Institutional Investment Horizon and Firm Valuation: A Global Perspective

Simon Döring[1], Wolfgang Drobetz[2], Sadok El Ghoul[3], Omrane Guedhami[4,*], Henning Schröder[5]

January 2019

Abstract

Using a comprehensive dataset of firms from 34 countries, we study the effect of institutional investors' investment horizons on firm valuation around the world. Long-term investors prefer to invest in firms domiciled in countries with a more investor-friendly institutional environment, while short-term investors tend to be less concerned about the quality of the financial and legal environment. The positive association between institutional ownership and firm value is driven by short-horizon institutions. This valuation effect of short-horizon institutions is stronger in countries with high market liquidity and in firms with high stock liquidity. This result is consistent with short-term investors increasing firm value by disciplining managers through a credible threat of exit.

Keywords: Institutional investors, investment horizon, firm value, corporate governance

[1] Hamburg Business School, University of Hamburg, Moorweidenstrasse 18, 20148 Hamburg, Germany.

[2] Hamburg Business School, University of Hamburg, Moorweidenstrasse 18, 20148 Hamburg, Germany.

[3] University of Alberta, Edmonton, AB T6C 4G9, Canada.

[4] University of South Carolina, Columbia, SC 29208, USA.

[5] Hamburg Business School, University of Hamburg, Moorweidenstrasse 18, 20148 Hamburg, Germany.

* Corresponding contact information: omrane.guedhami@moore.sc.edu

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I. Introduction

Ownership of listed corporations by financial institutions has increased steadily over recent decades. In the U.S., on average more than 50% of the equity of listed firms is held by institutional investors such as mutual funds, pension funds, insurance companies, and hedge funds. Outside the U.S., institutional ownership ratios have reached 15% to 30% in many countries. The corporate governance and firm value implications of rising levels of institutional ownership are documented in a number of studies.[1] However, the majority of this literature does not take institutional investor heterogeneity into account. While different institutional investors are likely to share certain characteristics and goals, they are also likely to employ different strategies in an effort to achieve these goals. In particular, investment horizon heterogeneity is expected to lead to different approaches to align managerial interests with their own. Variation in the effectiveness of these different approaches should thus have different valuation effects. In addition, the literature on institutional investors focuses mostly on the U.S. market (Gaspar, Massa, and Matos, 2005; Chen, Harford, and Li, 2007; Derrien, Kecskés, and Thesmar, 2013). These studies overlook country-level factors that affect both the level of institutional ownership and institutions' investment horizon. While a few studies analyze the effect of institutional ownership on firm valuation in countries outside the U.S. (Ferreira and Matos, 2008; Alvarez, Jara, and Pombo, 2018; Homanen and Liang, 2018), they do not account for the role of heterogeneity across institutional investors.

In this study, we extend the above literatures by empirically examining the effects of institutional investors' investment horizons on firm valuation using a comprehensive dataset of firms

[1] See Homanen and Liang (2018) for a summary of the literature and global empirical evidence.

from 34 countries. To the best of our knowledge, our paper is the first to analyze the relation between a country's institutional framework, institutional investors' investment horizon, and firm valuation on a global scale.

Institutional ownership can affect firm valuation in many ways. For instance, using an international sample, Aggarwal, Erel, Ferreira, and Matos (2011) find that institutional investors improve corporate governance in their portfolio firms. Bushee (1998) and Aghion, van Reenen, and Zingales (2013) find a positive effect of institutional ownership on innovation in U.S. firms, and Alvarez, Jara, and Pombo (2018) show that firms from emerging markets increase investment in the presence of institutional investors, particularly institutional investors that are independent and have a long investment horizon. Other studies that account for heterogeneity across institutional investors also identify investor horizon as an important determinant of corporate outcomes. For example, Harford, Kecskés, and Mansi (2018) argue that the positive effect of institutions on corporate governance is driven by long-term investors, whereas short-term institutional ownership is associated with managerial misbehavior such as earnings management. Gaspar, Massa, and Matos (2005) and Chen, Harford, and Li (2007) provide evidence that the investment horizon of institutional investors affects the likelihood and the success of merger and acquisition activities. Attig, Cleary, El Ghoul, and Guedhami (2012, 2013) show that institutional investor horizon affects firms' financing costs. Yan and Zhang (2009) identify a positive relation between short-term institutional ownership and future stock returns.

The horizon over which institutions allow managers to reach their goals is likely to influence the way investors choose to influence managers. Hirschman (1970) notes that institutional investors can exert influence over a portfolio firm by (i.) engaging with management directly to try to

effect change ("voice"), or (ii.) exiting the firm by selling shares ("voting with their feet"). Recent theoretical models suggest that the threat of exit alone can discipline management (Admati and Pfleiderer, 2009; Edmans, 2009; Edmans and Manso, 2011).

Investors with a longer horizon may have stronger incentives to engage with managers, for example, because they are likely to hold shares long enough to realize the benefits of intervention (Burkart, Gromb, and Panunzi, 1997; Faure-Grimaud and Gromb, 2004; McCahery, Sautner, and Starks, 2016). Long-term investors are thus more inclined to build relationships with managers and monitor them closely. In contrast, by the nature of their investment horizon and strategy, short-term investors are more willing to sell their shares if they aren't satisfied with managers' decisions. For the threat of exit to be credible, however, a stock must be sufficiently liquid that the investor could easily sell their shares in the market (Bharath, Jayaraman, and Nagar, 2013; Edmans, Fang, and Zur, 2013).

Regardless of the approach taken, the main purpose of institutional investors' monitoring pressure is to increase shareholder value. It is unclear, however, whether the different corporate governance mechanisms employed by long-term and short-term investors increase firm value equally. To shed light on this question, we examine whether the positive association between institutional ownership and firm value is driven mainly by long-term or short-term institutions (or both). To confirm that short-term investors tend to govern through the threat of exit, we test whether their positive impact on firm value is more pronounced when liquidity is higher. Moreover, given that the mechanisms through which institutional investors exert control likely depend on the corporate governance framework of the country they invest in, we examine the extent to which a country's institutional environment can explain cross-sectional differences in investment horizon.

We use a comprehensive dataset that consists of firm-level data from 34 countries excluding the U.S. However, since we account for ownership by all institutional owners, not just domestic ones, our investor-level data come from a number of additional countries (including the U.S.). To obtain our institutional ownership and investor horizon sample, we combine two databases from FactSet. More specifically, we combine 13F filings data, which include data from institutions that are active in the U.S., with the International Funds database, which includes portfolio ownership data for institutions from a number of countries around the world. The merged database allows us to compute churn rates as in Gaspar, Massa, and Matos (2005), which we use to classify institutions into long-term and short-term investors. To the best of our knowledge, no previous study has compiled a comparable dataset and constructed churn rates on a global scale.

Our results show that the share of firms' long-term institutional ownership tends to be higher in countries with a more investor-friendly environment. In particular, long-term institutional ownership is higher in countries with high accounting standards, strong shareholder rights, and an effective rule of law. We find that a country's culture affects institutions' investment horizon as well. More importantly for our purposes, investor horizon has a significant effect on firm valuation in all sample countries. We find that firms whose institutional investors have higher average portfolio turnover, that is, a higher churn rate, and a shorter investment horizon exhibit higher market-to-book ratios. These results hold when we use the relative share of total equity that is held by long-term versus short-term investors as the main explanatory variable: the ratio of short-term institutional ownership is significantly positively related to the market-to-book ratio. Overall, our findings suggest that the positive effect of institutional ownership on firm valuation is driven by short-term investors in our international dataset. These results are robust to including various firm- and

country-level control variables and to addressing endogeneity concerns using three-stage least squares (3SLS) as well as a placebo test. Finally, we find that the positive valuation effect of short-term investors is particularly strong in countries with high market liquidity and in firms with high stock liquidity. Our results thus support the view that short-term investors increase firm value by exerting governance through the threat of exit.

The structure of the paper is as follows. Section II discusses related literature and develops our testable hypotheses. Section III describes our data and research design. Section IV presents empirical results on the determinants of investor horizon, and Section V presents results on the effect of investor horizon on firm valuation. Finally, Section VI concludes.

II. Related literature and hypotheses

In this section, we first provide a brief review of the literature on institutional investors. In particular, we summarize studies that examine the effect of institutional investors on corporate governance, as well as studies that investigate the relationship between institutional ownership and firms' investment and financing preferences. We then present our testable hypotheses.

A. Institutional investors and corporate governance

In a seminal paper, Shleifer and Vishny (1986) argue that institutional investors can discipline managers through monitoring and intervention. In many firms institutional investors collectively hold a dominant position; such presence in terms of ownership concentration reduces coordination

costs and provides greater monitoring incentives.[2] Relative to retail investors, institutional investors are relatively independent, as they often have fewer business ties to portfolio firms. Moreover, they tend to be better informed ("smart money") (Borochin and Yang, 2017), as they employ teams of professional investment managers who are knowledgeable and experienced in business and finance (Goshen and Hannes, 2018).

Most empirical studies on institutional ownership find that, given their independence, expertise, and ability to monitor managers effectively, institutional investors have a positive effect on firm value. McConnell and Servaes (1990), for instance, document a positive relationship between institutional ownership and firm value for U.S. firms, which they attribute to institutions' efficient monitoring of firms. Smith (1996) shows that institutions increase firm value by actively changing the governance structures of the firms they invest in. Gompers and Metrick (2001) find positive excess returns in stocks with large institutional ownership, which they attribute to an increase in demand for stocks of firms with large institutional ownership.

