ownership and firm performance and a significant concave relation with regard to domestic

institutional investors. Thus, foreign institutional investors, when their shareholding is low, would encounter enormous monitoring costs and become less willing to monitor. When their ownership is high, having less correlation with the firms they invest in, they exercise better governance (Gillan and Starks, 2003; Ferreira and Matos, 2008; Ferreira, Massa, and Matos, 2010; Aggarwal et al., 2011). With further analysis, we can see that the inflection point for foreign institutional investors is 24.54%, suggesting that when foreign institutional ownership reaches 24.54%, the monitoring (positive) effect dominates. However, the inflection point of total institutional ownership is 12.90%, which is almost half that of foreign institutions. This finding supports the view that when the ownership level is low, due to differences in culture, geographic distance, different legal systems, and restrictions on activities, foreign institutional investors usually encounter higher monitoring costs and face more severe information asymmetry (La Porta et al., 1998; Gillan and Starks, 2003; Kang and Kim, 2010; Deng, Li, and Li, 2018). On the contrary, domestic institutions face less information asymmetry because of the same culture, better knowledge of policies, and familiarity with the business. However, when domestic institutional shareholding is high (beyond the inflection point of 52.87%), due to stronger business ties, they tend to form a coalition with management in ways that harm minority shareholders (Gillan and Starks, 2003; Ferreira and Matos, 2008; Ferreira et al., 2010; Bena et al., 2017)[8].

Next, Columns (4) and (5) of Table 4 reveal the outcome of the ownership–value relation as broken down by type of institutions. While the relation exhibited by independent institutions

[8] In the table that is not shown here, I also examine the same median regression while excluding the observations that are 100% owned by domestic institutional investors. This is to test whether the relation between domestic institutional ownership and firm performance could be cubic: with the increase of domestic institutional ownership, the firm performance increases first, then decreases, and then increases again. However, the result remains consistent as before. Moreover, when I dropped observations that are fully owned by domestic institutions, the inflection point increases to 61.41%. Thus, the presence of extreme large domestic institutional investors facilitates the coalition with managements.

seems to be partially in line with Hypothesis 3, the relation between grey institutional ownership and firm performance is unexpected. In Column (4) we can see that the relation between independent institutional ownership and firm performance is positive (though the positive effect is non-linear), indicating that the presence of independent institutions (mutual funds, investment advisors, and hedge funds) is better for corporate governance and performance (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005; Chen, Harford, and Li, 2007; Ferreira and Matos, 2008; De-la-Hoz and Pombo, 2016). Meanwhile, grey institutions exhibit a relation that contradicts that of Ferreira and Matos (2008). However, as illustrated in Tables 1 and 3, although categorized under grey institutions, bank trusts and insurance companies only play a minor role due to overall low shareholding. Thus, similar to our findings in Table 3, the impact of grey institutional investors is highly likely to be dominated by pension funds. Therefore, the result for grey institutions is not inconsistent with the findings of Brickley, Lease, and Smith (1988) and Almazan, Hartzell, and Starks (2005), both of whom consider pension funds as "active" investors.

To further examine the heterogeneity among all types of institutions, I re-estimate the regression in Table 4 with a detailed breakdown of each type of institution. The results are shown in Table 5. Column (1) of Table 5 indicates a concave relation between mutual fund ownership and firm performance, suggesting that a high level of mutual fund shareholding is detrimental to firm valuation, while low-level ownership has a positive effect. The finding here does not depart from Appel, Gormley, and Keim (2016), who conclude that increased mutual fund ownership is correlated with improved corporate governance. This is true when the mutual fund ownership is not too high. When the ownership increases beyond a certain threshold (33.92%), mutual fund managers become more reluctant to oppose management decisions due to business ties (Davis and Kim, 2007). Presented in Column (2), investment advisors exhibit a convex ownership–value

structure, suggesting that high ownership (beyond 35.95%) has a positive effect on firm performance (Brickley, Lease, and Smith, 1988; Almazan, Hartzell, and Starks, 2005). The negative impact of low investment-advisor ownership is probably due to the potential "free-rider" problem. Hedge fund ownership, which is shown in Column (3), denotes a negative quadratic impact on firm performance. Further, this negative impact is merely significant at the 10% level. The result for hedge funds does not deviate from arguments of the positive impact of hedge fund activism. Studies that find a positive outcome from hedge fund activism focus more on short-term stock performance, such as abnormal returns (Brav, Jiang, Partnoy, and Thomas, 2008; Klein and Zur, 2009; Mietzner and Schweizer, 2014; Bebchuk, Brav, and Jiang, 2015; Denes, Karpoff, and McWilliams, 2016). The ownership–performance relation is reflected more clearly on long-term firm performance instead of short-term stock performance. The negative coefficient of the quadratic item here indicates that a higher shareholding by hedge funds could be detrimental to firms' long-term performance (Cremers, Masconale, and Sepe, 2016; deHaan, Larcker, and McClure, 2019).

Columns (4) to (6) show the results for three grey institutions: bank trusts, insurance companies, and pension funds. Surprisingly, in Column (4), I find a convex relation between bank trust shareholding and firm performance, despite bank trusts owning, on average, only a small percentage. Combining all studies mentioned above (relating to banks), I conclude that bank trust ownership probably impacts firm valuation through improved credit offering instead of direct monitoring on management decisions. The plausible explanation here is that bank trusts, unlike investment advisors, do not participate in daily corporate governance, such as voting or restricting management. However, they fulfill a monitoring role as creditors since (comparably) high ownership (in this case, 4.22% as the inflection point) could probably facilitate credits offered by

banks (Kang and Shivdasani, 1995; Lin Zhang, and Zhu., 2009; Zemzem, Guesmi, and Ftouhi, 2017). This also explains why Brickley, Lease, and Smith (1988) find that grey institutions (including bank trusts) are reluctant to vote against management decisions and Almazan, Hartzell, and Starks (2005) document a negative impact on pay-for-performance practices from grey institutions. Low bank trust ownership that does not facilitate bank loans and that is also passive on direct corporate governance, would generate a negative impact on firm performance. Taken together, the relation between bank ownership and firm valuation is convex. However, due to data limitations, I did not perform a formal test.

I do not find a significant relationship between insurance company ownership and firm performance, nor do I find much literature concerning the impact of insurance companies. Brickley, Lease, and Smith (1988), Almazan, Hartzell, and Starks (2005), and Ferreira and Matos (2008) all consider insurance companies as grey institutions and indicate that they do not pursue value-maximization or corporate governance, either measured by voting, pay-for-performance practices, or firm valuation. However, it is unclear whether the pattern documented by these studies could represent insurance companies. The pattern from grey institutions may be mainly capturing bank trusts or pension funds, similar to the results in Table 3. Moreover, I do not find studies that focus uniquely on insurance companies. Thus, how insurance companies as shareholders affect firm performance remains ambiguous. Future analysis is needed here. Pension funds, which represent the majority of grey institutions, reveal a convex impact on firm performance. Moreover, the inflection point of pension funds is relatively low, at only 8.01%, compared to 12.90% for the total institutional ownership. The evidence suggests that, similar to foreign institutional investors and investment advisors, when pension funds hold less than 8.01% of the outstanding shares, because of potential “free-rider” problems or high monitoring costs, they have detrimental effects on firm

performance (Shleifer and Vishny, 1986; Shleifer and Vishny, 1997; Hartzell and Starks, 2003). When they hold shares beyond the inflection point (8.01%), pension funds improve firm performance by voting more frequently due to less pressure (Brickley, Lease, and Smith, 1988; Cremers and Nair, 2005), increased pay-for-performance sensitivity (Almazan, Hartzell, and Starks, 2005), and better corporate governance (Dittmar and Mahrt-Smith, 2007).

Therefore, due to heterogeneity issues, it is hard to "categorize" different types of institutions as independent or grey. Groupings in previous research would render the results unexplainable, especially when we are looking at non-U.S. international data.

Moreover, I find some interesting evidence from the control variables. Specifically, the level of institutional ownership concentration (*HERF*) is positively related to firm performance, further supporting the "free-rider" theory (Shleifer and Vishny, 1986; Shleifer and Vishny, 1997; Hartzell and Starks, 2003). Firms that are cross-listed on U.S. stock exchanges (*ADR*) have better performance than firms that are not. In my sample, when controlling for the total institutional ownership, firms that are cross-listed (*ADR*) have a mean Tobin's *Q* that is 3.69% higher than single-listed firms. This is consistent with Doidge, Karolyi, and Stulz (2004), who propose that cross-listing is associated with risk premium reduction, access to more developed capital markets, better information disclosure, and better corporate governance.

5.3 Robustness Tests

5.3.1 Alternative Measurement of Tobin's *Q*

For the robustness tests, I first re-estimate the regression using ordinary least squares (OLS) with two alternative transformations of Tobin's *Q*: log (*Q*) and -1/*Q* to alleviate potential measurement errors (Gompers, Ishii, and Metrick, 2006; Ferreira and Matos, 2008). Table 6

presents the outcomes using the two alternative dependent variables with the generalized breakdown. I find that most of the results remain consistent with those obtained from using the median *Q* regression (as shown in Table 4), especially for foreign and domestic institutions. However, when I use -1/*Q* as the predicted variable, only the quadratic coefficient of total institutional ownership is statistically significant, and the linear coefficient is even not economically significant. One possible explanation is that the inverse effect from foreign and domestic institutional investors, when combined into total institutions, partially neutralizes the effect. Furthermore, neither the linear nor the quadratic coefficient of independent institutional ownership is significant. Similar to total institutional ownership the concave and convex impact from mutual funds and investment advisors would render the relation between independent institutional ownership and firm performance insignificant.

To further investigate what causes the inconsistency among independent institutions, I study the OLS regression for each type of institution. Table 7 demonstrates the two OLS regressions with detailed breakdown by type of institution. Again, I find that all the relations remain the same as those in the median regression: a concave relation between mutual fund ownership and firm performance and convex effects on firm valuation from investment advisors, bank trusts, and pension funds. One exception here concerns hedge funds. When I regress -1/*Q* as a measure of firm performance, hedge fund ownership exhibits a significant and concave relation with -1/*Q*. Indeed, if we revisit Table 5 and Panel A of Table 7, we do find a concave relation between firm valuation and hedge fund ownership, but the coefficients are statistically insignificant. Therefore, there is weak evidence that a high percentage of hedge fund shareholding could be detrimental to firms' performance (Cremers, Masconale, and Sepe, 2016; deHaan, Larcker, and McClure, 2019).

5.3.2 Country-fixed effects and Fama–MacBeth regression

Moreover, Doidge, Karolyi, and Stulz (2007) argue that country characteristics are important when determining corporate governance. They also state that proxies, such as the legal environment and economic development, are less effective than country-fixed effects. Therefore, in Panel A of Table 8, I re-estimate the median Q regression, substituting country dummy variables for country-level control variables. Another problem related to Tobin's *Q* regression is cross-sectional dependence (Gompers, Ishii, and Metrick, 2006). Petersen (2009) propose that Fama–MacBeth regression generates unbiased standard errors in the presence of cross-sectional dependence (or in his terminology, time effect). Thus, I regress the impact of institutional ownership on firm performance using Fama–MacBeth and log (*Q*) as the firm performance measure. The result is presented in Panel B of Table 8. Most results in both Panels A and B are consistent with the previous regression results. However, the total of institutional investors demonstrates no significant impact on firm valuation. One possible explanation is that the inverse effects from foreign and domestic institutional ownership neutralize the effect of the total institutions. Moreover, independent institutions indicate a different pattern. In Panel A (country-fixed effects), independent institutional ownership has a significant convex effect on firm performance, while in Panel B (Fama–MacBeth regression), neither coefficient is statistically significant.

Since the effect from independent institutional investors is always ambiguous in all previous regressions, I again re-estimate the above two robustness regression on each type of institution. The results are shown in Table 9: Panel A substitutes country-fixed effects for country-level control variables and Panel B uses Fama–MacBeth regression. Again, the results in both panels are consistent with the primary finding: a concave relation between mutual fund ownership

and firm performance, convex effects from investment advisors, bank trusts, and pension funds, and no impact from hedge funds and insurance companies.

5.3.3 Endogeneity concern

Another major concern with the ownership–valuation regression is that institutional ownership and firm performance might be jointly determined (endogeneity problem) (Gompers, Ishii, and Metrick, 2006; Ferreira and Matos, 2008). Indeed, it is highly likely that firms with better performance and governance (or other firm and country characteristics, refer to Section 5.1 and Table 2 and 3) attract institutional investors. To address this problem, I follow Ferreira and Matos (2008) and implement the simultaneous equations model. The 3SLS method, developed by Zellner and Theil (1962), takes one more step (than the two-stage least squares (2SLS) method) to estimate all coefficients simultaneously using the moment matrix generated in the second step (from 2SLS) (Zellner and Theil, 1962). The 3SLS method is suggested to be asymptotically more efficient than, or at least as efficient as, the 2SLS (Zellner and Theil, 1962; Madansky, 1964; Belsley, 1987; Robinson, 1991). The 3SLS method has also been implemented in non-linear regressions (Jorgenson and Laffont, 1974; Amemyia, 1977). Following Kim and Lu (2011), I use R&D expenditure as one independent variable. The other independent variables are firm characteristics incorporated in the determinant regression but are not in the ownership–performance regression, such as the *MSCI* dummy (*MSCI*) and share turnover (*TURN*). Table 10 reports the results of the 3SLS regressions of total institutional ownership and the generalized breakdown. The results in Panel A to E are still consistent with the previous findings. The patterns for all institutions maintain the same sign and statistical significance, except that independent institutions require further scrutiny since the relation is always inconsistent.

