The Impact of Japanese ETF Providers and Foreign Passive Institutional Investors on the Cost of Equity of Japanese Firms

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Abstract

This paper examines the influence of ownership by Japanese exchange-traded-fund (ETF) providers and foreign passive institutional investors (PIIs) on the cost of equity (COE) for listed Japanese companies. The surge in ownership by these entities, driven by the Bank of Japan's (BOJ) unconventional monetary policy and the global trend toward passive investments frames the investigation. Using the Fama-French three-factor model, we explore the nuanced relationship between ownership structures and the COE.

Our analysis reveals a distinct correlation between ownership by Japanese ETF providers and foreign PIIs and a reduction in the COE for firms characterized by heightened market risk and lower market valuations. Additionally, we find a positive association between ownership by Japanese ETF providers, foreign PIIs, and AIIs and a company's price-to-book valuation.

Companies with low price-to-book ratios may be undervalued due to investors consistently underestimating the potential of cash and cash equivalent holdings. This aligns with stakeholder theory and alignment of stakeholder interests, as various institutional investors, including regulators and foreign entities, focus on unlocking value from these underappreciated assets. Conversely, the increased cost of equity for companies with high price-to-book ratios may signal a lack of consensus among shareholders and stakeholders.

Practically, the findings imply that Japanese ETF providers play a role in reducing the COE for Japanese companies, challenging concerns about the BOJ's policies impeding corporate governance reform. Additionally, the positive impact on price-to-book ratios aligns with regulatory initiatives aimed at enhancing governance through codes and market initiatives, ultimately contributing to the enhancement of corporate value.

Keywords: institutional shareholder, stewardship, firm-level governance outcomes, passive investment

1. Introduction

The Japanese corporate governance (CG) model is rooted in stakeholder orientation, focusing on lifelong employment and safeguarding contractual parties. Unlike other developed nations, external corporate management oversight is less prevalent in Japan (Suto and Takehara, 2018, p. 6). Company success precedes individual or shareholder wealth for managers and boards. Despite the regulatory emphasis on shareholder importance, the stakeholder-centric approach remains prominent. Domestic investors favour management as the corporation's success is prioritised over individual or shareholder wealth. Meanwhile, foreign investor activism faces challenges due to cross-ownership and civil-law system features. Regulatory differences between civil and common law countries and cultural aspects impact investor protection and information sharing, i.e., civil law typically offers less investor protection and language barriers present a challenge for foreign investors.

The Japan Revitalisation Strategy introduced reforms in 2014, shifting focus from insiders to shareholders. CG and Stewardship codes were established to enhance monitoring and engagement. While viewed positively, these reforms were not found to significantly impact the CG of companies or investor perception of listed Japanese companies (Litt, 2015; Muramiya & Takada, 2020; TSE, 2023). The Tokyo Stock Exchange (TSE) introduced initiatives to enhance corporate value, focusing on awareness, cost of capital improvement, and governance enhancement, especially for firms with low price-to-book ratios. The success of these reforms could reshape market perceptions of Japanese firms' cost of capital, but different shareholders' interests could influence the outcomes. Market perception will change because market participants will reprice the cost of capital if fundamentals and CG improve.

Japanese companies' discounted market valuation can be attributed to ineffective cash management, subpar corporate governance, and high corporate savings rates. This savings habit hinders growth potential and draws criticism from international investors for not benefiting shareholders. As a result, investors significantly undervalue Japanese firms' cash and cash equivalents, leading to lower market valuations and higher cost of equity for Japanese companies compared to global peers. This situation reflects concerns about agency costs, unproductive investments, and weak governance. Regulators must consider how distinct shareholder types have impacted market valuations via CG.

The ownership attributed to strategic or cross-shareholding is high and contributes to aligning voting shares with management interests and exacerbating agency costs. Foreign and domestic institutional investors have seen an increase in ownership in the past years. Passive investor trend[1] that emerged globally over the past decade also impacted the ownership structure of Japanese companies:

[1] Passive investment (PI) in equity markets refers to an investment strategy where an equity fund, such as an index mutual fund or an exchange-traded fund (ETF), aims to replicate stock market indices. There has been a rapid and significant growth in PI over the past decade, which has been attributed to its lower cost relative to active mutual funds and the failure by many active managers to outperform the market on a net-of-fees basis over the past decade which has led to the rising popularity of diversified strategies and of PI (Tokic, 2019; Azar, 2020).

on the one hand, the Bank of Japan (BoJ) uses ETFs in its monetary policy; on the other hand, investors globally buy investment products replicating market indices, such as Topix index. As a result, the ownership structure of Japanese companies changed.