In international samples, Ferreira and Matos (2008) and Bena, Ferreira, Matos, and Pires (2017) continue to find a positive effect of institutional ownership on firm value, with this effect driven primarily by foreign and thus more independent institutions.[3] Homanen and Liang (2018)

[2] Concentrated institutional ownership, a form of blockholding, is an important governance mechanism. The majority of blockholder models suggest that large shareholders add value through direct intervention, or "voice" (Hirschman, 1970). In Shleifer and Vishny (1986), Admati, Pfleiderer, and Zechner (1994), Maug (1998), Kahn and Winton (1998), and Mello and Repullo (2004), a larger block reduces the free-rider problem and maximizes incentives to intervene. In contrast, Burkart, Gromb, and Panunzi (1997) show that optimal block size may be finite if blockholder intervention deters managerial initiatives ex ante. Bolton and von Thadden (1998) and Faure-Grimaud and Gromb (2004) further suggest that too large a block reduces free float.

[3] The special governance role of foreign institutional investors is confirmed by Lel (2018), who shows that firms manage earnings less when independent foreign institutional investors are among their shareholders, particularly in countries where investor protection is weaker.

show that higher institutional ownership is unconditionally correlated with higher firm valuation. In sum, institutional ownership seems to be a "universal" corporate governance mechanism.[4]

In recent work, researchers have started to investigate the role of heterogeneity across institutions. While taken as a whole institutions have been shown to exert influence over portfolio firms through monitoring and governance, different institutions likely vary in how they engage with portfolio firms' management. In particular, an institution's investment horizon is likely to affect their intervention decisions. Long-term investors, for instance, can spread the costs and benefits of monitoring over a longer period of time and thus possess a comparative advantage in influencing managers through active engagement or "voice" (Gaspar, Massa, and Matos, 2005; Chen, Harford, and Li, 2007).[5] Moreover, institutional investors with a long investment horizon have incentives to build relationships with portfolio firms' management, engage in high quality research, and collect more detailed information about the firm (Attig, Cleary, El Ghoul, and Guedhami, 2012). Therefore, long-term investors are more likely to exert influence over firm management through engagement or voice than trading. Survey evidence in McCahery, Sautner, and Starks (2016) confirms that long-term investors use the voice channel more intensively. Chen, Harford, and Li

[4] Empirical evidence suggests that governance practices can spill over across countries (Aggarwal, Erel, Stulz, and Williamson, 2009; Aggarwal, Erel, Ferreira, and Matos, 2011; Albuquerque, Brandão-Marques, Ferreira, and Matos, 2019). However, a central question in this literature is the extent to which "good" governance practices are universal (i.e., "one size mostly fits all") versus a function of country and firm characteristics (see Cumming, Filatotchev, Knill, Reeb, and Senbet (2017) for a review of channels such as international mergers and acquisitions, foreign ownership, foreign political connections, and foreign directors). Homanen and Liang (2018) find that, while the relation between rule-based governance practices and firm value varies substantially across countries (implying there is no universal set of corporate governance practices across countries), institutional investors have a unique (universal) ability to mitigate agency problems in their portfolio firms that is independent of the institutional environment.

[5] Any hypothesized relationship between investor horizon and corporate outcomes is subject to the critique raised by Demsetz (1983) that a firm's ownership structure is "an endogenous outcome of competitive selection in which various cost advantages and disadvantages are balanced to arrive at an equilibrium organization of the firm" (p. 384). If both owners and investors are value maximizers, then given a firm's circumstances, there should be no relation between investor horizon and corporate outcomes.

(2007) further show that only long-term institutions are related to post-merger performance; total institutional holdings and concentrated holdings by other types of institutions show no monitoring effect. Therefore, long-horizon institutions are more likely to make long-term portfolio adjustments through acquisition bids than through trading, selling only ahead of very bad outcomes.

Short-term institutional investors, in contrast, are less likely to invest in extensive monitoring or information collection and hence are more likely to govern through the threat of exit or "voting with their feet" (Hirschman, 1970; Admati and Pfleiderer, 2009; Edmans, 2009; Edmans and Manso, 2011). According to exit models, blockholder exit (e.g., a sale by an institutional investor) exerts downward pressure on the stock price, which negatively affects managerial compensation tied to the share price. Because blockholders' private information on the fundamental value of the firm is impounded in the firm's stock price through trading, managers have incentives to make value-increasing investments to induce blockholders to stay with the firm.[6] Importantly, blockholders' acquisition of private information about firm fundamentals is not enough to discipline managers. For the threat of exit to be credible, the private information must reach the stock price and affect the value of managers' shareholdings. Exit models thus posit that a stock's liquidity is key to the effectiveness of the exit threat, as liquidity determines the extent to which a blockholder's private information can be impounded into the price.[7] Edmans (2009), for example, shows

[6] As Edmans (2009) notes, blockholders can buy on positive information and sell on negative information (whereas other investors may face short-sale constraints or nontrivial short-sale costs), and thus have greater incentives to acquire information in the first place.

[7] The theoretical literature offers conflicting predictions on the desirability of liquidity for governance. The traditional view is that blockholders govern by engagement (voice), and that stock market liquidity is bad for voice because it allows blockholders to sell their stake in a distressed firm rather than bear the cost of intervening to fix it (Coffee, 1991; Bhide, 1993). With higher liquidity, shareholders have lower incentive to actively monitor and prevent misconduct because it reduces the costs of "exit". However, liquidity can encourage voice by enabling a block to form in the first place (Kahn and Winton, 1998; Maug, 1998). It may also allow blockholders to acquire shares in the open market,

that liquidity increases the credibility of the exit threat by encouraging blockholders to collect information about the firm, allowing blockholders to trade more aggressively on that information, and leading to larger initial blocks. Taken together, these arguments suggest that by increasing the credibility of exit threats, liquidity helps short-horizon institutions discipline firm managers and in turn increase firm value.

Recent empirical evidence supports the above predictions. Fang, Noe, and Tice (2009) document that firms with more liquid stocks have better performance as measured by the market-to-book ratio. The authors argue that liquidity stimulates the entry of informed trades, which make prices more informative and lead in turn to reduced financial constraints and improved operating performance. Bharath, Jayaraman, and Nagar (2013) show that firm value increases in firms with large blockholders after positive liquidity shocks, and posit that this result is explained by the disciplining effect of a more powerful exit threat. Admati and Pfleiderer (2009) find that the valuation effect is more pronounced for cash-rich firms, i.e., firms that are more prone to value-destroying investment decisions by entrenched managers, suggesting that governance through the threat of exit rather than through intervention drives their result. Back, Li, and Ljungqvist (2015) also show that blockholder activity, as measured by hedge fund activism and the number of shareholder proposals submitted in opposition to management, decreases when liquidity increases.[8]

which does not (yet) fully reflect the value effect of intervention, to cover the cost of monitoring (Maug, 1998; Faure-Grimaud and Gromb, 2004).

[8] Roosenboom, Schlingemann, and Vasconcelos (2014) interpret their evidence from corporate takeovers as suggesting that high stock liquidity impedes institutions' incentives to monitor management. However, in cases in which the threat of exit has a particularly strong disciplining effect, the negative effects of liquidity on monitoring incentives are offset by the positive effects of liquidity on the effectiveness of the threat of exit. In the presence of an effective threat of exit (i.e., high liquidity of the firm's stock), managers make less value-destroying takeover decisions.

Survey results among institutional investors in McCahery, Sautner, and Starks (2016) document that both behind-the-scenes intervention and governance-motivated exit are widespread in practice. More importantly given our focus on institutional investor horizon, the authors find that long-term investors intervene more intensively than do short-term investors. Investors who choose intervention tend to be more concerned about a firm's corporate governance or strategy than reaping (possibly myopic) short-term gains, while investors who are more concerned about liquidity (e.g., because they hold more liquid stocks) tend to use voice less intensively.

B. Institutional investors and corporate decision-making

Differences in the goals and governance mechanisms between long- and short-term institutional investors affect firm investment. For instance, Bushee (1998) finds that institutions with short investment horizons encourage myopic investment behavior such as reducing R&D expenditures to reverse an earnings decline, while long-term institutional investors prevent managers from such behavior. Focusing on emerging markets, Alvarez, Jara, and Pombo (2018) find that short-term investors pressure managers to cut investment ratios in order to increase short-run returns, and in a study that employs patent data, Kim, Park, and Roy Song (2017) show that institutional investors with longer investment horizons mitigate managerial myopia through better monitoring, which results in greater investments in innovation.

The investment horizon of firms' institutional investors also affects acquisitions and the probability of becoming a takeover target. Chen, Harford, and Li (2007) find that acquisitions are positively related to post-merger performance only if independent long-term institutions own a significant share of the acquiring firm. The authors therefore conclude that long-term institutions care

more about monitoring the long-run consequences of managerial decisions than about seeking short-term profits. Gaspar, Massa, and Matos (2005) show that firms with more short-term investors realize lower acquisition premiums. Firms with short-term investors negotiate less efficiently, and their managers are more likely to trade off shareholder value for private benefits. Therefore, firms with more short-horizon investors are more frequent and cheaper takeover targets.

Turning to the effect of investor horizon on firm financing, Huang and Petkevich (2016) show that investor horizon affects bond pricing. In particular, they find that firms with larger short-term institutional ownership have higher future corporate bond yield spreads, especially if firms have higher financial distress risk and stock volatility. This effect is due to the risk that investors associate with the firm based on the perceived objectives of its institutional shareholders. Attig, Cleary, El Ghoul, and Guedhami (2013) show that firms with large short-term institutional ownership exhibit a higher cost of equity capital. Similarly, Attig, Cleary, El Ghoul, and Guedhami (2012) find that long-term institutional investors reduce the wedge between the cost of internal and external funds, and thus firms with long-term institutional investors have a lower investment-cash flow sensitivity. Derrien, Kecskés, and Thesmar (2013) show that the effect of stock mispricing on corporate policies is smaller in the presence of larger long-term investor ownership. Firms with more long-term investors tend to invest more, raise more equity financing, and have lower payouts to shareholders when the firm is undervalued.