Thus, I re-estimate the simultaneous regressions on each type of institution. Table 11 shows the regression details. I still find the same results for most institutions. The concave relation between mutual fund ownership and firm performance remains. Investment advisors, bank trusts, and pension funds continue to have convex effects on firm valuation. It is noteworthy that hedge funds demonstrate a significant concave impact on firm performance, similar to the results from the OLS regression with -1/*Q* as a response variable (refer to Panel B of Table 7). What is more interesting is that insurance companies, which in all previous tables show no significant impact, present a significant linear effect on firm performance here. Therefore, my results are robust to the endogeneity problem.

To conclude, foreign and domestic institutions show the most robust effect on firm performance. Although grey institutional ownership seems robust, it captures most of the effect of pension funds. Thus, the grouping by independent and grey institutions based on pressure-sensitivity cannot rule out the noise from heterogeneity among institutions.

6 Conclusion

In this study, I examine the roles of different institutional investors worldwide and how they affect firms' performance. I use a comprehensive database from 2007 to 2016 to test the hypotheses with regard to foreign institutional investors becoming dominant shareholders outside of the U.S. equity market.

To better understand the roles these institutional investors play, I first investigate what attracts institutional investors. I find that firm size (*SIZE)* is the most significant attribute that attracts all institutional investors. Moreover, all institutions are attracted by firms with negative

annual stock return (*RET*), more liquid stocks (*TURN*), and lower leverage (*LEV*). Meanwhile, foreign investors (both U.S. and non-U.S.) have strong preference for firms that are members of the MSCI ACWI and that are cross-listed on the U.S. stock exchange (*ADR*), whereas domestic institutions are attracted by firms with higher dividend payout (*DY*). Country characteristics, as measured by country-level control variables, are also significant determinants of institutional ownership (Doidge, Karolyi, and Stulz, 2007). Comparing the results with those of Ferreira and Matos (2008), I find that all institutional investors place more value on lower leverage (*LEV*) and high share turnover (*TURN*), suggesting that institutional investors have become more prudent on credit and liquidity risks after the 2008 financial crisis.

Next, I examine the relationship between institutional ownership and firm performance. I find that there is a convex relation between total institutional ownership and firm valuation, suggesting that a high level of total ownership is positively related to firm performance, while a low level of total ownership is susceptible to the "free-rider" problem. I find strong evidence that foreign institutional investors have a convex effect on firm performance and domestic institutions show an opposite impact. When ownership is low, foreign institutions suffer more from information asymmetry and free-rider problems due to differences in culture, geographic distance, different legal systems, and restrictions on activities (La Porta et al., 1998; Gillan and Starks, 2003; Kang and Kim, 2010; Deng, Li, and Li, 2018). When foreign institutions hold a substantial number of shares, they exercise good corporate governance since they have fewer business ties with local firms (Gillan and Starks, 2003; Ferreira and Matos, 2008; Ferreira, Massa, and Matos, 2010; Aggarwal et al., 2011). On the contrary, domestic institutions are less affected by information asymmetry but are subject to business relationships when they hold a certain level of shares (Gillan and Starks, 2003; Ferreira and Matos, 2008; Ferreira et al., 2010; Bena et al., 2017).

Further analysis reveals that previous categorizations of independent and grey institutions are compromised by heterogeneity. I find a concave relation between mutual fund ownership and firm performance. When holding a high level of shares, mutual fund managers are more likely to support management decisions at the cost of other shareholders (Davis and Kim, 2007). Investment advisors and pension funds exhibit a convex effect on firm valuation, consistent with the trade-off between the "free-rider" problem and good corporate governance. Bank trusts, although also showing a convex impact on firm performance, seem not to affect corporate governance the same way as investment advisors and pension funds do. They tend to play a monitoring role as creditors since higher ownership probably facilitates credits offered by banks (Kang and Shivdasani, 1995; Lin Zhang, and Zhu., 2009; Zemzem, Guesmi, and Ftouhi, 2017). However, further formal analysis is needed here. I do not find a significant effect on firm performance from hedge funds or insurance companies. Hedge fund managers usually focus on short-term profitability; thus, the level of hedge fund ownership generally does not affect firms' long-term performance. There is not much literature on the specific role of insurance companies. This could be an avenue for future studies. The results are robust in several ways, including the endogeneity concern.

My research could provide insights on investments in the global equity market, especially in a world with increasing globalization. Foreign institutional investors are more prevalent than before. My research also supplements previous studies by analyzing the quadratic relation between institutional ownership and firm performance, providing clearer patterns for different institutions. For future research, it would be interesting to further analyze the effect of the changes in institutional ownership on corporate governance, abnormal performance, or announcements of abnormal return (when an institution purchases or sells shares).

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Appendix

Figure 1 Institutional Ownership by location and country

The figure below illustrates the total institutional ownership with the breakdown of foreign and domestic institutions at the end of year 2016.

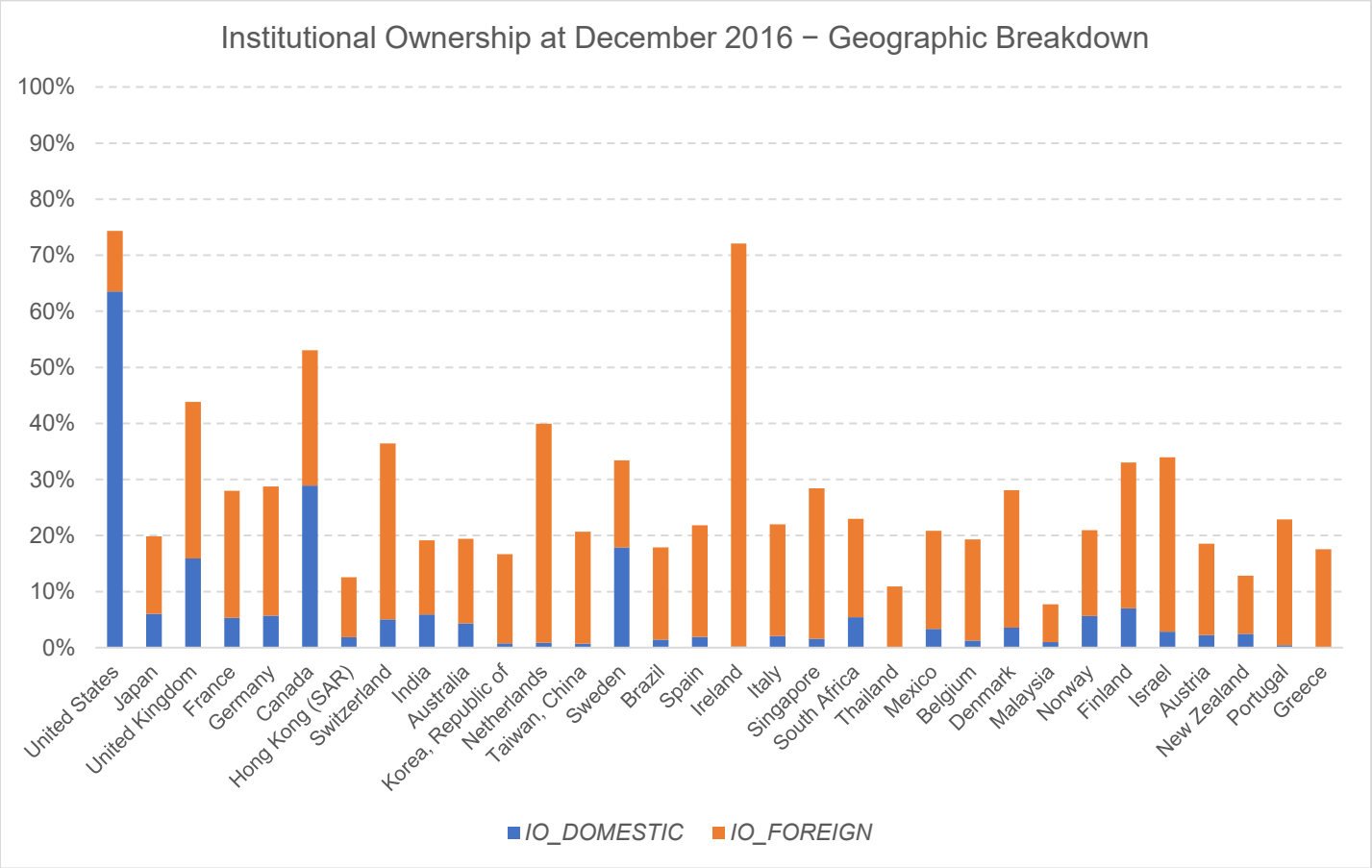

Figure 2 Institutional ownership trending

The figure below depicts the trend of total institution among year 2007, 2012, and 2016. Total institutions are composed with the breakdown of foreign and domestic institutions.

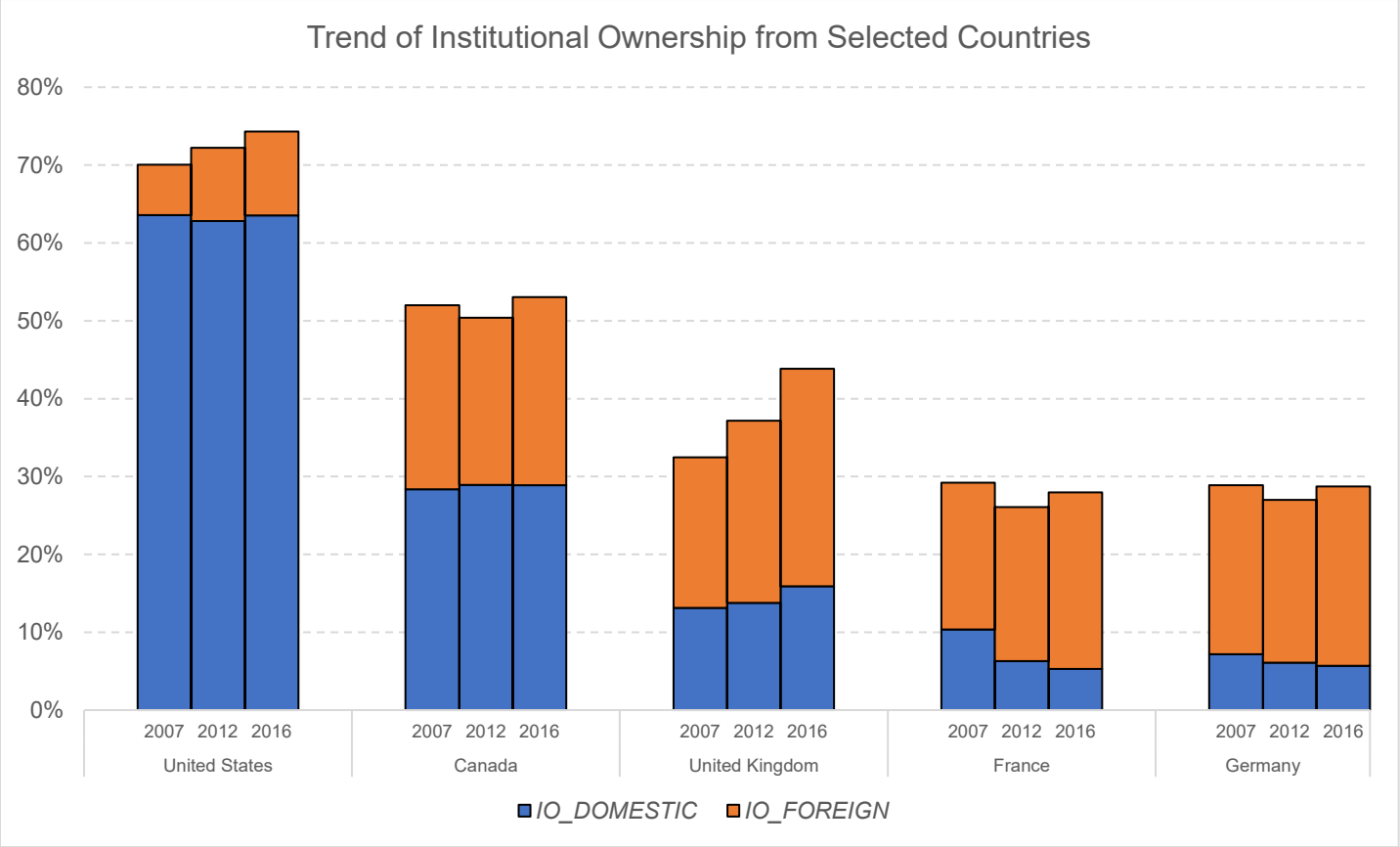

Figure 3 Institutional ownership by type and country

The figure below demonstrates the total institutional ownership with the breakdown of different institution types (mutual funds, investment advisors, hedge funds, bank trusts, insurance companies, and pension funds) at the end of year 2016.