The Bank of Japan (BOJ) deploys unconventional monetary policy by purchasing equity ETFs, mainly TOPIX-linked ETFs, aiming to enhance equity values and encourage investments[2]. However, BOJ's purchases indirectly impact the ownership structure of firms that are constituents of the TOPIX index: as a result of BOJ's policy of purchasing ETFs through external providers, ETF providers have collectively accumulated around 10% of the overall market capitalisation of the index as of 2022[3]. The BOJ does not oversee how the changed ownership structure impacts the CG of TOPIX firms. Therefore, there is a risk that BOJ's monetary policy counterbalances regulatory efforts to improve CG. The implications of Japan's institutional ownership extend globally due to parallels with Europe's growth and stakeholder-oriented corporate governance.

The influence of the Bank of Japan's (BOJ) ETF purchases on passive ownership in Japan has sparked research interest. Studies primarily examine the market structure implications of enhanced liquidity due to ETF operations while also criticising BOJ's substantial shareholding impact. In Japan, domestic ETF providers dominate the ETF space, with a few foreign ETF providers[4]. Limited research focuses on the roles of domestic and foreign ETFs in CG of investee companies. At the same time, foreign active institutional investors' activism has seen little success but exit threats enhanced pricing transparency and improved valuation characteristics of Japanese firms. It is also important to distinguish between foreign active and passive institutional investors, as the two types of shareholders might have different goals. However, the released Stewardship codes in Japan could support aligning goals across institutional investors.

We estimate domestic ETF providers annually receive about 0.36 trillion yen ($2.6 billion) in management fees as a result of BOJ's monetary policies. Regulators should ensure that ETF providers spend this money on improving CG which would reduce firms' cost of equity via stewardship and supporting CG reform in Japan. Finally, misalignment in interests among distinct foreign and passive ETF providers, foreign institutional investors and strategic investors emphasises that the objectives of the Stewardship Code have not effectively engendered a convergence of investor interests thus far.

[2] The BoJ may also provide market when there are outflows from Japanese equities which can also be triggered by monetary policy and its impact on yen and hence foreign investment outflow. We do not cover these aspects of BoJ's policy as as this is not the scope of the paper

[3] Authors calculated share of ownership by ETF providers using bottom-up approach. The BoJ doesn't explicitly say that they buy from domestic ETFs; these calculations are based on all ETF providers (domestic and foreign).

[4] Blackrock is the only provider of Topix-tracking ETFs that is listed in Japan, making it a more likely beneficiary of BOJ buying. However, foreign institutional investors can also create Topix-tracking ETFs listed outside Japan

This paper investigates how ownership by domestic ETF providers and foreign passive institutional investors (PIIs), which increased on the back of BOJ's unconventional monetary policy and global passive investment trend, impacts the cost of equity of listed Japanese companies using the Fama-French three-factor model. This paper also considers how interactions between domestic ETF providers, foreign PIIs, foreign active institutional investors (AIIs) and strategic institutional investors contribute to the impact.

The Fama & French three-factor model assumes that the cost of equity can be explained by three risk factors, namely, market, size and valuation (Fama & French, 1993). A common approach for estimating this model is regressing equity returns onto the market excess (over a risk-free rate) returns (MER), small-minus-large (SML) and high-minus-low (HML) portfolios. Using the three-factor model, we estimate MER, SML, and HML betas for Japanese companies. For an individual company, the beta coefficient shows the exposure of a particular factor to the cost of equity of this company. For instance, an elevated MER beta indicates that the company has high exposure to market risk, while a high/positive or low/negative SML beta denotes that the company's returns are predominantly explicable by its small/large size. Similarly, a high/positive or low/negative HML beta indicates that the company's returns are primarily attributable to its low/high market valuations, such as the price-to-book ratio, which is the metric used in this analysis.

First, we investigate the impact of ownership by domestic ETF providers and foreign PIIs on the cost of equity of Japanese companies. The empirical analysis reveals a discernible association between such ownership and a reduction in the cost of equity among firms characterized by elevated market risk (high MER beta) and lower market valuations (high HML beta). Similarly to Katagiri et al. (2022), we find that ETF purchases decrease MER beta. While Katagari links changes in beta to specific periods of BoJ's ETF program, we provide further evidence linking declines in betas to ownership by domestic ETF providers and thus to BoJ's monetary policy.