Previous research also establishes an association between investor horizon and stock returns. Yan and Zhang (2009) find a positive relation between short-term institutional ownership and future stock returns. They show that short-term institutional owners predict future stock returns and future earnings surprises, which they interpret as evidence that institutions that trade more actively

are better informed than long-term institutional investors and exploit this informational advantage. Cremers and Pareek (2015) show that momentum returns are higher for firms held primarily by short-term investors, but the subsequent reversals are stronger for these firms as well, thus contradicting the efficiency benefits of short-term investors. Similarly, Cremers, Pareek, and Sautner (2017) find that short-term institutional ownership is associated with a temporary increase in firm valuation, resulting from investment cuts that lead to positive earnings surprises. This effect reflects only temporary distortions, however, and is reversed when short-term investors sell their shares.

Borochin and Yang (2017) show that institutional investors with concentrated positions and a long investment horizon reduce future firm misvaluation, while institutional investors with smaller holdings and a short investment horizon increase misvaluation. They also show that firms with long-term institutional investors exhibit superior long-run performance. Similarly, Harford, Kecskés, and Mansi (2018) find that firms with high long-term investor ownership benefit from higher excess stock returns. They explain this investor horizon-stock return relation as a positive effect of long-term investors on corporate governance, which eventually reduces managerial misbehavior and at the same time increases innovation. This argument is attenuated, however, by Giannetti and Yu (2017), who suggest that the negative long-run effects of myopic short-term institutional investors are not present in all economic environments. Instead, they find that short-term institutions increase valuation and performance for firms that experience permanent negative shocks, which suggests that they are more successful in adapting to a new environment.

C. Hypotheses

Extant literature reports mixed results on the effect of long- and short-term institutional investors on corporate governance and firm outcomes. One reason for the conflicting results could be that different institutional investors exert governance through different channels. The traditional governance channel is to actively engage with firm management through monitoring, shareholder proposals, or discussions. We argue that engagement is the primary channel that long-term institutional investors tend to use. First, these investors are natural monitors because they typically establish a long-term relationship with the managers of their portfolio firms. Second, because they are more interested in long-term profits, they hold their shares long enough to realize the benefits of engagement, such as having more time to learn about the firm and therefore being able to intervene more efficiently (Burkart, Gromb, and Panunzi, 1997; Faure-Grimaud and Gromb, 2004; Gaspar, Massa, and Matos, 2005; Chen, Harford, and Li, 2007).[9] Survey evidence in McCahery, Sautner, and Starks (2016) confirms that long-term investors tend to intervene more intensively than short-term investors.

Alternatively, shareholders can govern by selling shares. As noted above, even the threat of exit can discipline management. Given that short-term investors trade more often, are more likely to sell, and are less willing to invest in extensive monitoring, we argue that they govern through the threat of exit more intensively than long-term investors.[10] The possibility of large shareholders

[9] In contrast, research also suggests that activism may be performed more often by short-term investors, in particular hedge funds, which intervene to reap short-term profits (Kahan and Rock, 2007; Brav, Jiang, Partnoy, and Thomas, 2008; Greenwood and Schor, 2011; Bessler, Drobetz, and Holler, 2015).

[10] However, this conjecture does not rule out the possibility that both long- and short-term investors may use exit and voice as complements. McCahery, Sautner, and Starks (2016) report that investors that use exit as a governance mechanism also have a higher intensity of voice.

exiting based on private information itself can reduce agency costs. It is unclear, however, whether voice or exit generally produce better firm outcomes. For instance, for the threat of exit to be credible, institutions' private information must reach the stock price and thus the effectiveness of the exit threat is a function of the stock's liquidity. Provided a sufficient degree of liquidity, however, informed investors can make a strong exit threat.

There are several reasons why one might expect institutions with different investment horizons to be differentially informed (Yan and Zhang, 2009). On the one hand, if some institutional investors possess superior information and can regularly identify under- or overvalued stocks, they will trade more frequently to exploit their informational advantage (Grinblatt and Titman, 1989; Wermers, 2000). Institutional investors that have limited information, in contrast, will trade more cautiously. Under this argument, institutions that trade more actively (short-term institutions) are better informed than those that trade less actively (long-term institutions). On the other hand, long-term institutions may trade infrequently because they trade only on the basis of information, whereas short-term institutions also trade on the basis of noise, perhaps due to overconfidence (Odean, 1998; Barber and Odean, 2000). In this case, long-term institutions are better informed than short-term institutions.

Overall, the investment horizon of institutional investors is expected to affect how they create value for shareholders. While institutional investors generally seem to have a positive impact (Homanen and Liang, 2018), previous evidence provides no clear prediction as to whether short- or long-term institutions should have a stronger effect on firm value. This discussion leads to two competing formulations of our first hypothesis:

H1a: *The positive association between institutional ownership and firm value is driven mainly by long-term institutions.*

H1b: *The positive association between institutional ownership and firm value is driven mainly by short-term institutions.*

Empirical evidence suggests that investors who care more about liquidity, and thus arguably hold more liquid stocks, govern less through engagement (McCahery, Sautner, and Starks, 2016). Liquidity discourages voice – it either allows investors to cut and run or induces them to use the threat of exit as a governance mechanism. Long-term investors are thus expected to exert governance more through the channel of voice than exit, while short-term investors are expected to trade (sell) or exert governance through the threat of exit rather than engage in monitoring. Albeit the exit threat is not directly observable, short-term investors may have a stronger positive effect on firm value when stock liquidity is high, since this makes their threat of exit more credible and thus more effective (Admati and Pfleiderer, 2009; Edmans, 2009). Our second testable hypothesis is:

H2: *Short-term institutional shareholders have a stronger positive effect on firm value when stock liquidity is high.*

III. Data and methodology

We obtain data on institutional ownership as well as financial statement data from FactSet. Stock data are from Compustat. Data on GDP, financial market size, and market-level turnover come from the World Bank. Furthermore, we obtain data on the inclusion of a firm in the MSCI All Country World Index from MSCI. Data on countries' institutional frameworks come from

Levine (2002), La Porta, López-de-Silanes, Shleifer, and Vishny (1998), Djankov, Hart, McLiesh, and Shleifer (2008), Hofstede (2001), and the International Country Risk Guide (2000).

A. Sample construction and variables

The starting point for constructing our sample is FactSet LionShares, which comprises two datasets. The 13F database contains ownership data for institutions active in the U.S., while the FactSet International Funds database contains ownership data for funds from a large number of other countries. One major difference between the 13F and International Funds databases is that 13F filings are at the institution level, whereas data in the International Funds database are recorded at the fund level. Therefore, before combining the databases, we aggregate holdings in the International Funds database at the institution level. We then restrict the 13F and International Funds databases to equity securities held by institutional investors. Next, we only keep reports by institutions that report at least semi-annually.[11]

To mitigate selection bias in the data, we omit reports by institutions from Australia and New Zealand, where reporting is not mandatory. Voluntary reporting leads to downwards-biased values of institutional ownership for firms from these countries, and thus the actual level of institutional ownership is likely to be higher in Australia (we do not have firms from New Zealand in our final sample). As institutional ownership is not our main variable of interest, and we include firm fixed

[11] Studies that use FactSet data for investor horizon applications focus mainly on the U.S. market; since the SEC requires large institutional investors that do business in the U.S. to report their portfolio holdings each quarter, measures of investor horizon in these studies are usually based on quarterly data. Reporting requirements for institutions differ substantially across countries in the International Funds database; however, while institutions in some countries report on a monthly basis, institutions in other countries report only once a year. Since we would lose the majority of observations if we only kept data from institutions that report at least quarterly, we employ a longer time span for our portfolio turnover measure. At the same time, we should not use so long a time span that we are not able to capture portfolio movements within a given period. We therefore base our investor horizon measure on six-month periods. We lose less than 5% of our observations using this measurement period.

effects in our regressions, omitting observations from these two countries does not systematically affect our results.

To calculate the investment horizon of institutional investors, we follow the approach introduced by Gaspar, Massa, and Matos (2005). First, for each institutional investor, we calculate a churn rate that is equal to the fraction of portfolio holdings bought or sold over a half-year period:

$$CR_{k,t} = \frac{\sum_{i=1}^{N_{k,t}} \left| S_{k,i,t} P_{i,t} - S_{k,i,t-1} P_{i,t-1} - S_{k,i,t-1} \Delta P_{i,t} \right|}{\sum_{i=1}^{N_{k,t}} \frac{S_{k,i,t} P_{i,t} + S_{k,i,t-1} P_{i,t-1}}{2}},$$

where $S_{k,i,t}$ is the number of shares of firm *i* in the portfolio of investor *k* in half-year *t*, $P_{i,t}$ is the stock price of firm *i* at time *t*, and $N_{k,t}$ is the number of positions in the portfolio of investor *k* at time *t*.

Next, for each investor we compute the average churn rate over the past two half-years, $AVG\_CR_{k,t}$, which yields an annual horizon measure at the investor level. In a third step we calculate the firm-level churn rate as the weighted average of the churn rates of all of the firm's institutional investors:

$$WACR_{j,t} = \sum_{k=1}^{M_{j,t}} W_{k,j,t} AVG\_CR_{k,t} ,$$

where $AVG\_CR_{k,t}$ is investor *k*'s average churn rate over the past two half-years, and $W_{k,j,t}$ is investor *k*'s equity share in firm *j* at time *t*.

The firm-level weighted average churn rate is our first main variable of interest. In additional analyses we use measures of investor horizon that account for the absolute level of long- versus

short-term investors in a firm. In particular, we define long-term institutional ownership, LTIO, as the fraction of a firm's market capitalization that is held by long-term institutions. Similarly, short-term institutional ownership, STIO, is the fraction of a firm's market capitalization that is held by short-term institutions. We classify institutional investors as long-term (short-term) institutions if their average churn rate is in the bottom (top) tercile of all institutional investors.