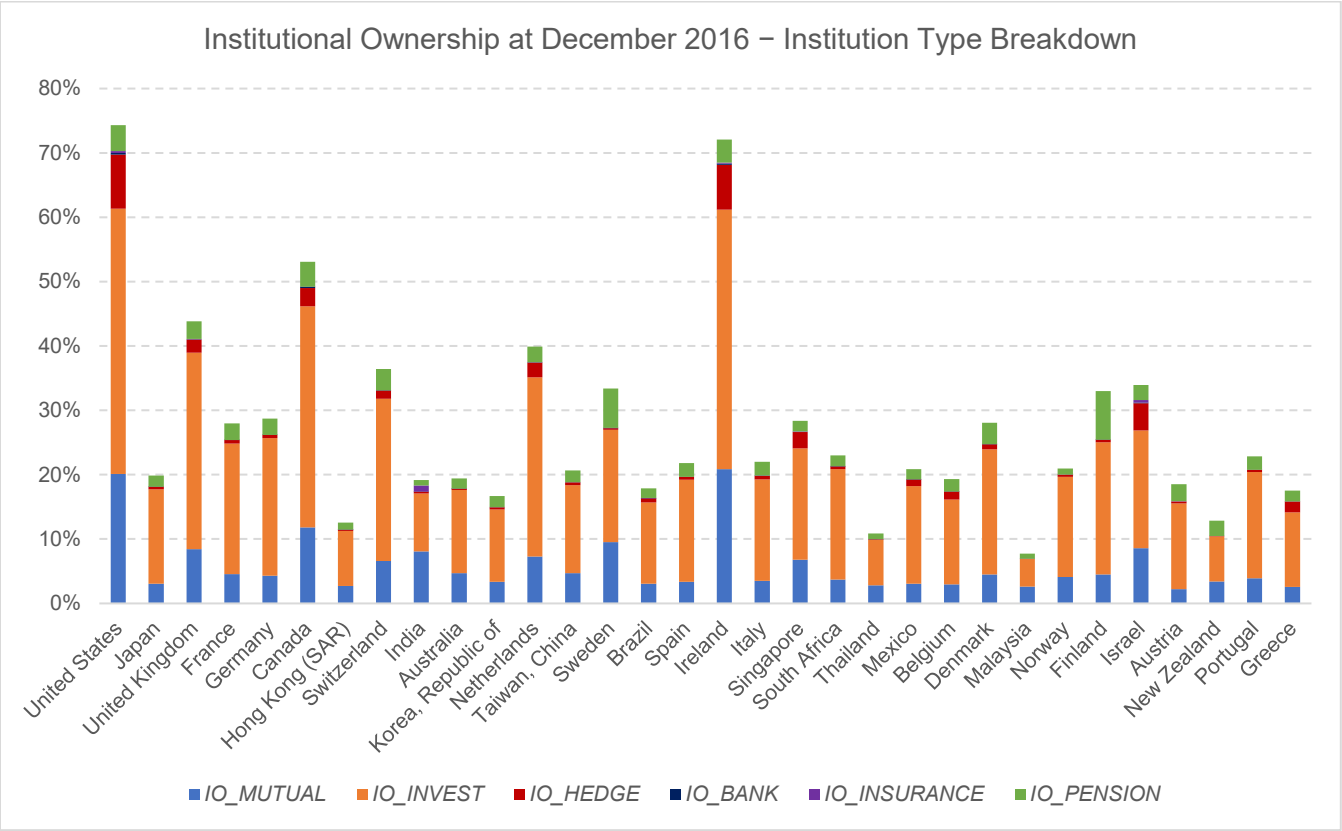

Table A1

Variable Description

Variables		Definition
Panel A: Institutional ownership variables		
Total institutions	*IO_TOTAL*	Total institutional ownership ratio in percentage of market capitalization (FactSet)
Foreign institutions	*IO_FOREIGN*	Foreign institutional ownership ratio in percentage of market capitalization (FactSet)
Foreign U.S. institutions	*IO_FOREIGN_US*	Foreign institutional ownership ratio (US institutions) in percentage of market capitalization (FactSet)
Foreign non-U.S. institutions	*IO_FOREIGN_NUS*	Foreign institutional ownership ratio (Non-US institutions) in percentage of market capitalization (FactSet)
Domestic institutions	*IO_DOMESTIC*	Domestic institutional ownership ratio in percentage of market capitalization (FactSet)
Independent institutions	*IO_INDEP*	Institutional ownership ratio (independent institutions) in percentage of market capitalization (FactSet)
Grey. institutions	*IO_GREY*	Institutional ownership ratio (grey institutions) in percentage of market capitalization (FactSet)
Ownership concentration	*HERF*	Herfindahl-Hirschman Index (FactSet)
Panel B: Valuation and operation performance		
Tobin's Q	*Q*	Sum of total assets plus market value of equity minus book value of equity divided by total assets (Compustat)
Panel C: Firm-level control variables		
Market capitalization (log)	*SIZE*	Log of annual market capitalization (Compustat)
Book-to-market (log)	*BM*	Log of the book-to-market equity ratio (Compustat)
Investment opportunities	*INVOP*	Two-year geometric average of annual growth in net sales (Compustat)
Research and Development	*R&D/K*	The ratio of research and development expenditures to property, plant, and equipment. We set missing observations of R&D/K equal to zero to maintain sample size (Compustat)
R&D Dummy	*RDUM*	A dummy variable equals to one if R&D data are available, and zero otherwise (Compustat)
Stock return annual	*RET*	Annual stock rate of return (Compustat)
Turnover	*TURN*	Annual share volume divided by shares outstanding (Compustat)
Dividend yield	*DY*	Annual dividends per share divided by price per share (Compustat)
Return on equity	*ROE*	Net income divided by equity (Compustat)
MSCI dummy	*MSCI*	MSCI dummy variable, which equals one when the firm is member of MSCI ACWI index (iShare Website)
Leverage	*LEV*	Ratio of debt to equity (Compustat)
Cash	*CASH*	Cash and short-term investments divided by total assets (Compustat)
ADR exchange-listed dummy	*ADR*	ADR dummy, which equals one if a firm is cross-listed on a U.S. exchange (Compustat)
Global industry Tobin Q	*GLOBAL_Q*	Median Tobin's Q of firms in each two-digit SIC global industry) (Compustat)
Panel D: Country-level control variables		
Legal regime quality index	*LEGAL*	Anti-director rights multiplied by the rule of law index (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998)
Disclosure	*DISC*	Strength of auditing and reporting standards from Global Competitive Report
Average distance (log)	*DISTANCE*	Average bilateral great circle distance in kilometers (log) between a country capital city and other capital cities
English language dummy	*ENGLISH*	English dummy variable, which equals one when a country's official language is English (CIA World Factbook)
GDP per capita (log)	*GDP*	Annual log GDP per capita (Global Competitive Report)
Market capitalization to GDP	*MCAP*	Annual ratio of stock market capitalization to gross domestic product (CEIC)

Table 1 Summary Statistics

This table contains mean, median, standard deviation, minimum, maximum and number of observations of all variables. The sample period is from 2007 to 2016 with no missing variables. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles.

Variable		Mean	Median	Std Dev	Minimum	Maximum	N
Panel A: Institutional ownership variables							
Total institutions	*IO_TOTAL*	0.115	0.061	0.146	0.000	1.000	78,547
Foreign institutions	*IO_FOREIGN*	0.063	0.023	0.104	0.000	1.000	78,547
Foreign U.S. institutions	*IO_FOREIGN_US*	0.033	0.009	0.076	0.000	1.000	78,547
Foreign non-U.S. institutions	*IO_FOREIGN*	0.029	0.007	0.049	0.000	1.000	78,547
Domestic institutions	*IO_FOREIGN_NUS*	0.052	0.017	0.090	0.000	1.000	78,547
Independent institutions	*IO_IDEP*	0.107	0.056	0.138	0.000	1.000	78,547
Mutual funds	*IO_MUTUAL*	0.023	0.004	0.044	0.000	1.000	78,547
Investment advisers	*IO_INVEST*	0.078	0.038	0.103	0.000	1.000	78,547
Hedge funds	*IO_HEDGE*	0.005	0.000	0.025	0.000	0.881	78,547
Grey institutions	*IO_GREY*	0.008	0.000	0.018	0.000	0.411	78,547
Bank trusts	*IO_BANK*	0.000	0.000	0.001	0.000	0.082	78,547
Pension funds	*IO_PENSION*	0.008	0.000	0.018	0.000	0.411	78,547
Insurance companies	*IO_INSURANCE*	0.000	0.000	0.003	0.000	0.240	78,547
Ownership concentration	*HERF*	0.408	0.277	0.343	0.009	1.000	78,547
Panel B: Valuation variable							
Tobin *Q*	*Q*	1.448	1.091	1.106	0.470	7.707	78,547
Panel C: Firm-level control variables							
Market capitalization (log)	*SIZE*	5.455	5.239	1.780	1.677	10.620	78,547
Book-to-market (log)	*BM*	-0.263	-0.197	0.879	-2.996	1.688	78,547
Investment opportunities	*INVOP*	0.056	0.048	0.202	-0.608	0.750	78,547
Research and Development	*R&D/K*	0.099	0.000	0.369	0.000	3.099	78,547
R&D Dummy	*RDUM*	0.506	1.000	0.500	0.000	1.000	78,547
Stock return annual	*RET*	0.229	-0.012	1.336	-0.877	11.056	78,547
Turnover	*TURN*	0.996	0.466	1.557	0.013	10.372	78,547
MSCI dummy	*MSCI*	0.034	0.000	0.181	0.000	1.000	78,547
Dividend yield	*DY*	0.018	0.011	0.023	0.000	0.119	78,547
Return on equity	*ROE*	0.027	0.073	0.314	-2.297	0.630	78,547
Leverage	*LEV*	0.456	0.465	0.214	0.000	0.893	78,547
Cash	*CASH*	0.171	0.126	0.154	0.001	0.782	78,547
ADR exchange-listed dummy	*ADR*	0.033	0.000	0.179	0.000	1.000	78,547
Global industry Tobin Q	*GLOBAL_Q*	1.246	1.188	0.227	0.909	1.701	78,547
Panel D: Country-level control variables							
Legal regime quality index	*LEGAL*	23.884	17.960	12.371	0.000	50.000	78,547
Disclosure	*DISC*	5.552	5.600	0.543	3.900	6.700	78,547
Average Distance (log)	*DISTANCE*	8.944	9.033	0.243	8.566	9.593	78,547
English language dummy	*ENGLISH*	0.347	0.000	0.476	0.000	1.000	78,547
GDP per capita (log)	*GDP*	10.169	10.558	0.981	6.885	11.516	78,547
Market capitalization to GDP	*MCAP*	1.421	0.949	2.057	0.073	12.441	78,547

Table 1a Correlation Matrix

This table contains the Pearson Correlation Coefficients among all variables. The sample period is from 2007 to 2016 with no missing variables. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles.