Moreover, we find that all investors that we analyse, Japanese ETF providers, foreign AIIs and PIIs, negatively impact the HML beta of Japanese companies. We interpret the impact from ownership of these investors as that they decrease the cost of equity for companies with high book-to-price (low price-to-book) and increase the cost of equity for companies traded at low book-to-price (high price-to-book). Companies with low price-to-book could include those companies where investors systematically undervalue the potential of cash and cash equivalent holdings. Evidence that led by the BoJ domestic ETF providers decreased the cost of equity for these companies could indicate that the BoJ's policies are not disruptive to the CG reform, against fears of some critics (Whiffin, 2019; Koll, 2021).

In addition, our findings reveal that ownership by Japanese ETF providers, foreign PIIs and AIIs, is positively associated with a company's price-to-book valuation. This alignment may be perceived by regulators as supportive of their initiatives to enhance corporate governance (CG) and shareholder environment via CG and Stewardship codes and TSE initiatives to enhance corporate value, especially

for companies with a particularly low price-to-book-value ratio. Consequently, the passive investment trend might be linked to increasing price-to-book valuations and lowering the cost of equity for some companies in Japan.

Companies with a low price-to-book ratio may encompass those where investors consistently undervalue the potential of cash and cash equivalent holdings. The evidence that various types of institutional investors decrease the cost of equity for companies with low price-to-book ratios could be explained by an alignment of interests, as regulators, domestic ETF providers, and foreign investors focus on unlocking value from undervalued cash and cash equivalent holdings. Conversely, the increased cost of equity for companies with high book-to-price ratios may imply a lack of consensus among shareholders and stakeholders.

Moreover, this research shows that foreign investors' impact varies based on the investment approach, underscoring the need to distinguish between different types of foreign investors. This aspect has been overlooked in previous studies on their influence in Japan.

We observe that ownership by foreign AIIs influences the SML beta of investee companies, with no discernible impact from foreign PIIs or domestic ETF providers. This could be interpreted as the cost of equity being affected by foreign AIIs in a manner where they decrease the cost of equity for small-cap companies while increasing it for larger companies, assuming constant exposures to other factors. This reduction in the cost of equity for small caps may be attributed to the monitoring capabilities of foreign AIIs, encouraging improvements in governance and performance, aligning with the notion that smaller firms may benefit from the expertise of foreign investors. Conversely, the increase in the cost of equity for large caps associated with foreign AIIs ownership may be explained by agency costs and misalignment of interests with other shareholders, reflecting the complexity of institutional ownership dynamics in shaping firms' cost of capital.

The remainder of our paper is structured as follows. Sections 2 and 3 provide an overview of the research context and academic literature. Section 4 presents the data and methodology used for the research. Section 5 discusses the results. Finally, section 6 discusses the research limitations and conclusions and discusses areas for future research.

2. Research context and background

Stakeholder-oriented model in Japan and CG

Japan has a stakeholder-oriented CG model that emphasises life-long employment and the protection of other contractual parties. Compared to other developed countries, the outside monitoring of corporate management of the business is less common in Japan (Suto and Takehara, 2018, p. 6). For managers and boards in Japan, the corporation's success is prioritised over individual or shareholder wealth. Moreover, despite the emphasis on the importance of shareholders and the increase of dividends to the shareholders by the regulators and academics, the basic notion of stakeholder-oriented corporate governance remains pervasive (Renou et al., 2023).

Japan's CG system heavily relies on the board of directors, who are mainly promoted within the firm (Franks et al., 2014). The stakeholder model of CG in Japan commonly includes insider-dominated boards of directors, substantial cross-shareholdings among affiliated firms, and the main bank that provides loan capital to companies and is an influential shareholder (Yoshikawa & McGuire, 2008). Moreover, in Japan, domestic investors tend to support company management and investor activism by foreign investors has been unsuccessful (Becht et al., 2021). This lack of success can be attributed to significant cross-ownership between affiliated firms and business dealings between asset managers and corporations. Moreover, civil-law countries, i.e., Japan, typically offer less investor protection and have weaker enforcement than common-law countries such as the UK or USA (La Porta et al., 1998; Aman et al., 2021). In addition, close relationships between stakeholders in civil law countries mean information asymmetry can be resolved via private communication rather than public disclosure (Aman et al., 2021). Another explanation is the cultural aversion to "losing face", as Japanese investors are averse to contributing to the humiliation of elected directors (Becht et al., 2021). Becht et al. (2021) find that, while public engagement failed, 'quiet engagements' where an investor or a service provider, such as a proxy voter, reach out to the company management privately have been more successful.