Prior literature uses alternative measures of investor horizon. For example, Alvarez, Jara, and Pombo (2018) calculate the investor horizon of each position of each investor separately. They define investors with holdings in the firm for more than two years as long-term investors, while investors with holdings for only one year are considered short-term investors. This approach accounts for the possibility that an institution may be invested long-term in one firm and short-term in another. However, a shortcoming of this approach is that it does not account for the full length of the holding period. Moreover, categorizing investors into long-term versus short-term at the institution level captures their typical investment horizon but obscures their investment decisions with respect to a specific firm, which might be affected by the firm itself and thus raises causality concerns. We therefore choose to employ investor-level horizon measures in our analysis.

Our final sample consists of firms for which we have both ownership and financial statement data. We drop U.S. firms since they would dominate the sample and render differences between other countries largely unnoticeable. We further drop firms in which the institutional ownership ratio is less than 5%, since it is unlikely that institutional owners will have much influence over those firms, and we omit observations associated with substantial M&A activities (sales growth of more than 100%), as such activities are likely to have abnormal effects on both investor horizon

and the market-to-book ratio. Finally, we omit countries for which we have very few observations (those that constitute less than 0.5% of our sample).

[Insert Table 1 here]

Mean values of institutional ownership, WACR, long-term institutional ownership, and short-term institutional ownership for all sample countries are presented in Table 1. While the average institutional ownership ratio is 17.7%, this value varies noticeably across countries. The average WACR is 0.406, which implies that the average institutional investor trades 40.6% of their portfolio holdings in a six-month period. Again, this mean value varies substantially across countries. The LTIO and STIO ratios are largely in line with WACR, as countries with a high (low) WACR tend to have low (high) LTIO and high (low) STIO. The larger average ratios of average LTIO compared to average STIO reflect the fact that long-term institutional investors have, on average, larger total investment and therefore are invested in a larger number of firms and have larger holdings.

In Table 2, we present descriptive statistics for our main variables based on the full sample in Panel A, across firms dominated by long-term investors in Panel B, and across firms dominated by short-term investors in Panel C. In Panel A we find that the mean market-to-book ratio of net assets is 1.85 (median: 1.26), but the value varies substantially across firms (standard deviation: 1.78). Similarly, the institutional ownership ratios and investor horizon measures exhibit a large degree of variation. Comparing across Panels B and C, we find that on average the market-to-book ratio is higher for firms with more short-term investors (with a mean of 2.02, versus 1.81 for firms with more long-term investors). The relative presence of long- and short-term investors is reflected

in the investor horizon measures, with WACR averaging 0.35 in firms dominated by short-term investors and 0.60 in firms dominated by long-term investors. Firms with short versus long investor horizons also differ with respect to firm characteristics. In particular, firms dominated by short-term investors are on average smaller and younger, their stocks are more liquid, and they exhibit higher stock returns compared to firms dominated by long-term investors.

[Insert Table 2 here]

B. Research design

Before analyzing the implications of investor horizon for firm valuation, we examine why investor horizon differs so much across firms and, in particular, across countries. We model investor horizon as follows:

$$WACR_{c,i,t} = \alpha_t + \gamma_1 F_c + \gamma_2 GDP_{c,t} + \sum_j \beta_j x_{j,i,t} + \varepsilon_{i,t}, \quad (1)$$

where $WACR_{c,i,t}$ is the weighted average churn rate of firm *i* domiciled in country *c* in year *t*, F_c is a proxy for the institutional framework of country *c*, $GDP_{c,t}$ is the natural logarithm of the GDP per capita of country *c* in year *t*, and $x_{j,i,t}$ is a vector of *j* firm-level control variables that include market capitalization, firm age, dividend yield, lagged market-to-book, stock price, stock turnover, stock return volatility, a dummy variable indicating whether the firm's shares are included in the MSCI All Country World Index, annual stock return, and lagged annual stock return; detailed variable definitions are provided in the Appendix. α_t are year fixed effects. The choice of firm-level variables is motivated by prior literature (Yan and Zhang, 2009).

To shed light on the effect of institutional investor horizon on firm valuation, our primary regression model is as follows:

$$MTB_{i,t} = \alpha_i + \alpha_t + \gamma_1 WACR_{i,t} + \gamma_2 IO_{i,t} + \sum_k \beta_k z_{k,i,t} + \varepsilon_{i,t}, \quad (2)$$

where $MTB_{i,t}$ is the market-to-book ratio of firm *i'* net assets in year *t*, and $WACR_{i,t}$ is the weighted average churn rate of firm i in year *t*. As control variables, we use firm *i*'s level of institutional ownership ($IO_{i,t}$) in year *t* and a set of accounting variables ($z_{j,i,t}$) that includes firm size, firm age, asset tangibility, leverage, capital intensity, and, in the specifications without firm fixed effects, a U.S. cross-listing dummy.

As additional proxies for investor horizon, we use the levels of long-term and short-term institutional ownership (LTIO and STIO). We therefore also estimate the following alternative model specification to investigate valuation effects:

$$MTB_{i,t} = \alpha_i + \alpha_t + \gamma_1 LTIO_{i,t} + \gamma_2 STIO_{i,t} + \sum_k \beta_k z_{k,i,t} + \varepsilon_{i,t}, \quad (3)$$

where $LTIO_{i,t}$ ($STIO_{i,t}$) is the level of long-term (short-term) institutional ownership in firm *i* in year *t*. We also estimate alternative specifications of equations (2) and (3) using country and industry fixed effects instead of firm fixed effects. In addition, we rerun equation (3) using the two horizon measures separately. Except for WACR, which by definition is restricted to values between zero and two, and IO, LTIO, and STIO, which take values between zero and one, we winsorize the firm-level variables at the 1% and 99% levels.

IV. Determinants of investor horizon

Before analyzing the valuation implications of institutional investor horizon, we first seek to shed light on which factors drive the heterogeneity in investor horizon across firms and countries. In Table 3, we regress WACR on the GDP of the country in which the firm is domiciled and several firm-level variables. To disentangle the relative importance of firm-level variables and country characteristics for investor horizon, we estimate two specifications: in column (1) we estimate the model without country fixed effects, in column (2) we use the same firm variables but add country fixed effects to the analysis. This analysis provides evidence on whether firm characteristics alone determine investor horizon, or whether country characteristics add significant explanatory power. Comparing the two models, we find that R^2 increases from 24.3% using only firm-level variables and GDP as explanatory variables to 36.4% when we add country fixed effects. The *F*-statistic on the joint test of the country dummy variables is 61.71, which confirms that country characteristics add significant explanatory power to the variation in investor horizon.

[Insert Table 3 here]

To examine how different aspects of a country's institutional framework affect investor horizon, we add proxies for a country's financial system, legal system, enforcement, and culture to the model in column (1) of Table 3. The results are reported in Table 4. Panel A shows that a country's financial and legal systems have a strong effect on investor horizon. Focusing first on a country's financial system, column (2) shows that WACR is lower in countries with high accounting standards, i.e., it is more important to long-term than to short-term institutional investors that firms in a country provide high quality financial statements. Column (3) further shows that firms in countries

with high bankruptcy costs attract relatively more short-term institutions. Since shareholders bear the expected costs of bankruptcy, most institutions presumably prefer not to be invested for long periods in these countries. Column (4) shows that firms in countries with liquid financial markets attract more short-term institutions, suggesting that short-term institutions invest primarily in environments in which it is relatively easy to sell their shares.

In columns (5) to (7) of Panel A, we report results on the effect of a country's legal environment on investor horizon. Specifically, we use legal tradition dummy variables that take the value of zero for firms domiciled in countries with a civil law tradition and one for firms in countries with a French legal origin (column (5)), German legal origin (column (6)), or Scandinavian legal origin (column (7)). The results indicate that firms in countries with a French legal origin have significantly more institutional investors with a short investment horizon, while firms in countries with a Scandinavian legal origin have significantly more institutional investors with a long investment horizon, both compared to firms from civil law countries. As expected, long-term investors have higher ownership shares in firms from countries with strong shareholder rights (column (8)) and weak creditor rights (column (9)). This result is likely due to shareholders suffering under, and thus avoiding long-term investments in, weak shareholder rights and strong creditor rights environments.

[Insert Table 4 here]

In Panel B of Table 4, we provide evidence on how a country's legal enforcement and culture affect the investment horizon of institutional investors. With respect to legal enforcement, we find that a country's rule of law plays an important role in explaining the variation in investor horizon.

In countries with a strong rule of law, firms have on average more long-term institutional investors. La Porta, López-de-Silanes, Shleifer, and Vishny (1998) suggest that a weak rule of law aggravates the difficulties investors face in weak legal environments. Together with the findings in Panel A, this result also supports recent studies showing that the law in the books is worthless unless enforcement is strong (Humphery-Jenner, 2013; Bhattacharya and Daouk, 2009).

Turning to the role of culture, to the extent that culture has shaped the development of a country's financial and legal environment, it has an indirect effect on investment decisions. However, culture may also have a direct effect on investment decisions in the sense that some cultures encourage long-term investments, making other cultural environments more attractive to short-term investors. We find that investor horizon is shorter in countries with greater power distance. This result is likely due to the fact that investors are less able to interact with managers, and thus to govern via engagement, in an environment characterized by high power distance. Accordingly, firms in such countries are less attractive for long-term investors. Investor horizon also varies across countries with different levels of individualism. In particular, investor horizon is longer in more individualist societies. This may be related to the degree to which managers' interests are aligned with those of shareholders: while in collectivist countries managers act in the interests of the organization, in individualist countries they tend to favor their own interests (Hofstede, 2001) and thus shareholders need to monitor managers more closely (Griffin, Guedhami, Kwok, Li, and Shao, 2017) – and long-term investors are more likely to engage in such monitoring. Finally, investor horizon is shorter in countries with a high level of masculinity. This result is consistent with the view that meeting or beating financial goals is more important in masculine societies, and thus

it is easier for short-term investors to increase profits or boost stock prices in the short run in these countries.

Overall, the results above suggest that long-term institutions prefer to invest in countries that provide more investor-friendly institutional environments, while short-term investors are less concerned about a country's financial and legal environments or the level of legal enforcement. In addition, a country's cultural background plays a role in attracting investors with different investment horizons.