	Q	*IO_TOTAL*	*HERF*	*SIZE*	*BM*	*INVOP*	*RDK*	*RDUM*	*RET*	*TURN*	*DY*	*ROE*	*MSCI*	*LEV*	*CASH*	*ADR*	*GLOBAL_Q*	*ROA*	*LEGAL*	*DISC*	*DISTANCE*	*ENGLISH*	*GDP*	*MCAP*
Q	1.000																							
IO_TOTAL	**0.156**	1.000																						
HERF	**-0.138**	**-0.506**	1.000																					
SIZE	**0.253**	**0.437**	**-0.660**	1.000																				
BM	**-0.794**	**-0.239**	**0.223**	**-0.376**	1.000																			
INVOP	**0.186**	**0.065**	**-0.054**	**0.078**	**-0.210**	1.000																		
RDK	**0.227**	**0.084**	**-0.014**	**-0.070**	**-0.183**	**0.047**	1.000																	
RDUM	**0.031**	**0.027**	**-0.116**	**0.082**	**-0.024**	**-0.068**	**0.264**	1.000																
RET	**0.170**	**-0.007**	**0.010**	**0.048**	**-0.185**	**0.113**	**0.017**	**-0.015**	1.000															
TURN	**0.081**	**0.059**	**-0.052**	**0.096**	**-0.101**	**0.036**	**0.035**	**0.102**	**0.131**	1.000														
DY	**-0.129**	**0.028**	**-0.058**	**0.052**	**0.146**	**-0.034**	**-0.110**	**-0.044**	**-0.081**	**-0.128**	1.000													
ROE	**0.073**	**0.091**	**-0.159**	**0.277**	**-0.072**	**0.135**	**-0.128**	0.003	**0.068**	**-0.028**	**0.186**	1.000												
MSCI	**0.043**	**0.236**	**-0.196**	**0.415**	**-0.089**	**-0.013**	**-0.021**	**0.053**	**-0.019**	**0.039**	**0.039**	**0.056**	1.000											
LEV	**-0.129**	**-0.067**	**-0.034**	**0.055**	**-0.044**	**-0.024**	**-0.161**	**-0.051**	**-0.037**	**0.031**	-0.003	**-0.085**	**0.041**	1.000										
CASH	**0.279**	**-0.062**	**0.044**	**-0.066**	**-0.191**	**0.018**	**0.318**	**0.128**	**0.063**	**0.065**	**-0.030**	0.004	**-0.060**	**-0.395**	1.000									
ADR	**0.037**	**0.020**	**-0.030**	**0.129**	**-0.052**	0.002	**-0.019**	**-0.060**	**-0.007**	**0.067**	**-0.025**	**0.026**	**0.087**	**0.019**	**-0.032**	1.000								
GLOBAL_Q	**0.228**	**0.091**	**-0.054**	**0.011**	**-0.248**	**0.088**	**0.236**	**0.150**	**0.030**	**0.012**	**-0.070**	**-0.024**	**0.031**	**-0.148**	**0.199**	**-0.029**	1.000							
ROA	**0.116**	**0.081**	**-0.164**	**0.291**	**-0.147**	**0.138**	**-0.171**	0.004	**0.072**	**-0.016**	**0.210**	**0.836**	**0.050**	**-0.063**	-0.002	**0.037**	**-0.024**	1.000						
LEGAL	**0.088**	**0.265**	**-0.012**	**-0.052**	**-0.072**	**0.084**	**0.046**	**-0.159**	**0.016**	**-0.102**	**0.074**	**-0.082**	**0.016**	**-0.258**	**-0.012**	**-0.099**	**0.038**	**-0.117**	1.000					
DISC	**0.063**	**0.196**	**-0.078**	**-0.015**	**-0.081**	**0.030**	**0.075**	**-0.066**	**-0.013**	**-0.142**	**0.076**	**-0.027**	**0.010**	**-0.174**	**0.062**	**-0.111**	**0.039**	**-0.065**	**0.496**	1.000				
DISTANCE	**-0.058**	**-0.298**	**0.114**	-0.002	**0.122**	0.000	**-0.130**	**-0.035**	0.001	**0.071**	**0.084**	**0.007**	**-0.029**	**-0.173**	**0.085**	**0.016**	**-0.090**	0.001	**0.108**	**0.077**	1.000			
ENGLISH	**0.127**	**0.221**	**0.023**	**-0.040**	**-0.112**	**0.126**	**0.010**	**-0.226**	**0.028**	**-0.122**	**0.038**	**-0.040**	**-0.009**	**-0.153**	**-0.068**	**-0.058**	**0.040**	**-0.061**	**0.774**	**0.342**	**0.091**	1.000		
GDP	**-0.069**	**0.149**	**-0.127**	**0.010**	**0.061**	**-0.084**	**0.092**	**0.086**	**-0.040**	**-0.050**	**0.060**	**-0.101**	**0.065**	**-0.087**	**0.087**	**-0.198**	**0.056**	**-0.150**	**0.202**	**0.413**	**-0.053**	**-0.212**	1.000	
MCAP	**0.045**	**-0.065**	**0.076**	**0.026**	**-0.010**	**0.023**	**-0.032**	**-0.102**	**0.026**	**-0.047**	**0.046**	**0.011**	**-0.012**	**-0.114**	**0.106**	**-0.019**	**-0.041**	**0.018**	**0.344**	**0.328**	**0.109**	**0.356**	**0.051**	1.000

Table 2 Determinants of institutional ownership: Foreign vs. Domestic

This table demonstrates the parameter estimates of OLS regression of institutional ownership for non-U.S. firms by total, foreign, and domestic institutions. The sample period is from 2007 to 2016 with no missing variables. The definitions of all variables are provided in Appendix Table A1. The regressions include year fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	Total Institutions			Foreign Institutions	Foreign U.S. Inst	Foreign non-U.S. Inst	Domestic Institutions
SIZE	0.0306***	0.0359***	0.0354***	0.0289***	0.0169***	0.0120***	0.0070***
	(85.83)	(110.97)	(132.41)	(104.45)	(74.89)	(103.65)	(37.23)
BM	-0.0228***	-0.0003	0.0026	0.0033***	0.0036***	-0.0003	-0.0036***
	(-34.48)	(-0.49)	(4.77)	(7.02)	(9.72)	(-1.35)	(-9.38)
INVOP	0.0117***	0.0017	-0.0025	0.0026	-0.0022	0.0048***	-0.0010
	(4.57)	(0.76)	(-1.29)	(1.52)	(-1.61)	(5.36)	(-0.63)
RET	-0.0047***	-0.0041***	-0.0043***	-0.0028***	-0.0018***	-0.0011***	-0.0012***
	(-12.10)	(-11.82)	(-14.86)	(-10.55)	(-8.34)	(-8.10)	(-5.48)
TURN	0.0027***	0.0094***	0.0095***	0.0071***	0.0061***	0.0010***	0.0024***
	(7.99)	(30.20)	(37.29)	(24.53)	(24.09)	(10.56)	(15.80)
DY	0.1564***	0.1112***	0.4724***	-0.0510***	-0.0503***	-0.0008	0.1623***
	(7.43)	(5.97)	(45.16)	(-3.78)	(-4.83)	(-0.11)	(12.00)
ROE	-0.0178***	0.0004	0.6253***	-0.0105***	-0.0083***	-0.0022***	0.0109***
	(-10.42)	(0.29)	(59.77)	(-9.35)	(-8.88)	(-4.22)	(10.33)
MSCI	0.0575***	0.0230***	0.6616***	0.0434***	0.0298***	0.0136***	-0.0204***
	(14.32)	(6.75)	(63.25)	(13.84)	(11.15)	(11.61)	(-11.36)
LEV	-0.1014***	-0.0614***	3.5199***	-0.0550***	-0.0547***	-0.0003	-0.0064***
	(-35.72)	(-25.00)	(336.48)	(-26.37)	(-30.46)	(-0.36)	(-4.11)
CASH	-0.1103***	-0.0186***	0.0213	0.0057**	-0.0014	0.0071***	-0.0243***
	(-30.29)	(-5.86)	(2.03)	(2.22)	(-0.68)	(5.91)	(-11.74)
ADR	-0.0359***	0.0139***	0.1039***	0.0227***	0.0101***	0.0126***	-0.0088***
	(-13.50)	(5.81)	(9.94)	(9.68)	(5.50)	(11.61)	(-8.57)
LEGAL		0.0015***		-0.0003***	-0.0002***	-0.0001***	0.0018***
		(21.21)		(-5.72)	(-4.30)	(-4.72)	(43.80)
DISC		0.0280***		0.0048***	0.0005	0.0042***	0.0232***
		(28.75)		(5.14)	(0.69)	(10.14)	(44.66)
DISTANCE		-0.1990***		-0.0693***	-0.0317***	-0.0376***	-0.1297***
		(-101.93)		(-44.98)	(-26.42)	(-45.94)	(-93.55)
ENGLISH		0.0722***		0.0370***	0.0297***	0.0074***	0.0352***
		(39.71)		(21.17)	(20.51)	(9.01)	(34.86)
GDP		0.0175***		0.0124***	0.0089***	0.0035***	0.0051***
		(31.12)		(22.73)	(19.67)	(14.01)	(17.02)
MCAP		-0.0149***		-0.0045***	-0.0033***	-0.0012***	-0.0104***
		(-80.29)		(-30.38)	(-30.85)	(-15.82)	(-98.51)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	No	No	Yes	No	No	No	No
F-Stat	743.03	1194.18	1589.69	711.92	410.09	747.82	719.07
R^2	0.2295	0.4499	0.5081	0.3331	0.2361	0.2585	0.3418
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547	78,547	78,547

Table 3 Determinants of institutional ownership: Independent vs. Grey

This table demonstrates the parameter estimates of OLS regression of institutional ownership for non-U.S. firms by independent institutions and grey institutions. The dependent is institutional ownership ratio in percentage of market capitalization. The sample period is from 2007 to 2016 with no missing variables. The definitions of all variables are provided in Appendix Table A1. The regressions include year fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	Independent Institutions	Mutual Funds	Investment Advisers	Hedge Funds	Grey Institutions	Bank Trusts	Insurance Companies	Pension Funds
SIZE	0.032***	0.006***	0.025***	0.001***	0.004***	0.000***	0.000***	0.004***
	(104.12)	(58.61)	(111.39)	(14.74)	(83.35)	(4.93)	(18.61)	(81.31)
BM	-0.001	-0.003***	0.002***	0.000	0.000***	0.000***	0.000	0.000***
	(-1.32)	(-12.43)	(3.95)	(0.88)	(5.92)	(4.08)	(0.91)	(5.77)
INVOP	0.003	0.000	0.000	0.002***	-0.001***	-0.000	0.000	-0.001***
	(1.26)	(0.63)	(0.25)	(2.96)	(-3.25)	(-0.07)	(0.49)	(-3.37)
RET	-0.004***	-0.001***	-0.003***	-0.000	-0.000***	-0.000	-0.000***	-0.000***
	(-11.16)	(-4.73)	(-12.66)	(-0.72)	(-8.04)	(-0.64)	(-5.67)	(-7.33)
TURN	0.009***	0.002***	0.005***	0.001***	0.001***	0.000***	-0.000	0.001***
	(28.87)	(20.24)	(27.21)	(15.44)	(20.39)	(8.70)	(-1.50)	(20.75)
DY	0.085***	0.035***	0.092***	-0.042***	0.027***	-0.000	0.000	0.026***
	(4.72)	(5.43)	(6.58)	(-10.99)	(8.93)	(-1.18)	(1.06)	(8.90)
ROE	0.002	0.001**	0.004***	-0.003***	-0.002***	-0.000***	-0.000***	-0.002***
	(1.61)	(2.11)	(3.62)	(-6.18)	(-9.16)	(-3.29)	(-4.27)	(-8.42)
MSCI	0.020***	0.005***	0.014***	0.001*	0.003***	0.000***	0.000	0.003***
	(6.09)	(4.90)	(6.10)	(1.76)	(7.68)	(8.28)	(0.89)	(7.37)
LEV	-0.059***	-0.021***	-0.022***	-0.016***	-0.003***	-0.000***	-0.000***	-0.002***
	(-24.83)	(-26.27)	(-12.84)	(-25.50)	(-8.22)	(-6.27)	(-4.53)	(-7.14)
CASH	-0.012***	-0.009***	-0.003	0.001	-0.007***	-0.000***	0.000	-0.006***
	(-3.93)	(-8.90)	(-1.45)	(0.74)	(-15.85)	(-3.69)	(0.54)	(-16.07)
ADR	0.015***	-0.001	0.014***	0.002***	-0.001***	0.000**	0.000*	-0.002***
	(6.61)	(-1.16)	(8.41)	(5.88)	(-6.06)	(2.09)	(1.90)	(-7.70)
LEGAL	0.002***	0.001***	0.001***	0.000***	-0.000***	0.000***	-0.000***	-0.000
	(23.15)	(25.14)	(19.12)	(3.25)	(-5.55)	(3.06)	(-17.30)	(-0.70)
DISC	0.022***	0.005***	0.017***	-0.000	0.006***	0.000***	-0.000***	0.006***
	(23.69)	(13.50)	(26.63)	(-0.54)	(31.04)	(4.20)	(-3.75)	(31.80)
DISTANCE	-0.187***	-0.036***	-0.137***	-0.014***	-0.012***	-0.000***	-0.001***	-0.011***
	(-99.22)	(-54.91)	(-94.05)	(-31.53)	(-40.10)	(-6.60)	(-27.09)	(-36.68)
ENGLISH	0.070***	0.017***	0.046***	0.007***	0.002***	0.000***	0.001***	0.001***
	(40.03)	(28.41)	(36.16)	(18.98)	(11.01)	(5.59)	(23.43)	(3.79)
GDP	0.017***	-0.006***	0.020***	0.002***	0.001***	0.000	-0.000***	0.001***
	(30.79)	(-27.92)	(53.82)	(19.77)	(13.33)	(1.53)	(-4.20)	(16.43)
MCAP	-0.014***	-0.003***	-0.010***	-0.001***	-0.001***	-0.000***	-0.000***	-0.001***
	(-78.07)	(-46.05)	(-77.25)	(-22.19)	(-39.67)	(-10.08)	(-19.95)	(-38.03)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat	1105.12	593.53	1232.80	82.06	509.15	14.87	48.86	504.35
R^2	0.4323	0.2396	0.4262	0.0710	0.2052	0.0101	0.0476	0.2024
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547