The regulatory framework that facilitates shareholder engagement and timely information disclosure to support investment decisions would be considered good for investors as investors would bear less costs due to information asymmetry. Where such regulatory framework is missing, investors would have to bear the extra cost of additional investments to support decision-making amid a less supportive investment environment. This cost would increase the cost of capital of firms as investors would need to factor in extra costs associated with geographic constraints and cultural and language barriers, as the information available to foreign institutional investors is limited compared to domestic investors. Given that the regulatory framework in Japan is less supportive for some investors, this would directly impact the cost of capital along with other proxies of market valuation of Japanese companies.

However, reforms introduced along with the Japan Revitalisation Strategy, announced in 2014, have partially shifted the emphasis of corporate governance from insiders to shareholders (Prime Minister of Japan and his Cabinet, 2014; Becht et al., 2021). These reforms include introducing Japan's CG and Stewardship codes, which intend to reduce cross-shareholding, foster board independence, and improve monitoring by shareholders.

Japan's CG Code was compiled in 2014 by The Council of Experts Concerning the Corporate Governance Code[5] , revised in 2018, and then again in 2021. In 2014, the CG code was formulated as

[5] The Japan Revitalization Strategy approved by the Cabinet in June 2014 specified as one of its measures the establishment of a council of experts of which the Tokyo Stock Exchange and the Financial Services Agency would act as joint secretariat, aiming to prepare the key elements of the Corporate Governance Code by around

part of Japan's economic growth strategy and rested on five principles: securing rights and equal treatment of shareholders, appropriate cooperation with stakeholders other than shareholders, ensuring appropriate information disclosure and transparency, responsibilities of the board and dialogue with shareholders (The Council of Experts Concerning the Corporate Governance Code, 2014; p.8-9). The Stewardship code requires institutional investors such as pension funds, trust banks or life insurance companies to promote the sustainable growth of their investee companies through constructive engagement with companies from a mid-to-long-term perspective. Unlike the CG code for firms, accepting the Stewardship code by institutional investors is voluntary (Public Relations Office Government of Japan, 2021). Similar to the CG code, the Stewardship code adopts the "comply or explain" (comply with the principles or explain why they are not adhered to) approach. Japan's Stewardship code was compiled in 2014 and revised in 2017 and 2020.

These reforms received positive reviews in the literature as researchers associated the CG and Stewardship codes with improvements in CG (see Muramiya & Takada, 2020; Litt, 2015). However, these reforms failed to improve indicators such as the market valuation of Japanese companies. As a result, on January 30, 2023, TSE published its' future initiatives to motivate listed companies to take action to improve their corporate value in the mid-to-long term (TSE, 2023). These initiatives include raising awareness, reducing the cost of capital and increasing the stock price, particularly among companies with a price-to-book-value ratio below 1x, and improving the quality of CG of listed companies (Saito and Mizukoshi, 2023).

If these reforms were found to provide greater support for shareholders, this could be reflected in a lower cost of capital for Japanese companies. However, the impact would depend on the incentives and interests of the type of shareholders, as their goals may vary.

Market valuation of Japanese companies

The discounted market valuation of Japanese companies has been attributed to poor cash and cash equivalents management and poor CG of Japanese companies (Yanagi, 2018, p.13). In addition, Japanese firms' high corporate savings rate is considered to be poor capital management and is viewed as holding back growth by preventing more efficient use of resources. Moreover, international investors frequently criticise Japanese companies for not returning value to shareholders as the cash is neither reinvested into the business nor paid back as dividends to shareholders. As a result, market participants value the cash and cash equivalents held by Japanese companies at a discount of approximately 50% (Yanagi, 2018, p.13). They, therefore, value Japanese companies at a significant discount compared to

autumn 2014 for the Tokyo Stock Exchange to newly prepare the Corporate Governance Code in time for the 2015 season of general shareholder meetings. This led to the formation of the Council of Experts Concerning the Corporate Governance Code in August 2014, with the Financial Services Agency and the Tokyo Stock Exchange serving as joint secretariat (The Council of Experts Concerning the Corporate Governance Code, 2014).

their international peers on a price-to-book basis (market capitalisation divided by equity book value on an accounting basis). Furthermore, academic literature links good CG with reducing excessive corporate savings by putting pressure on managers to act in shareholders' interests (Chie & Giovanni, 2017). Therefore, the poor valuation of Japanese companies' cash reflects concerns about agency costs related to excessive cash holdings, value-destructive investments, and poor CG.