V. The effect of investor horizon on firm valuation

A. Valuation regressions

Table 5 presents evidence on the relation between investor horizon and firm valuation. Specifically, we regress a firm's market-to-book ratio on its WACR as well as our two alternative proxies of investor horizon, the long-term and short-term institutional ownership ratios. When using WACR, which captures the average horizon of all institutional investors but does not reflect the absolute level of ownership of long-term and short-term investors, as the main explanatory variable, we control for the institutional ownership ratios. Moreover, we control for a firm's size, age, asset tangibility, leverage, and capital intensity, as well as a cross-listing dummy that indicates whether the firm's shares are cross-listed on a U.S. stock exchange. We further control for year, country, and industry fixed effects in columns (1), (3), (4), and (5) and year and firm fixed effects in columns (2), (6), (7), and (8).

The results in columns (1) and (2) show that the average churn rate of a firm's investors significantly increases the firm's market-to-book ratio. These findings support Hypothesis 1b, which holds that the positive valuation effect of institutional ownership is driven by short-term investors. As expected, the effect of institutional ownership on firm value is also significantly positive. This latter result is consistent with prior studies that examine the valuation effects of institutional investors (McConnell and Servaes, 1990; Ferreira and Matos, 2008; among others).

We use LTIO and STIO as alternative measures of investor horizon to alleviate concerns that, as an average value, WACR does not account for the relative share of equity owned by short-term and long-term investors. When using STIO as an explanatory variable in columns (4) and (7), we again find a significantly positive association between short-term institutions and the market-to-book ratio. This result also continues to hold when we control for the effect of LTIO. The relation between long-term institutions and firm value, however, is less clear. The coefficient is positive in all model specifications, but significantly different from zero only in column (8).

[Insert Table 5 here]

Overall, the results in Table 5 suggest that institutional investors' churn ratio is positively related to market-to-book, and that this effect is driven mainly by short-term institutions, in line with Hypothesis 1b. Moreover, we find that the coefficient estimates are stable with respect to the inclusion of different fixed effects. Since the specification using firm fixed effects has the highest explanatory power in terms of the variation in the market-to-book ratio, in the rest of our analyses we limit attention to models using firm and year fixed effects.

B. Robustness checks

A natural concern that arises with respect to our analyses above is that the relation between investor horizon and market-to-book documented in Table 5 could also be explained by different preferences of long-term and short-term investors. That is, one may wonder if reverse causality is at work, with short-term investors choosing to invest in growth firms that have higher market-to-book ratios while long-term investors invest in value firms that have lower market-to-book. We address this concern using two approaches. First, in Table 6, we estimate equations (1) and (2) as a system of simultaneous equations using three-stage least squares (3SLS) estimation. Second, in Table 7, we conduct a placebo test.

Table 6 reports results for simultaneous regressions of WACR and the market-to-book ratio as dependent variables. Importantly, the positive effect of short-term institutional investors on market-to-book persists. One potential problem that arises in using 3SLS is that the significance levels from the estimation in columns (1) and (2) may be distorted due to heteroskedastic standard errors. We therefore reestimate the 3SLS model using bootstrapped standard errors. The estimates in columns (3) and (4) show that the *p*-values are little affected; the only exception is institutional ownership, for which the coefficient becomes insignificant.

[Insert Table 6 here]

We recognize that the coefficient on WACR in Table 6 is considerably higher than that in Table 5, which raises concerns about the validity of our results. However, a much larger coefficient is typical in 3SLS estimations, and in multi-stage estimations in general. This notable increase in the coefficient is consistent, for instance, with Levitt (1996) and, in an institutional investor context,

Ferreira and Matos (2008). We therefore believe that, although we do not have perfect identification, this test alleviates concerns that our results are driven by reverse causality.

Nevertheless, we estimate a placebo test as an alternative approach to addressing reverse causality concerns. In particular, we replace the actual values of WACR by randomly drawn values of WACR from the sample distribution within each firm over our sample period. The randomly assigned WACR values thus have the same distribution as the original values – only the temporal sequence is changed. Intuitively, the aim of this test is to determine whether our results are based on pure correlations between investor horizon and market-to-book, or whether market-to-book reacts to contemporary values of WACR. In our simulations, we repeat the procedure of randomly redistributing the WACR values and estimating the regression model 100 times. Column (1) of Table 7 reports the average coefficients.

The coefficients on the control variables, for which the original values are used, are similar to those reported in Table 5. The coefficient on WACR, however, is essentially zero, which supports the view that the association between market-to-book and investor horizon cannot be attributed to a general preference of either short-term or long-term investors for specific types of firms with particular levels of market-to-book. In column (2) we repeat the simulation analysis using our alternative investor horizon measures, LTIO and STIO, which we jointly draw and reassign randomly within the distribution of each firm. The results confirm our conclusions.

[Insert Table 7 here]

C. The mediating effect of liquidity

Our analyses consistently suggest that a higher share of short-term institutions leads to higher firm value. As discussed above, in the case of short-term investors, we expect that they discipline portfolio firms' managers largely through the threat of exit. It follows that if short-term institutional investors increase firm value by disciplining management through the threat of exit, we should see a more pronounced value-enhancing effect when stock liquidity is high. To test this hypothesis, we interact our investor horizon measures with stock (market) liquidity measures and regress market-to-book on this interaction term. Table 8 reports the results.

In columns (1) and (2), we interact investor horizon with country-level liquidity, MTURNOVER, which is given as the ratio of the value of total shares traded on the country's stock market to the average market capitalization. The significantly positive coefficient on the interaction between WACR and MTURNOVER supports our prediction that the positive effect of short-term institutions on valuation is stronger in countries with a liquid stock market. This result is robust to using LTIO and STIO as the measure of investor horizon, as indicated by the positive coefficient on STIO × MTURNOVER. The negative coefficient on LTIO × MTURNOVER suggests that the effect is opposite for long-term institutions.

The advantage of using country-level liquidity is that it can be considered largely exogenous, but it may not be very precise because the liquidity of different stocks can vary substantially within a country. We therefore also analyze the effect of firm-level liquidity on the relation between investor horizon and valuation. Columns (3) and (4) repeat the previous analysis using the Amihud illiquidity measure, ILL, to capture firm-level liquidity. By construction, the expected signs on the

coefficients should be opposite those of the country liquidity interaction terms. The negative coefficient on the WACR × ILL interaction thus indicates that the results from column (1) hold at the firm level, that is, the positive valuation effect of short-term institutions is weaker for firms with high illiquidity. The coefficient on STIO × ILL is also in line with this conclusion. Additional support is provided by the estimate on the interaction with LTIO, which loses statistical significance when using firm-level illiquidity.

Taken together, the results in Table 8 suggest that the positive valuation effect of short-term institutions is stronger when liquidity is high. Our results therefore support our Hypothesis 2, which holds short-term institutional shareholders have a stronger positive effect on firm value when stock liquidity is high and hence the threat of exit is more credible.

[Insert Table 8 here]

VI. Conclusion

This study examines the effects of heterogeneity across institutional investors' investment horizon on firm value in an international context. Our main prediction is that institutional investors with a long-term investment horizon and those with a short-term investment horizon discipline managers differently. While long-term institutional investors are more likely to engage in relationship investing and exercise voice in influencing managers directly, short-term investors are more willing to sell their shares and hence are more likely to exert influence indirectly through exit or the threat of exit. Based on these arguments, the question that arises is how effective are the different types of institutions in aligning their portfolio managers' interests with their own – more successful governance mechanisms should result in higher firm values.

Most previous research on institutional ownership focuses on the level of institutional ownership, without accounting for heterogeneity across institutional investors, and focuses on the U.S. We show that the investment horizon of firms' institutional investors depends on country-level characteristics such as the financial and legal environment and culture. We then show that institutional investors' investment horizon has a significant effect on firm value. Specifically, firms with a higher ratio of short-horizon institutional investors have a higher market-to-book ratio. This result suggests that short-term investors are more effective in aligning managers' interests with their own. 3SLS estimation analysis and a placebo test indicate that causality runs from investor horizon to valuation and not from valuation to investor horizon. Additional tests show that the positive valuation effect of short-term institutions is particularly strong in countries with high market liquidity and in firms with high stock liquidity. These findings suggest that short-term investors increase firm value by disciplining managers through the threat of exit, which is arguably more credible when liquidity is high.

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Table 1
Mean values of horizon measures by country

This table reports mean values of the level of institutional ownership (IO), the weighted average churn rate (WACR), long-term institutional ownership (LTIO), and short-term institutional ownership (STIO) by country. Variable definitions are provided in the Appendix. The panel consists of 82,814 observations for 14,220 firms during the period 2001 to 2016. Sample firms come from 34 countries (excluding the U.S.) for which a substantial number of observations are available in the FactSet ownership databases.