Table 4 Institutional ownership and firm value: median regression

This table demonstrates the parameter estimates of median regression of Tobin's *Q* for non-U.S. firms. The definitions of all variables are provided in Appendix Table A1. The sample period is from 2007 to 2016 with no missing variables. The regressions include year and industry fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)
IO_TOTAL	-0.1099**				
	(-2.40)				
(IO_TOTAL)²	0.4259***				
	(7.05)				
IO_FOREIGN		-0.5111***			
		(-9.97)			
(IO_FOREIGN)²		1.0415***			
		(14.36)			
IO_DOMESTIC			0.4697***		
			(7.46)		
(IO_DOMESTIC)²			-0.4442***		
			(-3.61)		
IO_INDEP				-0.0342	
				(-0.72)	
(IO_INDEP)²				0.3690***	
				(5.65)	
IO_GREY					-2.1010***
					(-8.68)
(IO_GREY)²					12.7613***
					(8.94)
HERF	0.1160***	0.1047***	0.1425***	0.1211***	0.1099***
	(11.40)	(11.29)	(14.82)	(11.98)	(11.81)
SIZE	0.1723***	0.1726***	0.1682***	0.1716***	0.1671***
	(24.37)	(25.22)	(24.13)	(24.33)	(23.91)
(SIZE)²	-0.0054***	-0.0049***	-0.0048***	-0.0054***	-0.0043***
	(-9.72)	(-8.89)	(-8.80)	(-9.71)	(-7.71)
INVOP	0.3476***	0.3436***	0.3414***	0.3456***	0.3424***
	(30.28)	(30.94)	(30.23)	(30.17)	(30.16)
R&D/K	0.3314***	0.3358***	0.3317***	0.3322***	0.3355***
	(47.31)	(49.57)	(48.17)	(47.53)	(48.46)
RDUM	-0.0481***	-0.0500***	-0.0473***	-0.0482***	-0.0493***
	(-9.07)	(-9.74)	(-9.08)	(-9.10)	(-9.40)
LEV	0.2742***	0.2706***	0.2713***	0.2749***	0.2663***
	(22.03)	(22.46)	(22.25)	(22.13)	(21.74)
CASH	0.0504	0.0689*	0.0564	0.0509	0.0408
	(1.17)	(1.65)	(1.32)	(1.18)	(0.95)
(CASH)²	1.7028***	1.6731***	1.6969***	1.7016***	1.7147***
	(25.22)	(25.62)	(25.55)	(25.26)	(25.68)
ADR	0.0369***	0.0416***	0.0433***	0.0366***	0.0378***
	(2.83)	(3.30)	(3.38)	(2.81)	(2.93)
GLOBAL_Q	0.5346***	0.5312***	0.5264***	0.5330***	0.5297***
	(32.28)	(33.17)	(32.31)	(32.25)	(32.37)
LEGAL	0.0033***	0.0037***	0.0031***	0.0033***	0.0036***
	(9.05)	(10.39)	(8.42)	(8.93)	(9.87)
DISC	0.0691***	0.0705***	0.0601***	0.0691***	0.0709***
	(12.70)	(13.46)	(11.12)	(12.75)	(13.15)
DISTANCE	-0.2010***	-0.2199***	-0.1806***	-0.1950***	-0.2243***
	(-18.95)	(-22.80)	(-17.23)	(-18.45)	(-22.76)
ENGLISH	0.0630***	0.0653***	0.0564***	0.0601***	0.0701***
	(6.31)	(6.81)	(5.75)	(6.03)	(7.17)

	(1)	(2)	(3)	(4)	(5)
GDP	-0.0593***	-0.0592***	-0.0571***	-0.0593***	-0.0569***
	(-17.71)	(-18.28)	(-17.39)	(-17.74)	(-17.24)
MCAP	-0.0235***	-0.0246***	-0.0216***	-0.0232***	-0.0254***
	(-18.14)	(-20.02)	(-16.72)	(-17.91)	(-20.20)
Year Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Number of Firms	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547

Table 5 Institutional ownership and firm value: detailed breakdown by institution types

This table demonstrates the parameter estimates of median regression of Tobin's *Q* by breaking independent (*IO_INDEP*) and grey (*IO_GREY*) institutions into specific type of institutions. The definitions of all variables are provided in Appendix Table A1. The sample period is from 2007 to 2016 with no missing variables. The regressions include year and industry fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
IO_MUTAL	1.5652***					
	(16.33)					
(IO_MUTAL)²	-2.3069***					
	(-7.47)					
IO_INVEST		-0.5310***				
		(-8.57)				
(IO_INVEST)²		1.4771***				
		(12.04)				
IO_HEDGE			0.2448			
			(1.53)			
(IO_HEDGE)²			-0.7957*			
			(-1.87)			
IO_BANK				-29.5416***		
				(-3.65)		
(IO_BANK)²				350.3490***		
				(3.06)		
IO_INSURANCE					-0.9721	
					(-0.90)	
(IO_INSURANCE)²					4.1646	
					(0.35)	
IO_PENSION						-2.2108***
						(-8.96)
(IO_PRENSION)²						13.7968***
						(9.57)
HERF	0.1436***	0.0993***	0.1208***	0.1207***	0.1197***	0.1097***
	(15.34)	(10.11)	(13.08)	(13.11)	(13.11)	(11.82)
SIZE	0.1724***	0.1711***	0.1716***	0.1693***	0.1710***	0.1676***
	(24.84)	(24.60)	(24.63)	(24.26)	(24.70)	(24.03)
(SIZE)²	-0.0057***	-0.0051***	-0.0051***	-0.0048***	-0.0050***	-0.0043***
	(-10.35)	(-9.19)	(-9.30)	(-8.77)	(-9.22)	(-7.78)
INVOP	0.3374***	0.3477***	0.3438***	0.3422***	0.3432***	0.3426***
	(29.94)	(30.80)	(30.48)	(30.20)	(30.57)	(30.24)
R&D/K	0.3217***	0.3322***	0.3331***	0.3339***	0.3316***	0.3352***
	(46.80)	(48.24)	(48.36)	(48.32)	(48.44)	(48.52)
RDUM	-0.0467***	-0.0487***	-0.0480***	-0.0479***	-0.0478***	-0.0493***
	(-8.97)	(-9.33)	(-9.22)	(-9.15)	(-9.22)	(-9.43)
LEV	0.2885***	0.2666***	0.2710***	0.2685***	0.2700***	0.2674***
	(23.63)	(21.85)	(22.06)	(21.94)	(22.27)	(21.87)
CASH	0.0632	0.0653	0.0599	0.0581	0.0585	0.0443
	(1.49)	(1.53)	(1.41)	(1.36)	(1.38)	(1.04)
(CASH)²	1.7065***	1.6772***	1.6847***	1.6836***	1.6881***	1.7109***
	(25.75)	(25.26)	(25.40)	(25.27)	(25.57)	(25.68)
ADR	0.0370***	0.0403***	0.0400***	0.0412***	0.0404***	0.0384***
	(2.89)	(3.14)	(3.12)	(3.20)	(3.17)	(2.99)
GLOBAL_Q	0.5235***	0.5309***	0.5336***	0.5329***	0.5335***	0.5288***
	(32.22)	(32.59)	(32.81)	(32.62)	(32.95)	(32.39)
LEGAL	0.0029***	0.0033***	0.0035***	0.0035***	0.0035***	0.0036***
	(8.13)	(9.11)	(9.80)	(9.77)	(9.75)	(10.09)
DISC	0.0653***	0.0724***	0.0686***	0.0685***	0.0687***	0.0707***
	(12.30)	(13.56)	(12.92)	(12.84)	(12.98)	(13.13)
DISTANCE	-0.1808***	-0.2163***	-0.2141***	-0.2166***	-0.2168***	-0.2233***
	(-18.34)	(-20.96)	(-21.93)	(-22.23)	(-22.39)	(-22.75)
ENGLISH	0.0491***	0.0689***	0.0692***	0.0713***	0.0709***	0.0690***
	(5.04)	(7.04)	(7.11)	(7.31)	(7.28)	(7.07)
GDP	-0.0491***	-0.0565***	-0.0576***	-0.0571***	-0.0578***	-0.0570***

	(1)	(2)	(3)	(4)	(5)	(6)
	(-14.77)	(-16.98)	(-17.54)	(-17.35)	(-17.70)	(-17.29)
MCAP	-0.0215***	-0.0244***	-0.0246***	-0.0249***	-0.0247***	-0.0255***
	(-17.10)	(-19.24)	(-19.67)	(-19.89)	(-19.92)	(-20.30)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547	78,547

Table 6 Institutional ownership and firm value

This table presents the estimates of coefficients of regression on firm performance (Tobin's *Q*) for non-U.S. firms. Panel A reports the estimates from OLS regression with log(*Q*) as dependent variable while Panel B reports -1/*Q* as dependent variable. The definitions of all variables are provided in Appendix Table A1. The sample period is from 2007 to 2016 with no missing variables. The regressions include year and industry fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	Panel A					Panel B				
Regression Type	OLS					OLS				
Dependent Variable	log(*Q*)					-1/*Q*				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
IO_TOTAL	-0.110**					-0.000				
	(-2.40)					(-0.02)				
(IO_TOTAL)²	0.426***					0.075**				
	(7.05)					(2.55)				
IO_FOREIGN		-0.211***					-0.396***			
		(-12.07)					(-14.62)			
(IO_FOREIGN)²		0.277***					0.536***			
		(10.71)					(14.33)			
IO_DOMESTIC			0.180***					0.456***		
			(8.34)					(12.91)		
(IO_DOMESTIC)²			-0.242***					-0.558***		
			(-5.22)					(-7.43)		
IO_INDEP				-0.013					0.026	
				(-0.84)					(1.11)	
(IO_INDEP)²				0.038*					0.052	
				(1.80)					(1.61)	
IO_GREY					-0.774***					-0.968***
					(-8.33)					(-6.91)
(IO_GREY)²					3.885***					5.392***
					(5.80)					(5.49)
HERF	0.116***	0.053***	0.071***	0.062***	0.058***	0.115***	0.097***	0.136***	0.117***	0.108***
	(11.40)	(19.12)	(24.42)	(20.92)	(20.72)	(21.64)	(19.33)	(26.17)	(22.15)	(21.55)
SIZE	0.172***	0.099***	0.099***	0.100***	0.099***	0.219***	0.218***	0.216***	0.219***	0.218***
	(24.37)	(46.49)	(46.20)	(46.81)	(46.51)	(55.43)	(55.19)	(54.60)	(55.43)	(55.21)
(SIZE)²	-0.005***	-0.004***	-0.004***	-0.004***	-0.004***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***
	(-9.72)	(-21.78)	(-23.02)	(-23.64)	(-22.28)	(-35.01)	(-32.92)	(-33.78)	(-35.04)	(-33.77)
INVOP	0.348***	0.152***	0.152***	0.153***	0.152***	0.267***	0.266***	0.265***	0.267***	0.266***
	(30.28)	(37.98)	(37.93)	(38.13)	(37.84)	(38.34)	(38.15)	(38.07)	(38.32)	(38.12)
R&D/K	0.331***	0.071***	0.070***	0.071***	0.071***	0.105***	0.106***	0.105***	0.105***	0.106***
	(47.31)	(25.31)	(24.97)	(24.97)	(25.24)	(25.69)	(26.19)	(25.69)	(25.66)	(26.00)
RDUM	-0.048***	-0.019***	-0.018***	-0.018***	-0.018***	-0.030***	-0.031***	-0.030***	-0.030***	-0.030***
	(-9.07)	(-12.27)	(-11.97)	(-11.90)	(-11.97)	(-11.21)	(-11.63)	(-11.35)	(-11.20)	(-11.28)
LEV	0.274***	0.083***	0.085***	0.085***	0.084***	0.331***	0.327***	0.330***	0.331***	0.328***
	(22.03)	(21.59)	(22.09)	(21.97)	(21.85)	(47.40)	(46.92)	(47.53)	(47.45)	(47.25)
CASH	0.050	0.258***	0.260***	0.256***	0.250***	0.468***	0.470***	0.478***	0.467***	0.460***
	(1.17)	(17.75)	(17.87)	(17.59)	(17.16)	(19.86)	(19.99)	(20.30)	(19.83)	(19.49)