Cross-holders generally comprise a part of voting shares that are likely to vote in line with management which results in executives' tendency to undermine minority shareholders' interests in their management, hence deepening agency costs (Renou et al., 2023). Market participants value Japanese companies' cash holding at an even higher discount when factoring in the outstanding balance of investment securities held on the balance sheet and uninvested in value generation, including cross-shareholdings, as cross-shareholding relates to strategic investment as opposed to value-generating investment (Yanagi, 2018, p.38). Although the average level of cross-shareholding is not high (e.g., at 10% or lower) in the Japanese market, Muramiya & Takada (2020) find that even such a small percentage of cross-shareholding exerts a material impact on financial reporting and the information environment for firms. They find that cross-shareholding entrenches managers and discourages them from reporting contract-efficient financial reporting and exacerbates information asymmetry in the market.

Bank of Japan's ETF Purchases

The BOJ's unconventional monetary policy includes the purchase by BOJ's of equity ETFs. Since 2010, the BoJ has invested approximately 35 trillion yen in ETFs, or 5% of Japan's total market value of all listed stocks (Katagiri et al., 2022). In 2010, the BoJ specified that it would buy ETFs tracking the Tokyo Stock Price Index (TOPIX) or the Nikkei 225 Stock Average. ETFs tracking these two indices were mainly the target of BOJ purchases of ETFs until 2021, after which the BoJ shifted its focus solely to funds tracking the Topix (BoJ, 2010; BoJ, 2021). The BOJ's policy reports explain ETF purchases as interventions to boost equity values, and to reduce firms' costs of capital and stimulate their investment. Consistent with the former, the BOJ appears to time ETF purchases to occur on days when market prices drop (Charoenwong et al., 2021).

These ETF purchases have contributed to changes in the ownership structure of Japanese companies. As of July 2022, the BoJ owns 63 per cent of all locally listed ETF assets (Boyde, 2022)[6]. However, since the BOJ does not buy stocks directly but via investment products, it does not appear on the shareholder register of any companies purchased via ETFs. Moreover, the BOJ does not disclose the names of investment managers that it buys ETFs from. Instead, the BOJ only provides high-level guidelines on purchases, such as period and the overall amount invested[7]. Therefore, if one wanted to

[6] Boyde refers to indirect ownership of companies via ETF purchases
[7] For examples of challenges to estimating BOJ's buying, see Charoenwong et al. (2021)

assess the BOJ's indirect ownership, one would have to make assumptions based on the timing and value of buying done by the BOJ.

ETF providers - beneficiaries of BoJ's ETF purchases

We estimate that as of December 2021, ETF providers held approximately 76 trillion yen in constituents of the domestically listed ETFs tracking the TOPIX index. Bank of Japan reported having 36 trillion yen in ETFs as of December 2021 as a result of multi-year purchases of ETFs tracking the Tokyo Stock Price Index (TOPIX) or the Nikkei 225 Stock Average. The TOPIX index represents the broader Japanese stock market and contains about 2,000 stocks including constituents of Nikkei 225 and Nikkei 425. Therefore, we can derive that 76 trillion yen is the approximate size of the Japanese ETF market, and the Bank of Japan holds about 50 per cent of it, based on AUM[8][9]. Moreover, it means that the monetary policy was the most significant driver of the passive investment trend in Japan. Among providers, the largest players are Nomura, which holds 27 trillion yen, or 36 per cent of the total, Asset One, which holds 15 trillion yen, or 20 per cent, followed by Nikko, which holds 13 trillion yen and Daiwa, which owns 12 trillion yen or 17 per cent and 15 per cent, respectively, as of December 31 2021. ETF providers hold about ten per cent of the overall market capitalisation of firms which are constituents of the Topix index as of December 31 2021. Nomura holds approximately four per cent of the overall market capitalisation, while Asset One, Nikko and Daiwa hold about one per cent each. We, therefore, conclude that the four largest ETF providers have been the largest beneficiaries of the BoJ's purchases of ETFs.