Country	Observations	% of sample	IO	WACR	LTIO	STIO
Australia	2,224	2.7	0.122	0.328	0.050	0.008
Austria	505	0.6	0.142	0.401	0.055	0.017
Belgium	757	0.9	0.147	0.377	0.062	0.013
Brazil	1,155	1.4	0.165	0.372	0.058	0.017
Canada	6,468	7.8	0.292	0.377	0.132	0.029
China	4,927	5.9	0.180	0.631	0.035	0.062
Denmark	861	1.0	0.198	0.377	0.055	0.018
Finland	1,107	1.3	0.218	0.383	0.059	0.015
France	3,574	4.3	0.152	0.426	0.051	0.019
Germany	3,576	4.3	0.174	0.405	0.067	0.022
Greece	437	0.5	0.181	0.409	0.074	0.028
Honk Kong	2,851	3.4	0.130	0.418	0.051	0.021
India	4,113	5.0	0.129	0.384	0.052	0.011
Indonesia	646	0.8	0.103	0.363	0.045	0.010
Ireland	538	0.6	0.318	0.385	0.150	0.038
Israel	816	1.0	0.226	0.459	0.071	0.059
Italy	1,352	1.6	0.129	0.441	0.042	0.022
Japan	15,861	19.2	0.115	0.382	0.054	0.016
Korea	2,462	3.0	0.120	0.368	0.055	0.014
Malaysia	1,082	1.3	0.104	0.419	0.039	0.018
Mexico	503	0.6	0.156	0.341	0.065	0.016
Netherlands	1,099	1.3	0.250	0.371	0.105	0.023
Norway	1,187	1.4	0.195	0.369	0.084	0.017
Pakistan	476	0.6	0.101	0.363	0.049	0.021
Poland	2,027	2.4	0.233	0.490	0.043	0.025
Singapore	1,212	1.5	0.158	0.394	0.070	0.021
South Africa	1,520	1.8	0.137	0.364	0.063	0.011
Spain	859	1.0	0.142	0.386	0.052	0.014
Sweden	2,366	2.9	0.260	0.358	0.111	0.017
Switzerland	1,781	2.2	0.206	0.346	0.103	0.016
Taiwan	2,580	3.1	0.118	0.429	0.048	0.027
Thailand	489	0.6	0.079	0.433	0.027	0.014
Turkey	627	0.8	0.102	0.370	0.042	0.009
UK	10,776	13.0	0.261	0.405	0.084	0.030
Total	82,814	7.8	0.177	0.406	0.067	0.023

Table 2
Descriptive statistics

This table reports the mean, minimum, 25th percentile, median, 75th percentile, maximum, and standard deviation for the listed variables. SIZE and AGE are measured in natural logarithms. The other variables, except for the U.S. cross-listing dummy (XLIST), are ratios. Variable definitions are provided in the Appendix. Panel A shows statistics for the full sample, which comprises 82,814 observations for 14,220 firms. Panel B presents statistics for the 11,583 firms (63,076 observations) for which the level of long-term institutional ownership is higher than the level of short-term institutional ownership in a given year. Panel C presents statistics for the 8,589 firms (18,088 observations) for which the level of short-term institutional ownership is higher than the level of long-term institutional ownership in a given year. The panel covers the years 2001 to 2016 and firms from 34 countries (excluding the U.S.).

Panel A: Full sample

	Mean	Min	p25	Median	p75	Max	StdDev
MTB	1.85	0.49	0.98	1.26	1.96	12.72	1.78
IO	0.18	0.05	0.08	0.13	0.22	1.00	0.13
WACR	0.41	0.02	0.31	0.38	0.46	1.86	0.15
LTIO	0.07	0.00	0.02	0.05	0.09	0.82	0.07
STIO	0.02	0.00	0.00	0.01	0.03	0.86	0.04
SIZE	7.30	0.01	0.19	0.69	2.70	212.52	26.69
AGE	45.55	1.00	16.00	32.00	64.00	262.00	40.70
TANGIBILITY	0.27	0.00	0.07	0.22	0.41	1.00	0.24
LEVERAGE	0.13	0.00	0.00	0.08	0.21	0.60	0.14
CAPINT	0.05	0.00	0.02	0.04	0.07	0.30	0.06
XLIST	0.18	0.00	0.00	0.00	0.00	1.00	0.39
MKTCAP	5.10	0.01	0.15	0.52	2.02	135.02	17.61
DIVYIELD	0.02	0.00	0.00	0.01	0.03	0.17	0.03
PRICE	38.11	0.05	1.84	6.23	18.82	1401.60	161.42
STURNOVER	0.94	0.01	0.27	0.58	1.14	6.60	1.12
VOLATILITY	0.03	0.01	0.02	0.02	0.03	0.08	0.01
MSCI	0.21	0.00	0.00	0.00	0.00	1.00	0.41
RETURN	0.15	-0.82	-0.19	0.07	0.38	2.45	0.56

Panel B: Firms dominated by long-term institutions

	Mean	Min	p25	Median	p75	Max	StdDev
MTB	1.81	0.49	0.97	1.24	1.89	12.72	1.76
IO	0.18	0.05	0.09	0.14	0.23	1.00	0.14
WACR	0.35	0.02	0.29	0.35	0.41	0.85	0.08
LTIO	0.08	0.00	0.04	0.06	0.11	0.82	0.07
STIO	0.01	0.00	0.00	0.01	0.02	0.33	0.02
SIZE	8.94	0.01	0.27	0.93	3.74	212.52	29.64
AGE	48.89	1.00	17.00	36.00	69.00	262.00	42.03
TANGIBILITY	0.28	0.00	0.07	0.23	0.41	1.00	0.24
LEVERAGE	0.13	0.00	0.01	0.09	0.22	0.60	0.14
CAPINT	0.05	0.00	0.02	0.04	0.07	0.30	0.05
XLIST	0.21	0.00	0.00	0.00	0.00	1.00	0.40
MKTCAP	6.23	0.01	0.19	0.65	2.62	135.02	19.67
DIVYIELD	0.02	0.00	0.00	0.02	0.03	0.17	0.03
PRICE	38.39	0.05	2.16	7.35	21.17	1401.60	154.95
STURNOVER	0.85	0.01	0.27	0.56	1.07	6.60	0.95
VOLATILITY	0.03	0.01	0.02	0.02	0.03	0.08	0.01

MSCI	0.25	0.00	0.00	0.00	1.00	1.00	0.44
RETURN	0.13	-0.82	-0.19	0.06	0.35	2.45	0.52

Panel C: Firms dominated by short-term institutions

	Mean	Min	p25	Median	p75	Max	StdDev
MTB	2.02	0.49	1.03	1.38	2.20	12.72	1.88
IO	0.16	0.05	0.08	0.12	0.19	1.00	0.12
WACR	0.60	0.28	0.48	0.56	0.67	1.86	0.17
LTIO	0.02	0.00	0.00	0.01	0.02	0.32	0.02
STIO	0.06	0.00	0.02	0.04	0.07	0.86	0.06
SIZE	2.26	0.01	0.11	0.31	0.98	212.52	12.64
AGE	35.03	1.00	13.00	22.00	47.00	257.00	33.76
TANGIBILITY	0.26	0.00	0.07	0.21	0.39	1.00	0.22
LEVERAGE	0.11	0.00	0.00	0.05	0.17	0.60	0.13
CAPINT	0.06	0.00	0.02	0.04	0.08	0.30	0.06
XLIST	0.12	0.00	0.00	0.00	0.00	1.00	0.33
MKTCAP	1.64	0.01	0.10	0.30	0.97	135.02	7.27
DIVYIELD	0.02	0.00	0.00	0.01	0.03	0.17	0.03
PRICE	39.10	0.05	1.40	4.11	12.34	1401.60	185.88
STURNOVER	1.29	0.01	0.31	0.67	1.56	6.60	1.55
VOLATILITY	0.03	0.01	0.02	0.03	0.03	0.08	0.01
MSCI	0.09	0.00	0.00	0.00	0.00	1.00	0.29
RETURN	0.25	-0.82	-0.18	0.13	0.53	2.45	0.65

Table 3
Investor horizon and country effects

This table reports coefficients obtained from regressing the weighted average churn rate on the natural logarithm of the country's GDP per capita and firm-level variables. MKTCAP, AGE, lagged market-to-book ratio (lMTB), stock price (PRICE), 12-month turnover of the firm's shares (STURNOVER), and 12-month stock return volatility (VOLATILITY) are measured in natural logarithms. MSCI is a binary variable that indicates whether the firm's shares are listed in the MSCI All Country World Index. RETURN is the annual stock return, and lRETURN the lagged annual return. Variable definitions are provided in the Appendix. Standard errors are clustered at the firm and year levels. p-values are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)
Dependent variable	WACR	WACR
GDP	-0.020***	0.137***
	(0.000)	(0.008)
MKTCAP	-0.007***	-0.012***
	(0.000)	(0.000)
AGE	-0.012***	-0.003*
	(0.000)	(0.051)
DIVYIELD	-0.282***	-0.270***
	(0.000)	(0.000)
lMTB	0.023***	0.024***
	(0.000)	(0.000)
PRICE	-0.000	0.004***
	(0.977)	(0.001)
STURNOVER	0.018***	0.014***
	(0.000)	(0.000)
VOLATILITY	0.016	0.018*
	(0.273)	(0.088)
MSCI	-0.040***	-0.022***
	(0.000)	(0.000)
RETURN	0.032***	0.032***
	(0.003)	(0.000)
lRETURN	0.004	0.004
	(0.408)	(0.207)
Constant	0.922***	-0.698
	(0.000)	(0.194)
Observations	74,000	74,000
Adjusted R^2	0.243	0.364
Time FE	Yes	Yes
Country FE	No	Yes

Table 4
Determinants of investor horizon

This table reports coefficients obtained from regressing the weighted average churn rate on country governance variables (considered one at a time in each of the columns) and firm-level variables. In Panel A, we use financial and legal system variables. In Panel B, we use measures of enforcement and culture. Financial structure is a binary variable that takes the value of zero for firms incorporated in countries with a bank-based financial system, and one for firms incorporated in countries with a market-based financial system. French legal origin, German legal origin, and Scandinavian legal origin are binary variables that take the value of one for firms that are incorporated in countries with the respective legal tradition, and zero for firms from countries with a civil law tradition. MTURNOVER is the ratio of the value of total shares traded on the country's stock market to the average market capitalization; MTURNOVER varies over years and is standardized. The other country governance variables are standardized based on static index values. GDP is the natural logarithm of the country's GDP per capita. MKTCAP, AGE, lagged market-to-book ratio (lMTB), stock price (PRICE), 12-month turnover of the firm's shares (STURNOVER), and 12-month stock return volatility (VOLATILITY) are measured in natural logarithms. MSCI is a binary variable that indicates whether the firm's shares are listed in the MSCI All Country World Index. RETURN is the annual stock return, and lRETURN the lagged annual return. Variable definitions are provided in the Appendix. Standard errors are clustered at the firm and year levels. p-values are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Financial system and legal system variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Financial system				Legal system				
Financial structure	-0.010								
	(0.166)								
Accounting standard		-0.011**							
		(0.040)							
Bankruptcy costs			0.038***						
			(0.003)						
MTURNOVER				0.039***					
				(0.000)					
French legal origin					0.021***				
					(0.000)				
German legal origin						0.008			
						(0.549)			
Scandinavian legal origin							-0.017***		
							(0.007)		
Shareholder rights								-0.033***	
								(0.000)	
Creditor rights									0.006***
									(0.001)
GDP	-0.002	-0.001	-0.025***	-0.018***	-0.001	-0.004	-0.004	-0.016***	-0.002
	(0.482)	(0.693)	(0.000)	(0.000)	(0.849)	(0.331)	(0.370)	(0.000)	(0.590)
MKTCAP	-0.010***	-0.010***	-0.010***	-0.008***	-0.012***	-0.010***	-0.010***	-0.009***	-0.010***