	Panel A					Panel B				
Regression Type	OLS					OLS				
Dependent Variable	log(*Q*)					-1/*Q*				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(CASH)^2	1.703***	0.174***	0.173***	0.175***	0.181***	0.152***	0.150***	0.145***	0.153***	0.159***
	(25.22)	(6.79)	(6.75)	(6.85)	(7.05)	(3.93)	(3.87)	(3.76)	(3.95)	(4.10)
ADR	0.037***	0.012***	0.012***	0.011**	0.010**	0.022***	0.026***	0.025***	0.022***	0.023***
	(2.83)	(2.86)	(2.69)	(2.44)	(2.37)	(3.19)	(3.73)	(3.63)	(3.14)	(3.23)
GLOBAL_Q	0.535***	0.233***	0.230***	0.232***	0.232***	0.410***	0.412***	0.406***	0.410***	0.411***
	(32.28)	(46.17)	(45.67)	(46.00)	(46.09)	(48.39)	(48.64)	(47.99)	(48.36)	(48.51)
LEGAL	0.003***	0.001***	0.001***	0.001***	0.001***	0.003***	0.003***	0.003***	0.003***	0.003***
	(9.05)	(13.72)	(11.97)	(13.22)	(13.38)	(16.39)	(17.21)	(14.52)	(16.26)	(16.86)
DISC	0.069***	0.031***	0.028***	0.031***	0.032***	0.069***	0.070***	0.061***	0.068***	0.070***
	(12.70)	(20.25)	(17.58)	(19.83)	(20.62)	(26.24)	(27.06)	(23.16)	(26.25)	(26.83)
DISTANCE	-0.201***	-0.091***	-0.076***	-0.087***	-0.091***	-0.156***	-0.168***	-0.131***	-0.154***	-0.167***
	(-18.95)	(-28.81)	(-22.62)	(-25.74)	(-29.04)	(-28.09)	(-32.52)	(-23.75)	(-27.83)	(-32.33)
ENGLISH	0.063***	0.035***	0.031***	0.035***	0.036***	0.041***	0.042***	0.033***	0.040***	0.044***
	(6.31)	(11.64)	(10.47)	(11.56)	(12.12)	(8.05)	(8.32)	(6.47)	(7.89)	(8.81)
GDP	-0.059***	-0.028***	-0.028***	-0.028***	-0.027***	-0.049***	-0.049***	-0.049***	-0.050***	-0.048***
	(-17.71)	(-27.79)	(-27.88)	(-27.96)	(-27.53)	(-29.13)	(-28.83)	(-29.02)	(-29.17)	(-28.60)
MCAP	-0.024***	-0.009***	-0.008***	-0.009***	-0.010***	-0.020***	-0.021***	-0.018***	-0.020***	-0.021***
	(-18.14)	(-19.40)	(-16.88)	(-18.79)	(-19.92)	(-24.32)	(-25.34)	(-21.65)	(-24.20)	(-25.65)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat	637.84	637.45	643.86	638.18	637.11	768.44	768.71	776.58	768.80	766.06
R^2	0.3652	0.3667	0.3660	0.3652	0.3661	0.3723	0.3739	0.3740	0.3723	0.3726
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547

Table 7 Institutional ownership and firm value: breakdown

This table presents the estimates of coefficients of regressions on firm performance (Tobin's *Q*) for non-U.S. firms as broken down by each type of institution. Panel A reports the estimates from OLS regression with log(*Q*) as dependent variable while Panel B reports -1/*Q* as dependent variable. The definitions of all variables are provided in Appendix Table A1. The sample period is from 2007 to 2016 with no missing variables. The regressions include year and industry fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	Panel A						Panel B					
Regression Type	OLS						OLS					
Dependent Variable	log(*Q*)						-1/*Q*					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
IO_MUTAL	0.4287***						0.9176***					
	(11.39)						(12.88)					
(IO_MUTAL)²	-0.7080***						-1.5388***					
	(-4.81)						(-5.10)					
IO_INVEST		-0.1881***						-0.3049***				
		(-8.74)						(-8.44)				
(IO_INVEST)2		0.3390***						0.6006***				
		(7.25)						(7.72)				
IO_HEDGE			0.0144						0.3572***			
			(0.28)						(4.01)			
(IO_HEDGE)²			-0.1743						-0.8093***			
			(-1.39)						(-3.33)			
IO_BANK				-16.6951***						-18.4126***		
				(-5.81)						(-4.22)		
(IO_BANK)²				201.1809***						230.7692***		
				(5.79)						(4.36)		
IO_INSURANCE					0.0004						0.3045	
					(0.00)						(0.69)	
(IO_INSURANCE)²					-2.5011						-3.9291	
					(-0.92)						(-0.97)	
IO_PENSION						-0.8021***						-1.0280***
						(-8.26)						(-7.02)
(IO_PRENSION)²						4.0596***						5.7265***
						(5.80)						(5.56)
HERF	0.0714***	0.0518***	0.0621***	0.0623***	0.0621***	0.0581***	0.1333***	0.0972***	0.1158***	0.1136***	0.1135***	0.1082***
	(25.43)	(17.66)	(22.26)	(22.50)	(22.41)	(20.78)	(26.15)	(18.36)	(23.14)	(22.84)	(22.80)	(21.58)
SIZE	0.1003***	0.0996***	0.0996***	0.0992***	0.0996***	0.0992***	0.2204***	0.2186***	0.2201***	0.2184***	0.2190***	0.2183***
	(47.16)	(46.74)	(46.63)	(46.56)	(46.82)	(46.61)	(55.83)	(55.25)	(55.57)	(55.26)	(55.39)	(55.27)
(SIZE)²	-0.0042***	-0.0039***	-0.0040***	-0.0040***	-0.0040***	-0.0038***	-0.0107***	-0.0102***	-0.0104***	-0.0103***	-0.0103***	-0.0101***
	(-24.62)	(-23.09)	(-23.54)	(-23.21)	(-23.64)	(-22.37)	(-35.98)	(-34.27)	(-35.00)	(-34.48)	(-34.74)	(-33.83)
INVOP	0.1518***	0.1532***	0.1529***	0.1524***	0.1529***	0.1516***	0.2648***	0.2678***	0.2668***	0.2667***	0.2672***	0.2655***
	(37.83)	(38.21)	(38.13)	(38.03)	(38.13)	(37.83)	(38.01)	(38.40)	(38.29)	(38.27)	(38.34)	(38.11)
R&D/K	0.0697***	0.0709***	0.0707***	0.0707***	0.0707***	0.0712***	0.1034***	0.1056***	0.1046***	0.1054***	0.1053***	0.1059***

	Panel A						Panel B					
Regression Type	OLS						OLS					
Dependent Variable	log(Q)						-1/Q					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	(24.68)	(25.10)	(24.99)	(25.05)	(25.02)	(25.25)	(25.32)	(25.89)	(25.61)	(25.85)	(25.83)	(26.02)
RDUM	-0.0182***	-0.0184***	-0.0183***	-0.0183***	-0.0183***	-0.0184***	-0.0293***	-0.0297***	-0.0296***	-0.0295***	-0.0296***	-0.0297***
	(-11.84)	(-11.98)	(-11.89)	(-11.87)	(-11.90)	(-11.99)	(-11.15)	(-11.29)	(-11.23)	(-11.21)	(-11.22)	(-11.29)
LEV	0.0895***	0.0835***	0.0840***	0.0831***	0.0842***	0.0841***	0.3394***	0.3274***	0.3314***	0.3269***	0.3281***	0.3280***
	(23.20)	(21.72)	(21.63)	(21.60)	(21.91)	(21.90)	(48.69)	(47.17)	(47.24)	(47.03)	(47.28)	(47.30)
CASH	0.2593***	0.2567***	0.2553***	0.2542***	0.2553***	0.2501***	0.4736***	0.4677***	0.4667***	0.4641***	0.4653***	0.4595***
	(17.81)	(17.64)	(17.54)	(17.46)	(17.53)	(17.17)	(20.12)	(19.85)	(19.81)	(19.69)	(19.74)	(19.48)
(CASH)2	0.1730***	0.1733***	0.1762***	0.1767***	0.1761***	0.1805***	0.1476***	0.1496***	0.1528***	0.1546***	0.1540***	0.1589***
	(6.75)	(6.76)	(6.88)	(6.90)	(6.87)	(7.05)	(3.81)	(3.86)	(3.94)	(3.99)	(3.97)	(4.10)
ADR	0.0107**	0.0117***	0.0108**	0.0114***	0.0109**	0.0103**	0.0227***	0.0239***	0.0221***	0.0236***	0.0229***	0.0224***
	(2.44)	(2.66)	(2.46)	(2.59)	(2.47)	(2.35)	(3.26)	(3.44)	(3.17)	(3.38)	(3.29)	(3.21)
GLOBAL_Q	0.2307***	0.2337***	0.2322***	0.2323***	0.2323***	0.2322***	0.4079***	0.4132***	0.4110***	0.4111***	0.4111***	0.4110***
	(45.88)	(46.29)	(46.05)	(46.07)	(46.06)	(46.07)	(48.32)	(48.70)	(48.50)	(48.50)	(48.50)	(48.50)
LEGAL	0.0012***	0.0014***	0.0014***	0.0014***	0.0014***	0.0014***	0.0026***	0.0030***	0.0029***	0.0030***	0.0030***	0.0030***
	(11.71)	(13.47)	(13.44)	(13.63)	(13.29)	(13.67)	(14.73)	(16.71)	(16.75)	(17.01)	(16.80)	(17.07)
DISC	0.0294***	0.0319***	0.0304***	0.0304***	0.0304***	0.0320***	0.0668***	0.0712***	0.0690***	0.0689***	0.0689***	0.0705***
	(19.23)	(20.78)	(19.81)	(19.88)	(19.86)	(20.71)	(25.80)	(27.36)	(26.64)	(26.59)	(26.58)	(26.89)
DISTANCE	-0.0787***	-0.0944***	-0.0878***	-0.0882***	-0.0877***	-0.0909***	-0.1436***	-0.1711***	-0.1603***	-0.1632***	-0.1625***	-0.1662***
	(-24.79)	(-28.41)	(-27.97)	(-28.32)	(-28.06)	(-28.96)	(-27.58)	(-31.28)	(-31.25)	(-32.08)	(-31.80)	(-32.33)
ENGLISH	0.0307***	0.0372***	0.0355***	0.0355***	0.0355***	0.0351***	0.0334***	0.0455***	0.0422***	0.0435***	0.0431***	0.0430***
	(10.26)	(12.39)	(11.93)	(11.97)	(11.88)	(11.85)	(6.63)	(8.99)	(8.41)	(8.69)	(8.55)	(8.60)
GDP	-0.0252***	-0.0266***	-0.0278***	-0.0278***	-0.0279***	-0.0274***	-0.0430***	-0.0470***	-0.0492***	-0.0488***	-0.0488***	-0.0482***
	(-24.65)	(-26.26)	(-27.77)	(-27.83)	(-27.84)	(-27.44)	(-24.87)	(-27.34)	(-29.03)	(-28.84)	(-28.81)	(-28.51)
MCAP	-0.0085***	-0.0097***	-0.0093***	-0.0094***	-0.0093***	-0.0096***	-0.0191***	-0.0212***	-0.0206***	-0.0208***	-0.0207***	-0.0210***
	(-17.65)	(-19.89)	(-19.37)	(-19.50)	(-19.35)	(-19.90)	(-23.27)	(-25.57)	(-25.14)	(-25.40)	(-25.30)	(-25.65)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat	647.02	636.20	636.45	637.38	636.11	637.22	782.46	766.85	766.18	767.84	766.33	766.17
R^2	0.3674	0.3660	0.3652	0.3655	0.3652	0.3661	0.3754	0.3728	0.3722	0.3722	0.3721	0.3726
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547

Table 8 Institutional ownership and firm value: robustness checks

This table presents the estimates of coefficients of regression on firm performance (Tobin's *Q*) for non-U.S. firms. Panel A reports the estimates of median regression using country fixed effects instead of country level control variables. Panel B presents the coefficients of Fama-MacBeth regressions with log(*Q*) as dependent variable. The definitions of all variables are provided in Appendix Table A1. The sample period is from 2007 to 2016 with no missing variables. The regressions include year and industry fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	Panel A					Panel B				
Regression Type	Median					Fama-MacBeth OLS				
Dependent Variable	*Q*					log(*Q*)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
IO_TOTAL	-0.3215***					0.0029				
	(-7.04)					(0.13)				
(IO_TOTAL)²	0.6155***					0.0246				
	(10.26)					(0.76)				
IO_FOREIGN		-0.7636***					-0.1984***			
		(-14.60)					(-4.43)			
(IO_FOREIGN)²		1.3783***					0.2722***			
		(18.32)					(4.73)			
IO_DOMESTIC			0.4160***					0.2079***		
			(6.29)					(4.44)		
(IO_DOMESTIC)²			-0.3709***					-0.2635***		
			(-3.00)					(-3.03)		
IO_INDEP				-0.2321***					0.0231	
				(-4.90)					(1.07)	
(IO_INDEP)²				0.5787***					0.0078	
				(8.89)					(0.22)	
IO_GREY					-4.0147***					-0.8243***
					(-16.17)					(-3.72)
(IO_GREY)²					16.7674***					3.9390**
					(12.06)					(2.77)
HERF	0.0628***	0.0578***	0.0946***	0.0694***	0.0607***	0.0736***	0.0644***	0.0830***	0.0753***	0.0682***
	(6.25)	(6.01)	(9.83)	(6.92)	(6.50)	(5.83)	(5.43)	(6.63)	(5.96)	(5.69)
SIZE	0.1546***	0.1549***	0.1467***	0.1536***	0.1475***	0.1063***	0.1059***	0.1052***	0.1063***	0.1058***
	(22.26)	(22.20)	(21.04)	(22.05)	(21.39)	(9.19)	(8.94)	(8.98)	(9.20)	(8.94)
(SIZE)²	-0.0039***	-0.0033***	-0.0033***	-0.0040***	-0.0024***	-0.0044***	-0.0042***	-0.0043***	-0.0044***	-0.0042***
	(-7.17)	(-6.01)	(-6.08)	(-7.19)	(-4.46)	(5.04)	(-4.54)	(-4.88)	(-5.96)	(-4.69)
INVOP	0.3465***	0.3457***	0.3391***	0.3473***	0.3384***	0.1503***	0.1498***	0.1496***	0.1502***	0.1488***
	(31.17)	(30.98)	(30.56)	(31.16)	(30.63)	(6.47)	(6.55)	(6.57)	(6.47)	(6.49)
R&D/K	0.2895***	0.2849***	0.2872***	0.2901***	0.2930***	0.0793***	0.0799***	0.0792***	0.0792***	0.0800***
	(42.32)	(41.48)	(42.07)	(42.28)	(43.15)	(7.01)	(7.11)	(7.19)	(7.01)	(7.10)
RDUM	-0.0154***	-0.0140***	-0.0147***	-0.0153***	-0.0134**	-0.0161***	-0.0167***	-0.0165***	-0.0161***	-0.0160***
	(-2.89)	(-2.62)	(-2.76)	(-2.87)	(-2.54)	(-3.31)	(-3.51)	(-3.43)	(-3.31)	(-3.28)