On average, the annual fee for ETFs is about 1%; therefore, domestic ETF providers receive 0.36 trillion (36 trillion yen x 1%), effectively "free money" that providers could partially allocate to stewardship activities. If this money is not reinvested for the good of CG, that would indicate that BOJ's monetary policies are an impediment to CG reform in Japan.

Relevance of Japanese experience for practitioners globally

There are many reasons why an investigation into the impact of institutional ownership in Japan is of relevance for practitioners globally. Acharya et al. (2019) document parallels between Japan's "lost decades" and Europe's slow growth, including "ultra-accommodative central bank policies and zombie lending (i.e., cheap credit to impaired firms) by undercapitalised banks." Banerjee and Hofmann (2018) document a growing Japanese-style "zombification" in OECD economies. Moreover, many European countries have a model similar to Japan's stakeholder-oriented CG model. Historically,

[8] Our bottom-up estimate is in-line with estimate provided by ETFGI in a report on Japanese ETF market: "The Japanese ETF/ETP industry had 235 ETFs/ETPs, with 269 listings, assets of $556 Bn (72 trl yen)" (Furh, D., 2021, p.1)

[9] Some institutional share classes allow investors to invest larger amount vs number of shares of an ETFs. Our estimates disregard the possibility of BoJ buying such share classes as we do not have access to transparent data of ownership of ETFs which are domestically listed

policies implemented by Japanese regulators were reapplied by other countries before and are likely to be in the future. Understanding the pros and cons of these policies benefits regulators and investors globally.

3. Literature review and hypothesis development

Impact of Institutional ownership on firms and their cost of capital

We distinguish between positive and negative impacts on the cost of capital. The following theories explain the impact leading to an increase in cost of capital:

a) According to agency theory, the conflict of interest between shareholders (the principals) and managers acting on behalf of shareholders (the agents) and related agency costs[10] arise due to the separation of ownership from control, different risk preferences, information asymmetry and moral hazards. Where information asymmetry and risk of moral hazards are high, shareholders need to invest in monitoring of managers, and hence, the cost of capital is likely to be higher. Similarly, from the stakeholder theory perspective, a conflict between principal and agent can occur between senior management and stakeholders when stakeholders' goals are dispersed (Kay and Silberston, 1995). In Japan, a conflict more commonly arises between domestic stakeholders and foreign shareholders.
b) Moreover, the interests of strategic shareholders, other domestic shareholders and stakeholders can conflict with the interests of foreign shareholders, which is more common in Japan, given the alignment between managers and stakeholders. In the context of the CG system with weaker protection of minority shareholders' interests, foreign owners encounter obstacles in terms of language. As a result, foreign ownership might increase the cost of equity capital (Muslim & Setiawan, 2021[11]).

The following theories explain the impact leading to a decrease in cost of capital:

c) From the stewardship theory perspective, managers act in the interest of stakeholders, including foreign investors. Foreign owners tend to be more vigilant in protecting their interests than domestic investors, demanding better CG practices. In addition, foreign ownership can also give confidence to company partners and potential investors. As a result, foreign ownership can lead to a lower cost of equity capital. For example, Huo et al. (2021) find that institutional investors with more extended holding periods and higher shares of ownership are negatively associated with the cost of capital in China's capital markets. Like Japan, China has a civil-law regulatory system and ownership

[10] Agency cost is the internal expense resulting from conflicts of interest between principals and agents in an organization; it is hidden in any decision which is not aimed at maximizing company profit (Anh Huu et al., 2020).
[11] Although the paper is based on Indonesian market, theoretical framework that authors propose is applicable to the case of Japan

concentration in the hands of insiders is common. Compared with nonstate-owned enterprises, the negative influence of institutional investors on the cost of capital is more significant in state-owned enterprises. Institutional investors can play a more positive and effective governance role in state-owned enterprises. Huo et al. (2021) highlight that ownership concentration weakens the negative influence of institutional investors on the cost of capital.

d) On the other hand, where domestic investors represent a firm's ownership structure, the information asymmetry is minor as these investors would not face challenges related to understanding the information. Hence, where domestic investors' ownership is large and foreign investors' ownership is low, the impact on the cost of capital could be negative as domestic investors do not have to pay the fee for understanding the information. Moreover, domestic investors could facilitate efficient monitoring and enforcement because they do not face cultural or language barriers (Aman, 2021).

Cost of equity and market, size and valuation risk-factors.