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AGE	-0.008***	-0.007***	-0.007***	-0.011***	-0.007***	-0.007***	-0.006***	-0.008***	-0.007***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIVYIELD	-0.174***	-0.192***	-0.328***	-0.246***	-0.196***	-0.214***	-0.217***	-0.303***	-0.220***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lMTB	0.016***	0.015***	0.023***	0.027***	0.011***	0.018***	0.012***	0.024***	0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PRICE	-0.001	-0.002*	0.004***	-0.002**	-0.002	-0.003	-0.006***	-0.003*	0.001
	(0.204)	(0.083)	(0.000)	(0.020)	(0.271)	(0.108)	(0.002)	(0.057)	(0.171)
STURNOVER	0.006**	0.006*	0.019***	0.010***	0.009***	0.006**	0.010***	0.019***	0.006**
	(0.020)	(0.053)	(0.000)	(0.000)	(0.000)	(0.017)	(0.000)	(0.000)	(0.027)
VOLATILITY	0.008	0.007	0.016	0.011	0.001	0.008	-0.001	0.004	0.011*
	(0.197)	(0.273)	(0.247)	(0.259)	(0.797)	(0.206)	(0.782)	(0.739)	(0.064)
MSCI	-0.009**	-0.008**	-0.041***	-0.032***	-0.008**	-0.009**	-0.006	-0.034***	-0.010***
	(0.016)	(0.030)	(0.000)	(0.000)	(0.042)	(0.042)	(0.104)	(0.000)	(0.009)
RETURN	0.027***	0.026***	0.031***	0.031***	0.029***	0.027***	0.028***	0.033***	0.023***
	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
lRETURN	0.004	0.003	0.001	0.005	0.010***	0.004	0.010***	0.004	0.004
	(0.181)	(0.380)	(0.767)	(0.276)	(0.001)	(0.254)	(0.005)	(0.323)	(0.277)
Constant	0.691***	0.680***	1.043***	0.897***	0.592***	0.694***	0.668***	0.882***	0.737***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	65,225	67,001	69,696	67,697	40,202	53,235	34,868	74,000	68,467
Adjusted R^2	0.295	0.296	0.291	0.290	0.234	0.314	0.240	0.291	0.289
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Enforcement and cultural variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Enforcement			Culture			
Rule of law	-0.012**						
	(0.017)						
Judicial efficiency		0.002					
		(0.541)					
Corruption			0.012				
			(0.285)				
Power distance				0.029***			
				(0.000)			

Uncertainty avoidance					0.000		
					(0.961)		
Individualism						-0.015***	
						(0.001)	
Masculinity							0.010***
							(0.003)
GDP	0.003	-0.005	-0.027***	-0.005	-0.020***	-0.013***	-0.020***
	(0.395)	(0.227)	(0.003)	(0.249)	(0.000)	(0.001)	(0.000)
MKTCAP	-0.010***	-0.010***	-0.007***	-0.009***	-0.007***	-0.008***	-0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AGE	-0.007***	-0.007***	-0.011***	-0.011***	-0.012***	-0.011***	-0.013***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIVYIELD	-0.215***	-0.214***	-0.288***	-0.256***	-0.281***	-0.266***	-0.229***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
lMTB	0.013***	0.013***	0.022***	0.028***	0.023***	0.027***	0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PRICE	0.000	0.000	0.000	0.000	-0.000	-0.000	-0.000
	(0.915)	(0.893)	(0.899)	(0.787)	(0.947)	(0.894)	(0.689)
STURNOVER	0.006**	0.006**	0.019***	0.018***	0.018***	0.017***	0.017***
	(0.023)	(0.014)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VOLATILITY	0.009	0.009	0.016	0.017	0.016	0.015	0.019
	(0.135)	(0.136)	(0.277)	(0.222)	(0.285)	(0.282)	(0.198)
MSCI	-0.010***	-0.010***	-0.039***	-0.039***	-0.040***	-0.040***	-0.039***
	(0.004)	(0.009)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
RETURN	0.024***	0.024***	0.032***	0.034***	0.032***	0.033***	0.034***
	(0.000)	(0.000)	(0.003)	(0.001)	(0.002)	(0.002)	(0.001)
lRETURN	0.004	0.004	0.004	0.003	0.004	0.003	0.005
	(0.277)	(0.246)	(0.396)	(0.495)	(0.401)	(0.540)	(0.362)
Constant	0.687***	0.767***	0.981***	0.818***	0.922***	0.878***	0.933***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	68,467	68,467	74,000	74,000	74,000	74,000	74,000
Adjusted R^2	0.288	0.287	0.244	0.258	0.243	0.251	0.249
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5
Impact of investor horizon on valuation

This table reports results from regressing the market-to-book ratio on investor horizon measures and firm-level control variables. In columns (1) and (2), we use the weighted average churn rate as the investor horizon measure. In columns (3) to (8), we use long-term and short-term institutional ownership ratios as the investor horizon measure. SIZE and AGE are measured in natural logarithms. XLIST is a binary variable indicating whether a firm is listed on a major U.S. stock exchange. The other variables are ratios. Variable definitions are provided in the Appendix. Standard errors are clustered at the firm and year levels. p-values are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	MTB	MTB	MTB	MTB	MTB	MTB	MTB	MTB
WACR	0.923***	0.621***						
	(0.007)	(0.000)						
LTIO			0.242		0.162	0.243		0.344**
			(0.220)		(0.423)	(0.106)		(0.031)
STIO				1.864***	1.839***		1.878***	1.923***
				(0.004)	(0.005)		(0.000)	(0.000)
IO	0.415***	0.752***						
	(0.002)	(0.000)						
SIZE	-0.075***	-0.264***	-0.086***	-0.082***	-0.083***	-0.257***	-0.252***	-0.257***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AGE	-0.065***	-0.045	-0.070***	-0.068***	-0.068***	-0.036	-0.034	-0.033
	(0.002)	(0.559)	(0.000)	(0.001)	(0.001)	(0.642)	(0.656)	(0.664)
TANGIBILITY	-0.637***	-0.506***	-0.665***	-0.654***	-0.654***	-0.534***	-0.520***	-0.520***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
LEVERAGE	-1.008***	-0.887***	-0.972***	-0.986***	-0.986***	-0.917***	-0.916***	-0.911***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAPINT	3.271***	1.890***	3.341***	3.312***	3.309***	1.944***	1.928***	1.913***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
XLIST	1.307***		1.314***	1.303***	1.301***			
	(0.000)		(0.000)	(0.000)	(0.000)			
	(0.000)		(0.000)	(0.000)	(0.000)			
Constant	1.181***		1.711***	1.620***	1.624***			
	(0.002)		(0.000)	(0.000)	(0.000)			
Observations	80,896	80,122	80,896	80,896	80,896	80,122	80,122	80,122
Adjusted R^2	0.193	0.697	0.188	0.189	0.189	0.695	0.696	0.696
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	No	Yes	Yes	Yes	No	No	No
Industry FE	Yes	No	Yes	Yes	Yes	No	No	No
Firm FE	No	Yes	No	No	No	Yes	Yes	Yes

Table 6
Three-stage least squares estimation

This table reports results from a 3-stage least squares estimation of a system of two equations. Each pair of columns presents results for one estimation. In the first equation (columns (1) and (3)), the weighted average churn rate is regressed on the market-to-book ratio, the natural logarithm of the country's GDP per capita ratio, and firm-level control variables. In the second equation (columns (2) and (4)), the market-to-book ratio is regressed on the weighted average churn rate and firm-level controls. We account for firm effects by demeaning all variables and for time fixed effects. In columns (3) and (4), we use bootstrapped standard errors. GDP is the natural logarithm of the country's GDP per capita. SIZE, AGE, the firm's stock price (PRICE), 12-month turnover of the firm's shares (STURNOVER), and 12-month stock return volatility (VOLATILITY) are measured in natural logarithms. The other firm-level control variables are ratios. RETURN is the annual stock return, and lRETURN the lagged annual return. Variable definitions are provided in the Appendix. p-values are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
Dependent variable	Basic model		Bootstrap	
WACR		15.711***		15.711***
		(0.000)		(0.000)
MTB	-0.049***		-0.049***	
	(0.000)		(0.000)	
GDP	0.028***		0.028***	
	(0.000)		(0.000)	
SIZE	-0.054***	0.154***	-0.054***	0.154***
	(0.000)	(0.000)	(0.000)	(0.000)
AGE	-0.019***	0.670***	-0.019***	0.670***
	(0.000)	(0.000)	(0.000)	(0.000)
DIVYIELD	-0.345***		-0.345***	
	(0.000)		(0.000)	
PRICE	0.040***		0.040***	
	(0.000)		(0.000)	
STURNOVER	0.006***		0.006***	
	(0.000)		(0.000)	
VOLATILITY	0.014***		0.014***	
	(0.000)		(0.000)	
RETURN	0.036***		0.036***	
	(0.000)		(0.000)	
lRETURN	0.018***		0.018***	
	(0.000)		(0.000)	
IO		0.310***		0.310
		(0.000)		(0.112)
TANGIBILITY		-0.279***		-0.279***
		(0.000)		(0.004)
LEVERAGE		-0.962***		-0.962***
		(0.000)		(0.000)
CAPINT		2.149***		2.149***
		(0.000)		(0.000)
Constant	0.049***	-0.594***	0.049***	-0.594***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	74,015	74,015	74,015	74,015
Time FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes

Table 7

Placebo test

This table reports average coefficients from placebo tests. In column (1), the market-to-book ratio is regressed on random samples of the weighted average churn rate ($\widetilde{WACR}$) drawn from the actual sample distribution of the WACR for each firm and firm-level control variables. In column (2), the market-to-book ratio is regressed on random samples of long-term institutional ownership ($\widetilde{LTIO}$)and short-term institutional ownership ($\widetilde{STIO}$), which are jointly drawn from the actual sample distribution of the LTIO and STIO values for each firm, and firm-level control variables. Variable definitions are provided in the Appendix. Standard errors are clustered at the firm and year levels. p-values are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)
Dependent variable	MTB	MTB
$\widetilde{WACR}$	0.003	
	(0.935)	
$\widetilde{LTIO}$		0.006
		(0.944)
$\widetilde{STIO}$		0.004
		(0.976)
IO	0.738***	
	(0.000)	
SIZE	-0.268***	-0.253***
	(0.000)	(0.000)
AGE	-0.032	-0.036
	(0.681)	(0.637)
TANGIBILITY	-0.519***	-0.534***
	(0.000)	(0.000)
LEVERAGE	-0.889***	-0.920***
	(0.000)	(0.000)
CAPINT	1.878***	1.954***
	(0.000)	(0.000)
Observations	80,122	80,122
Time FE	Yes	Yes
Firm FE	Yes	Yes

Table 8
Investor horizon and valuation: The effect of liquidity

This table reports results from regressing the market-to-book ratio on investor horizon measures, liquidity variables, and interactions thereof. In columns (1) and (2), we use country-level liquidity (MTURNOVER). In columns (3) and (4), we use firm-level illiquidity (ILL). MTURNOVER is the ratio of the value of total shares traded on the country's stock market to the average market capitalization, and ILL is the Amihud illiquidity measure. MTURNOVER and ILL are standardized. SIZE and AGE are measured in natural logarithms. The other firm-level variables are ratios. Variable definitions are provided in the Appendix. Standard errors are clustered at the firm and year levels. *p*-values are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
Dependent variable	MTB	MTB	MTB	MTB
WACR	0.489***		0.593***	
	(0.000)		(0.002)	
LTIO		0.098		0.362**
		(0.530)		(0.032)
STIO		1.556***		1.786***
		(0.001)		(0.000)
WACR × MTURNOVER	0.440***			
	(0.000)			
LTIO × MTURNOVER		-0.954***		
		(0.002)		
STIO × MTURNOVER		1.224***		
		(0.001)		
WACR × ILL			-0.094***	
			(0.002)	
LTIO × ILL				0.050
				(0.407)
STIO × ILL				-0.239**
				(0.044)
MTURNOVER	-0.197***	0.045		
	(0.000)	(0.167)		
ILL			-0.005	-0.042***
			(0.775)	(0.000)
IO	0.797***		0.717***	
	(0.000)		(0.000)	
SIZE	-0.313***	-0.292***	-0.292***	-0.286***
	(0.000)	(0.000)	(0.000)	(0.000)
AGE	-0.031	-0.028	-0.070	-0.059
	(0.721)	(0.748)	(0.410)	(0.481)
TANGIBILITY	-0.527***	-0.529***	-0.484***	-0.501***
	(0.001)	(0.001)	(0.002)	(0.002)
LEVERAGE	-0.833***	-0.865***	-0.936***	-0.955***
	(0.000)	(0.000)	(0.000)	(0.000)
CAPINT	1.925***	1.941***	1.572***	1.595***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	71,097	71,097	70,521	70,521
Adjusted R^2	0.700	0.699	0.710	0.709
Time FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes

Appendix

Table A1
Variable definitions and sources

Variable	Description	Source
MTB	Ratio of the market value of assets to the book value of assets, where the market value of assets is the market value of equity minus the book value of equity plus the book value of assets.	Authors' calculations based on FactSet data
IO	Institutional ownership.	As above
WACR	Value-weighted average of institutional investors' churn rates (based on Gaspar, Massa, and Matos, 2005).	As above
$\widetilde{WACR}$	Random samples of the weighted average churn rate drawn from the actual sample distribution of the WACR for each firm.	As above
LTIO	Institutional ownership of long-term investors (based on Gaspar, Massa, and Matos, 2005).	As above
$\widetilde{LTIO}$	Random samples of the ratio of long-term institutional ownership drawn from the actual sample distribution of LTIO for each firm.	As above
STIO	Institutional ownership of short-term investors (based on Gaspar, Massa, and Matos, 2005).	As above
$\widetilde{STIO}$	Random samples of the ratio of short-term institutional ownership drawn from the actual sample distribution of STIO for each firm.	As above
SIZE	Firm size, measured as the logarithm of total assets in $US millions.	As above
AGE	Firm age, measured as the natural logarithm of the number of years since the firm was established.	As above
TANGIBILITY	Asset tangibility, measured as the ratio of property, plant, and equipment to total assets.	As above
LEVERAGE	Leverage, measured as the ratio of long-term debt to total assets.	As above
CAPINT	Capital intensity, measured as the ratio of capital expenditures to total assets.	As above
MKTCAP	Natural logarithm of the firm's market capitalization.	As above
DIVYIELD	Total dividends paid divided by the firm's market capitalization.	As above
lMTB	Natural logarithm of the lagged MTB ratio.	As above
RETURN	Stock return during the fiscal year.	As above
l RETURN	RETURN lagged by one year.	As above
GDP	Natural logarithm of a country's GDP per capita.	World Bank
PRICE	Natural logarithm of the firm's stock price.	Authors' calculations based on Compustat data
STURNOVER	Natural logarithm of the turnover of the firm's shares over the past 12 months.	As above
VOLATILITY	Natural logarithm of the stock return volatility during the fiscal year.	As above
MSCI	Dummy variable that indicates whether the firm is listed in the MSCI ACWI in the respective year.	MSCI
XLIST	Dummy variable equal to 1 if the firm is cross-listed on a major U.S. stock exchange, and 0 otherwise.	Authors' calculations based on Compustat data
Financial structure	Dummy variable equal to 0 if the financial system structure is bank-based, and 1 if it is market-based.	Levine (2002)
Accounting standard	Corporate transparency as indicated by the quality of accounting standards. The index is created by examining and rating companies' annual reports on their inclusion or omission of 90 items. Standardized value.	La Porta, López-de-Silanes, Shleifer, and Vishny (1998)

Bankruptcy costs	The costs to complete insolvency proceedings, expressed as a percentage of the bankruptcy estate at the time of entry to bankruptcy. Standardized value.	Djankov, Hart, McLiesh, and Shleifer (2008)
MTURNOVER	Ratio of the value of the total shares traded on the country's stock market to average real market capitalization (standardized).	As above
French legal origin	Dummy variable equal to 1 if the legal tradition is French common law, and 0 if it is civil law.	La Porta, López-de-Silanes, Shleifer, and Vishny (1998)
German legal origin	Dummy variable equal to 1 if the legal tradition is German common law, and 0 if it is civil law.	La Porta, López-de-Silanes, Shleifer, and Vishny (1998)
Scand. legal origin	Dummy variable equal to 1 if the legal tradition is Scandinavian common law, and 0 if it is civil law.	La Porta, López-de-Silanes, Shleifer, and Vishny (1998)
Shareholder rights	Shareholder rights index, ranging from 0 (weak shareholder rights) to 5 (strong shareholder rights). Standardized value.	La Porta, López-de-Silanes, Shleifer, and Vishny (1998)
Creditor rights	Creditor rights index, ranging from 0 (weak creditor rights) to 4 (strong creditor rights). Standardized value.	La Porta, López-de-Silanes, Shleifer, and Vishny (1998)
Rule of law	Assessment of the law and order tradition in the country produced by the country-risk rating agency International Country Risk (ICR). Ranges from 0 to 6, with lower scores for less tradition of law and order. Standardized value.	La Porta, López-de-Silanes, Shleifer, and Vishny (1998)
Judicial efficiency	Assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country-risk rating agency Business International Corporation. Ranges from 0 to 10, with lower scores indicating lower efficiency levels. Standardized value.	International Country Risk Guide (2000)
Corruption	Ranges from 0 to 10, with a high value indicating high corruption. High ratings indicate ''bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans.'' Standardized value.	Based on La Porta, López-de-Silanes, Shleifer, and Vishny (1998)
Power distance	Defined by Hofstede (2001) as the difference between the extent to which a boss can determine the behavior of a subordinate and the extent to which the subordinate can determine the behavior of the boss. A measure of inequality. Standardized value.	Hofstede (2001)
Uncertainty avoidance	Defined by Hofstede (2001) as the degree to which a society tries to control the uncontrollable and the extent to which a culture programs its members to feel uncomfortable in situations that are novel, unknown, surprising, or different from usual. Standardized value.	Hofstede (2001)
Individualism	The opposite of collectivism, defined by Hofstede (2001) as the degree to which individuals are supposed to look after themselves or remain integrated into groups, usually around the family. Standardized value.	Hofstede (2001)
Masculinity	The opposite of femininity, defined by Hofstede (2001) as the degree to which males and females differ in terms of how much importance they attach to (feminine) social versus (masculine) ego goals. Standardized value.	Hofstede (2001)
ILL	Amihud illiquidity: (ABS(RET))/VOLD (averaged over the year), where RET is the daily stock return and VOLD is daily trading volume. Standardized value.	Authors' calculations based on Compustat data