	Panel A					Panel B				
Regression Type	Median					Fama-MacBeth OLS				
Dependent Variable	*Q*					log(*Q*)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
LEV	0.3138***	0.3143***	0.3136***	0.3155***	0.3154***	0.0799***	0.0776***	0.0791***	0.0802***	0.0778***
	(24.88)	(24.80)	(24.94)	(24.94)	(25.22)	(4.82)	(4.64)	(4.89)	(4.84)	(4.83)
CASH	0.3372***	0.3637***	0.3331***	0.3386***	0.3316***	0.2900***	0.2921***	0.2931***	0.2895***	0.2838***
	(7.91)	(8.50)	(7.83)	(7.92)	(7.84)	(4.85)	(4.99)	(4.87)	(4.83)	(4.80)
$(CASH)^2$	1.2983***	1.2556***	1.2927***	1.2900***	1.2942***	0.1578*	0.1551*	0.1563*	0.1585*	0.1625*
	(19.73)	(19.00)	(19.69)	(19.55)	(19.81)	(1.98)	(1.99)	(1.93)	(1.99)	(2.06)
ADR	-0.1855***	-0.1837***	-0.1870***	-0.1879***	-0.1962***	0.0134	0.0153	0.0149	0.0132	0.0133
	(-10.64)	(-10.49)	(-10.75)	(-10.75)	(-11.34)	(0.96)	(1.13)	(1.06)	(0.94)	(0.95)
GLOBAL_Q	0.4876***	0.4846***	0.4854***	0.4878***	0.4898***	0.1723***	0.1724***	0.1722***	0.1723***	0.1721***
	(30.35)	(30.05)	(30.27)	(30.28)	(30.72)	(3.31)	(3.30)	(3.33)	(3.31)	(3.30)
LEGAL						0.0012**	0.0013**	0.0011**	0.0012**	0.0012**
						(3.05)	(3.13)	(2.71)	(3.03)	(3.08)
DISC						0.0397**	0.0407**	0.0365**	0.0396**	0.0415**
						(3.12)	(3.11)	(2.77)	(3.09)	(3.18)
DISTANCE						-0.1003***	-0.1053***	-0.0884***	-0.0987***	-0.1070***
						(-4.87)	(-5.18)	(-4.69)	(-4.81)	(-5.39)
ENGLISH						0.0300*	0.0303*	0.0266*	0.0294*	0.0317*
						(2.19)	(2.25)	(1.96)	(2.14)	(2.38)
GDP						-0.0292***	-0.0288***	-0.0289***	-0.0292***	-0.0284***
						(-5.23)	(-5.18)	(-5.28)	(-5.25)	(-5.04)
MCAP						-0.0076***	-0.0079***	-0.0067***	-0.0075***	-0.0081***
						(-4.90)	(-5.03)	(-4.19)	(-4.88)	(-4.97)
Country Dummies	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547

Table 9 Institutional ownership and firm value: robustness checks with detailed breakdown

This table presents the estimates of coefficients of regression on firm performance (Tobin's *Q*) for non-U.S. firms as broken down by each type of institution. Panel A reports the estimates of median regression using country fixed effects instead of country level control variables. Panel B presents the coefficients of Fama-MacBeth regressions with log(*Q*) as dependent variable. The definitions of all variables are provided in Appendix Table A1. The sample period is from 2007 to 2016 with no missing variables. The regressions include year and industry fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	Panel A						Panel B					
Regression Type	Median						Fama-MacBeth OLS					
Dependent Variable	*Q*						log(*Q*)					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
IO_MUTAL	1.1952***						0.4995***					
	(12.29)						(6.33)					
(IO_MUTAL)²	-1.8127***						-0.8410***					
	(-5.90)						(-4.32)					
IO_INVEST		-0.7226***						-0.1599***				
		(-11.60)						(1.02)				
(IO_INVEST)²		1.7927***						0.3125***				
		(14.72)						(4.11)				
IO_HEDGE			0.1869						0.0338			
			(1.14)						(0.22)			
(IO_HEDGE)²			-0.5329						-0.1657			
			(-1.26)						(-0.76)			
IO_BANK				-27.6600***						-14.9387*		
				(-3.42)						(-2.17)		
(IO_BANK)²				317.7433***						180.8864*		
				(2.79)						(2.15)		
IO_INSURANCE					-0.5401						-0.2735	
					(-0.50)						(-0.46)	
(IO_INSURANCE)²					3.0371						-0.3782	
					(0.25)						(-0.12)	
IO_PENSION						-4.2912***						-0.8480***
						(-16.89)						(-3.61)
(IO_PRENSION)²						18.1607***						4.0991**
						(12.96)						(2.69)
HERF	0.0971***	0.0540***	0.0809***	0.0807***	0.0806***	0.0604***	0.0836***	0.0641***	0.0728***	0.0727***	0.0725***	0.0684***
	(10.14)	(5.49)	(8.59)	(8.54)	(8.57)	(6.51)	(7.23)	(5.01)	(6.09)	(6.10)	(6.04)	(5.04)
SIZE	0.1544***	0.1560***	0.1513***	0.1505***	0.1515***	0.1489***	0.1072***	0.1062***	0.1065***	0.1060***	0.1063***	0.1060***
	(22.12)	(22.45)	(21.61)	(21.36)	(21.60)	(21.72)	(9.30)	(9.09)	(9.09)	(9.07)	(9.15)	(8.95)
(SIZE)²	-0.0043***	-0.0039***	-0.0036***	-0.0035***	-0.0036***	-0.0025***	-0.0046***	-0.0043***	-0.0044***	-0.0043***	-0.0044***	-0.0042***
	(-7.85)	(-7.10)	(-6.57)	(-6.36)	(-6.58)	(-4.66)	(-5.29)	(-4.86)	(-4.99)	(-4.92)	(-5.05)	(-4.68)
INVOP	0.3377***	0.3457***	0.3467***	0.3448***	0.3461***	0.3388***	0.1491***	0.1507***	0.1503***	0.1500***	0.1503***	0.1488***
	(30.24)	(31.15)	(31.00)	(30.58)	(30.85)	(30.86)	(6.47)	(6.48)	(6.46)	(6.46)	(6.46)	(6.48)
R&D/K	0.2847***	0.2926***	0.2913***	0.2916***	0.2917***	0.2911***	0.0783***	0.0796***	0.0795***	0.0796***	0.0795***	0.0801***
	(41.42)	(42.83)	(42.28)	(42.03)	(42.25)	(43.12)	(7.13)	(6.99)	(7.02)	(7.03)	(7.02)	(7.09)

	Panel A						Panel B					
Regression Type	Median						Fama-MacBeth OLS					
Dependent Variable	*Q*						log(*Q*)					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
RDUM	-0.0148***	-0.0151***	-0.0149***	-0.0145***	-0.0141***	-0.0138***	-0.0161***	-0.0161***	-0.0161***	-0.0161***	-0.0161***	-0.0160***
	(-2.77)	(-2.85)	(-2.79)	(-2.69)	(-2.63)	(-2.62)	(-3.29)	(-3.35)	(-3.32)	(-3.34)	(-3.31)	(-3.28)
LEV	0.3175***	0.3072***	0.3150***	0.3138***	0.3128***	0.3144***	0.0852***	0.0783***	0.0787***	0.0774***	0.0785***	0.0780***
	(25.06)	(24.41)	(24.79)	(24.56)	(24.60)	(25.28)	(5.36)	(4.81)	(4.59)	(4.70)	(4.86)	(4.84)
CASH	0.3171***	0.3406***	0.3213***	0.3223***	0.3238***	0.3328***	0.2912***	0.2910***	0.2893***	0.2884***	0.2893***	0.2838***
	(7.41)	(8.01)	(7.50)	(7.46)	(7.53)	(7.92)	(4.83)	(4.93)	(4.83)	(4.81)	(4.84)	(4.80)
$(CASH)^2$	1.3134***	1.2846***	1.3153***	1.3125***	1.3112***	1.2897***	0.1577*	0.1551***	0.1580*	0.1583*	0.1580*	0.1624*
	(19.87)	(19.55)	(19.87)	(19.67)	(19.74)	(19.86)	(1.97)	(1.98)	(1.98)	(1.97)	(1.98)	(2.06)
ADR	-0.1904***	-0.1863***	-0.1917***	-0.1907***	-0.1864***	-0.1988***	0.0134	0.0143***	0.0137	0.0143	0.0138	0.0132
	(-10.87)	(-10.70)	(-10.93)	(-10.78)	(-10.59)	(-11.55)	(0.94)	(1.04)	(0.97)	(1.01)	(0.97)	(0.94)
GLOBAL_Q	0.4799***	0.4852***	0.4877***	0.4886***	0.4878***	0.4912***	0.1724***	0.1727***	0.1724***	0.1723***	0.1724***	0.1720***
	(29.73)	(30.25)	(30.17)	(29.98)	(30.09)	(30.98)	(3.35)	(3.30)	(3.30)	(3.30)	(3.30)	(3.30)
LEGAL							0.0010**	0.0012***	0.0012**	0.0013**	0.0012**	0.0013**
							(2.68)	(3.10)	(3.06)	(3.13)	(3.11)	(3.19)
DISC							0.0386**	0.0412***	0.0399**	0.0400**	0.0399**	0.0417**
							(3.02)	(3.26)	(3.04)	(3.08)	(3.06)	(3.21)
DISTANCE							-0.0923***	-0.1077***	-0.1030***	-0.1034***	-0.1033***	-0.1065***
							(-4.90)	(-5.14)	(-5.11)	(-5.25)	(-5.26)	(-5.37)
ENGLISH							0.0257*	0.0321**	0.0310**	0.0311**	0.0314**	0.0308**
							(1.95)	(2.34)	(2.32)	(2.34)	(2.45)	(2.33)
GDP							-0.0258***	-0.0280***	-0.0289***	-0.0289***	-0.0289***	-0.0284***
							(-4.64)	(-5.02)	(-5.22)	(-5.17)	(-5.13)	(5.06)
MCAP							-0.0069***	-0.0081***	-0.0078***	-0.0079***	-0.0078***	-0.0081***
							(-4.37)	(-5.15)	(-4.87)	(-4.88)	(-4.80)	(-4.98)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes						
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes						
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes						
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,52
N	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,54

Table 10 Institutional ownership and firm value: three-stage least squares regression

This table presents the estimates of coefficients of simultaneous regressions of firm performance (Tobin's *Q*) for non-U.S. firms. The dependent variable is log(*Q*). The result in Panel A examines total institutional ownership (*IO_TOTAL*), in Panel B foreign institutional ownership (*IO_FOREIGN*), in Panel C domestic institutional ownership (*IO_DOMESTIC*), in Panel D independent institutions (*IO_INDEP*), and in Panel E grey institutions (*IO_GREY*). The definitions of all variables are provided in Appendix Table A1. The sample period is from 2007 to 2016 with no missing variables. The regressions include year and industry fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	Panel A		Panel B		Panel C		Panel D		Panel E	
Institution Type	Total Institutions		Foreign Institutions		Domestic Institutions		Independent Institutions		Grey Institutions	
Dependent Variable	log(*Q*)	*IO*	log(*Q*)	*IO*	log(*Q*)	*IO*	log(*Q*)	*IO*	log(*Q*)	*IO*
IO	-8.914***		-22.801***		27.786***		-3.704***		-60.326***	
	(-14.03)		(-15.03)		(20.09)		(-11.08)		(-23.95)	
$(IO)^2$	8.398***		19.546***		-37.077***		3.458***		210.858***	
	(11.32)		(10.51)		(-15.76)		(8.49)		(17.15)	
log(*Q*)		-0.648***		-0.480***		-0.307***		-0.608***		0.089***
		(-16.23)		(-15.44)		(-12.21)		(-15.66)		(15.45)
HERF	-0.565***		-0.581***		0.986***		-0.174***		-0.198***	
	(-10.11)		(-8.89)		(15.87)		(-6.33)		(-12.47)	
SIZE	0.162***	0.041***	0.241***	0.030***	-0.060***	0.007***	0.121***	0.041***	0.097***	0.004***
	(31.61)	(132.14)	(15.62)	(123.69)	(-5.13)	(33.36)	(45.51)	(135.39)	(14.12)	(100.34)
$(SIZE)^2$	0.001		0.019***		0.007***		-0.002***		0.010***	
	(0.92)		(8.28)		(6.87)		(-6.67)		(12.07)	
BM		-0.128***		-0.105***		-0.080***		-0.098***		0.024***
		(-13.55)		(-14.31)		(-13.57)		(-10.75)		(17.57)
INVOP	0.185***	0.028***	0.063**	0.010***	0.018	0.004***	0.171***	0.043***	0.055***	-0.001***
	(19.92)	(11.88)	(2.31)	(5.15)	(0.89)	(2.90)	(35.29)	(18.43)	(4.41)	(-3.38)
RDK	0.075***		0.057***		0.076***		0.063***		0.117***	
	(12.65)		(3.61)		(6.84)		(21.44)		(16.95)	
RDUM	-0.020***		-0.048***		-0.024***		-0.017***		-0.019***	
	(-5.20)		(-4.11)		(-2.92)		(-8.64)		(-3.85)	
RET		-0.002***		-0.001***		-0.000		-0.002***		-0.000***
		(-5.79)		(-4.48)		(-1.31)		(-6.49)		(-7.04)
TURN		0.008***		0.006***		0.002***		0.007***		0.000***
		(29.37)		(26.25)		(11.76)		(27.55)		(3.68)
DY		-0.054***		-0.089***		0.025**		-0.038**		0.024***
		(-2.66)		(-6.10)		(2.08)		(-1.96)		(8.87)
ROE		0.012***		0.006***		0.013***		0.010***		-0.004***
		(7.03)		(4.49)		(11.93)		(5.89)		(-16.12)
MSCI		0.010***		0.028***		-0.021***		0.007***		0.002***
		(4.08)		(14.90)		(-13.73)		(2.79)		(6.25)
LEV	-0.058***	-0.100***	-0.325***	-0.087***	0.206***	-0.042***	0.015***	-0.081***	0.025**	0.008***
	(-5.50)	(-23.27)	(-10.71)	(-25.79)	(9.60)	(-15.62)	(2.78)	(-19.39)	(1.97)	(12.31)
CASH	0.373***	0.061***	0.862***	0.047***	0.581***	-0.014***	0.336***	0.096***	-0.376***	-0.009***
	(11.54)	(14.02)	(8.95)	(13.75)	(7.69)	(-5.02)	(20.02)	(22.63)	(-8.13)	(-14.28)
$(CASH)^2$	-0.080		-0.609***		0.251**		0.044*		0.770***	