The Fama-French (1992) thee factor model identifies that the cost of equity can be explained by three risk factors, namely, market, size and value (book-to-market equity) risk factors[12]. Academic researchers and practitioners observe that risk premia can vary significantly over time, albeit the timing of risk factors presents a challenge (see Smith and Timmermann, 2022 or Asness et al., 2017). Practitioners such as institutional investors commonly view assets through their exposures to risk factors (e.g., Bass et al., 2017). Similarly, a practical approach to analyse the cost-of-equity drivers of Japanese companies would be to evaluate exposures to risk factors (see Gormsen and Huber, 2020).

Iwasawa and Uchiyama (2014) discovered that the market beta[13] anomaly observed in the Japanese market can be ascribed to the actions of foreign institutional investors rather than domestic ones. When these foreign institutional investors ramp up their investments, they tend to favour high-beta stocks over low-beta ones. Conversely, when they scale back their investments, they are more inclined to sell high-beta stocks compared to low-beta stocks. Therefore, it is intuitive that domestic and foreign institutional investors impact the cost of equity of investee companies differently (as will be hypothesised in the text below).

The size of a company tends to be negatively related to the cost of capital such that smaller companies might have a higher cost of capital (see Weston, 1972, Scherer, 1973; Alberts & Archer, 1973). Larger companies benefit from economies of scale in production and are more resilient through an economic cycle, therefore investors might attribute higher investment risk to small caps and would expect a higher return on investment in smaller companies. Furthermore, established companies

[12] There is a broad range of academic research providing risk models for cost of equity (see Gormsen and Huber, 2020). In the methodology section we explain why we select the Fama-French three factor model.
[13] Market beta can be referenced by market excess return beta measured by the Fama-French three-factor model, which is discussed in Section 4. Data and research methodology.

entering a new industry have a cost advantage over new entrants and single-product companies in the same industry. Alternatively, if size is not the primary factor for the observed relationship, a negative relationship between company size and cost could be due to smaller companies being more concentrated in industries with unstable demand, indicating that a company's risk is closely tied to its industry (Alberts & Archer, 1973; Sullivan, 1978). On the other hand, small caps may have fewer governance issues than larger firms because entrepreneur-managers, who own substantial stakes in these companies, tend to have aligned interests with outside shareholders. Additionally, the entrepreneurial nature of small caps can lead to operational efficiencies and better resource coordination. Thus, if investors recognise these advantages, smaller companies might see these advantages reflected in their cost of equity, (Switzer & Mingjun Tang, 2010). Alternatively, some investors might be more prone to investing in companies that are constituents of large-cap market indices as they are tracking these indices (Miyajima et al., 2015).

Cadamuro and Iwaisako (2023) examine value premiums in the Japanese market and find that the recent decline in value factor[14] returns is mostly explained by the unpredictable decline in the performance of value stocks relative to growth stocks globally, after the Global Financial Crisis in 2008-2009. Qadan and Jacob (2022) show that the value premium correlates with and is predictable by investors' sentiment and appetite for risk. Kang et al. (2010) observe that domestic and foreign investors evaluate domestic stocks via different models and thus arrive at different valuations for them; consequently, the two investor groups are attracted to different sets of domestic stocks. Therefore, given the trend where growth stocks outperformed value stocks, the global (i.e., foreign) investors' sentiment and risk appetite towards value stocks in Japan could have declined, while domestic investors could have been driven by other trends.

Impact of ETF buying by BOJ

The academic research into the rise in passive ownership in Japan (which resulted from the extensive ETF buying by BOJ) has focused mainly on the impact on the market structure, e.g., intraday stock returns, equity risk premium, stock valuations or resultants share issuances (for example, Katagiri et al., 2022, Charoenwong, 2021; Harada & Okimoto, 2021; Hattori & Yoshida, 2020). For instance, Katagiri et al. (2022) find that ETF purchases decreased the market beta, leading to a decline in Japanese companies' cost of equity. However, many studies focus on the impact of improved liquidity on the

[14] Investors focusing on the value factor choose stocks by considering market valuation metrics like price-to-book. This investment strategy is founded on the belief that stocks deemed cheaper based on such metrics tend to outperform their pricier counterparts. In contrast, growth stocks represent equities issued by companies projected to undergo significant increases in revenue, earnings, or other key financial metrics. These growth stocks are commonly juxtaposed with value stocks, which are linked to more established companies that might be undervalued according to fundamental measures.

back of ETF operations as opposed to the long-term impact arising from the impact ETF buying has on ownership structure.