	Panel A		Panel B		Panel C		Panel D		Panel E	
Institution Type	Total Institutions		Foreign Institutions		Domestic Institutions		Independent Institutions		Grey Institutions	
Dependent Variable	log*(Q)*	*IO*	log*(Q)*	*IO*	log*(Q)*	*IO*	log*(Q)*	*IO*	log*(Q)*	*IO*
	(-1.62)		(-4.16)		(2.29)		(1.70)		(11.51)	
ADR	0.099***	0.016***	0.337***	0.023***	0.185***	-0.009***	0.050***	0.018***	-0.035***	-0.001**
	(8.82)	(6.26)	(10.25)	(11.87)	(7.82)	(-5.57)	(8.62)	(7.41)	(-2.61)	(-2.10)
GLOBAL_Q	0.259***		0.204***		-0.003		0.220***		0.199***	
	(19.20)		(5.91)		(-0.12)		(31.42)		(13.10)	
LEGAL	0.007***	0.001***	0.001	-0.000***	-0.020***	0.002***	0.004***	0.002***	-0.000	-0.000*
	(18.18)	(20.17)	(1.14)	(-7.63)	(-22.13)	(37.49)	(19.03)	(23.69)	(-0.69)	(-1.68)
DISC	0.165***	0.027***	0.080***	0.002**	-0.440***	0.021***	0.078***	0.024***	0.207***	0.007***
	(18.04)	(25.25)	(6.12)	(1.98)	(-19.42)	(31.08)	(18.35)	(23.35)	(27.90)	(43.11)
DISTANCE	-0.907***	-0.207***	-0.853***	-0.073***	1.795***	-0.123***	-0.432***	-0.204***	-0.471***	-0.013***
	(-21.14)	(-109.45)	(-24.29)	(-49.47)	(24.61)	(-104.36)	(-19.86)	(-111.26)	(-29.76)	(-47.03)
ENGLISH	0.324***	0.084***	0.229***	0.039***	-0.589***	0.042***	0.158***	0.084***	0.093***	0.001***
	(19.70)	(42.19)	(9.97)	(25.52)	(-19.94)	(34.09)	(19.13)	(43.60)	(8.96)	(4.26)
GDP	0.014***	0.013***	0.069***	0.009***	-0.047***	0.005***	-0.010***	0.010***	0.006*	0.001***
	(5.09)	(19.15)	(8.84)	(18.44)	(-8.21)	(13.25)	(-6.79)	(15.26)	(1.77)	(8.16)
MCAP	-0.067***	-0.016***	-0.043***	-0.004***	0.150***	-0.010***	-0.033***	-0.016***	-0.039***	-0.001***
	(-23.00)	(-64.36)	(-14.63)	(-21.43)	(24.06)	(-68.83)	(-23.04)	(-66.31)	(-24.07)	(-30.38)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547

Table 11 Institutional ownership and firm value: three-stage least squares regression and detailed breakdown

This table presents the estimates of coefficients of simultaneous regressions of firm performance (Tobin's *Q*) for non-U.S. firms as broken down by each type of institution. The dependent variable is log(*Q*). The result in Panel A examines mutual fund ownership (*IO_MUTUAL*), in Panel B investment advisor ownership (*IO_INVEST*), in Panel C hedge fund ownership (*IO_HEDGE*), in Panel D bank trusts (*IO_BANK*), in Panel E insurance companies (*IO_INSURANCE*), and in Panel F pension funds (*IO_PENSION*). The definitions of all variables are provided in Appendix Table A1. The sample period is from 2007 to 2016 with no missing variables. The regressions include year and industry fixed effects. All utility (SIC 4900-4999) and financial firms (SIC 6000-6999) are excluded. The robust t-statistics are provided in parenthesis. The variables (refer to data description section) are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

	Panel A		Panel B		Panel C		Panel D		Panel E		Panel F	
Institution Type	Mutual Funds		Investment Advisors		Hedge Funds		Bank Trusts		Insurance Companies		Pension Funds	
Dependent Variable	log(*Q*)	*IO*	log(*Q*)	*IO*	log(*Q*)	*IO*	log(*Q*)	*IO*	log(*Q*)	*IO*	log(*Q*)	*IO*
IO	42.944***		-36.194***		20.558***		-1118.209***		36.862***		-59.111***	
	(20.74)		(-12.79)		(17.72)		(-24.34)		(2.86)		(-25.41)	
$(IO)^2$	-62.142***		47.985***		-34.224***		11108.901***		-170.308		206.490***	
	(-11.72)		(9.66)		(-13.43)		(19.20)		(-1.60)		(18.34)	
log(*Q*)		0.034***		-0.346***		-0.152***		0.001***		0.004***		0.084***
		(2.70)		(-12.57)		(-17.29)		(3.16)		(3.97)		(15.01)
HERF	0.531***		-1.435***		0.154***		0.059***		0.065***		-0.178***	
	(11.92)		(-9.07)		(15.92)		(11.98)		(12.91)		(-12.67)	
SIZE	-0.011	0.006***	0.338***	0.026***	0.134***	-0.000***	0.065***	0.000***	0.101***	-0.000***	0.107***	0.004***
	(-0.88)	(65.07)	(18.57)	(122.14)	(23.22)	(-2.75)	(16.51)	(26.84)	(22.14)	(-3.32)	(16.77)	(99.64)
$(SIZE)^2$	-0.012***		0.008***		-0.007***		0.000		-0.005***		0.008***	
	(-10.21)		(4.22)		(-15.83)		(1.21)		(-9.77)		(11.61)	
BM		0.003		-0.076***		-0.041***		0.000***		0.000		0.023***
		(0.97)		(-11.71)		(-19.70)		(6.35)		(0.13)		(17.23)
INVOP	0.063***	-0.002***	0.188***	0.008***	0.133***	0.001	0.128***	0.000***	0.156***	-0.001***	0.059***	-0.001***
	(2.79)	(-2.80)	(5.88)	(5.05)	(18.38)	(1.49)	(19.24)	(6.19)	(44.31)	(-11.42)	(5.02)	(-3.01)
RDK	-0.009		0.037**		0.043***		0.070***		0.066***		0.115***	
	(-0.76)		(1.99)		(8.94)		(18.61)		(31.53)		(17.67)	
RDUM	-0.002		-0.024*		-0.018***		-0.013***		-0.018***		-0.020***	
	(-0.27)		(-1.84)		(-5.76)		(-4.82)		(-11.07)		(-4.36)	
RET		-0.000***		-0.002***		0.000***		-0.000*		-0.000***		-0.000***
		(-2.97)		(-6.94)		(3.38)		(-1.65)		(-3.70)		(-6.64)
TURN		0.001***		0.005***		0.001***		0.000		-0.000		0.000***
		(7.92)		(24.48)		(16.91)		(1.30)		(-1.61)		(3.74)
DY		0.011**		0.009		-0.050***		0.000		0.001		0.023***
		(2.01)		(0.67)		(-11.53)		(0.25)		(1.40)		(8.74)
ROE		-0.000		0.010***		0.002***		-0.000***		-0.000***		-0.004***
		(-0.81)		(8.68)		(6.22)		(-5.37)		(-2.97)		(-15.60)
MSCI		0.002**		0.007***		0.001		0.000***		0.000**		0.002***
		(2.42)		(4.42)		(1.49)		(6.26)		(2.50)		(5.31)
LEV	0.636***	-0.018***	-0.209***	-0.050***	0.302***	-0.033***	0.002	0.000**	0.091***	-0.001***	0.043***	0.008***
	(20.82)	(-13.69)	(-5.79)	(-16.68)	(22.57)	(-34.82)	(0.31)	(2.48)	(20.12)	(-4.86)	(3.57)	(12.63)
CASH	0.602***	-0.016***	0.777***	0.024***	0.224***	0.002**	0.158***	0.000***	0.268***	-0.002***	-0.341***	-0.008***
	(7.91)	(-11.92)	(6.71)	(8.04)	(8.41)	(2.54)	(6.57)	(4.40)	(20.63)	(-15.73)	(-7.86)	(-13.73)
$(CASH)^2$	-0.042		-0.809***		0.272***		0.248***		0.162***		0.730***	
	(-0.37)		(-4.50)		(6.69)		(6.76)		(8.03)		(11.61)	
ADR	0.001	-0.001	0.293***	0.014***	-0.043***	0.002***	0.051***	0.000***	0.006	0.000*	-0.042***	-0.001***
	(0.03)	(-0.77)	(7.64)	(8.35)	(-5.05)	(3.66)	(6.72)	(4.33)	(1.40)	(1.67)	(-3.30)	(-2.71)

GLOBAL_Q	0.052**		0.378***		0.204***		0.199***		0.217***		0.195***	
	(2.00)		(8.00)		(21.00)		(22.87)		(44.14)		(13.59)	
LEGAL	-0.017***	0.000***	0.013***	0.001***	-0.000	-0.000*	0.002***	0.000***	0.003***	-0.000***	0.002***	0.000***
	(-16.99)	(21.94)	(12.23)	(18.55)	(-0.19)	(-1.91)	(11.65)	(5.41)	(5.99)	(-33.14)	(6.63)	(3.61)
DISC	-0.096***	0.004***	0.390***	0.016***	0.043***	-0.002***	0.033***	0.000***	0.035***	-0.000***	0.211***	0.007***
	(-8.73)	(11.67)	(14.23)	(21.07)	(12.50)	(-7.87)	(10.64)	(6.07)	(15.11)	(-8.44)	(29.40)	(44.81)
DISTANCE	0.946***	-0.033***	-2.324***	-0.137***	0.090***	-0.011***	-0.127***	-0.000***	-0.057***	-0.001***	-0.417***	-0.012***
	(24.73)	(-56.48)	(-21.00)	(-106.34)	(9.03)	(-27.58)	(-21.87)	(-13.02)	(-6.07)	(-13.79)	(-30.59)	(-44.10)
ENGLISH	-0.481***	0.016***	0.719***	0.050***	-0.053***	0.009***	0.045***	0.000**	-0.010	0.001***	0.020**	-0.000
	(-18.39)	(25.42)	(17.84)	(37.10)	(-7.35)	(19.76)	(7.98)	(2.46)	(-0.69)	(26.16)	(2.12)	(-0.83)
GDP	0.231***	-0.006***	0.345***	0.019***	-0.058***	0.002***	-0.026***	-0.000***	-0.025***	0.000	0.012***	0.001***
	(17.36)	(-28.47)	(15.67)	(41.44)	(-23.49)	(17.17)	(-13.78)	(-3.98)	(-16.42)	(0.30)	(3.33)	(9.26)
MCAP	0.082***	-0.003***	-0.163***	-0.010***	0.001	-0.001***	-0.014***	-0.000***	-0.008***	0.000	-0.037***	-0.001***
	(21.88)	(-38.42)	(-21.81)	(-59.97)	(1.41)	(-11.53)	(-18.62)	(-9.59)	(-18.52)	(0.31)	(-24.76)	(-29.95)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firms	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526	14,526
N	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547	78,547