The BOJ has been criticised for the unconventional monetary policy that led to the Bank's significant shareholding across many companies of the indices underlying ETF products. For example, the Financial Times estimated that "BoJ held some 70 per cent of the free-float stock of Uniqlo owner Fast Retailing, or 18 per cent of the company's total shares in issue in late 2018" (Whiffin, 2019)[15]. Moreover, the BOJ has been criticised for reducing the free-float[16] in the market, as it "owns more than one-third of the free-float in many of Japan's leading companies" (Koll, 2021).

Fewer papers discuss the implications for CG. For example, Sai and Yamada (2021) show that passive ownership (resultant from ETF buying) can reduce agency costs and affect CG such that firms with high passive ownership are more likely to remove anti-takeover defences, adopt executive stock options, have a high ratio of outside directors and female board members, and have a small board size. On the other hand, Charoenwong et al. (2021) find that BOJ's ETF buying can "aggravate the propensity of ill-governed firms to invest inefficiently" (p. 16).

H1: Higher ownership by Japanese ETFs providers decreases the cost of equity of Japanese companies

If the proposed hypothesis is true, then the monetary policy by the BoJ also assists regulators in their attempts to reduce the cost of capital for Japanese companies and make domestic companies more attractive to investors. However, if ownership by ETF increases the cost of equity, this would mean that regulators' efforts to facilitate better CG and a better environment for shareholders (which would be associated with a lower cost of equity) are being offset by the central bank's monetary policy.

Impact of foreign institutional investors

The share of ownership by foreign investors has been increasing over the past decades and stands at about 30% in 2021 (JEG, 2021, p.3). These changing dynamics led Japanese firms to adjust their relationships with stakeholders and revise their understanding of shareholder relationships and ownership (Suto and Takehara, 2018, p. 9).

Miyajima et al. (2015) observe two competing views on the role of increased foreign ownership. The positive view is that foreign investors have high monitoring capability and encourage

[15] As of 31 August, 2022 the largest institutional shareholders of Fast Retailing are The Master Trust Bank of Japan, Ltd. (22.4%) and Custody Bank of Japan, Ltd. (10.9%) – both are trust service providers. However, it is not reported how much assets BOJ holds in these trusts.
https://www.fastretailing.com/eng/ir/stockinfo/breakdown.html

[16] Free float represents listed shares deemed to be available for trading in the market. The critics view BOJ's buying out of free-float as poor signal for active ownership as BOJ does not issue any guidance for corporate governance of companies it indirectly owns.

improvements in the governance arrangement of firms, resulting in higher performance. Conversely, the negative view is that they have a strong bias in their investment strategies and are less committed to a particular firm since they are mainly invested in the Japanese market as a part of a strategy of international diversification of their investment portfolio and face asymmetric information problems. Miyajima et al. (2015) find evidence supporting foreign institutional investors' positive impact on Japanese firms' performance. However, the authors also flag those disparities in firm characteristics such as size, reputation in foreign markets, and performance cause the ownership structure to differentiate by means of institutional investors' stock preferences and firms' self-selection regarding capital policy and management reform. As a result, foreign ownership increased significantly in firms with high market capitalisation, such as firms that are constituents of the MSCI index that represents over 200 largest companies in the Japanese market, as opposed to TOPIX, which contains about 2000 companies[17].

Nemoto (2022) observes that firms with large revenue exposures to the domestic market tend to be critical and unwelcoming of foreign investors. Nemoto points out that Japanese companies do not view foreign shareholders as a threat because of cross-shareholding and low free-float, which passive institutional investors largely dominate if only activist investors can present a threat and their ownership is low. On the contrary, companies with a large portion of profits coming outside Japan value the relationship with foreign shareholders[18].

However, it is important to distinguish that foreign investors can be passive and active, and their intentions could differ. So far, a vast body of academic research focused on foreign investors without separating foreigners into passive and active. Various studies investigate the impact of institutional investors on the CG of Japanese companies they invest in. Mizuno (2010) finds that foreign institutional investors' influence is greater than that of domestic investors, albeit as of the period used in the dataset, 2004 and 2007, foreign investors do not present a material impact on CG and firm performance. A decade later, Sakawa and Watanabel (2020) find that institutional investors increase firm value, moreover, that foreign investors effectively play monitoring roles in Japan. Kabir et al. (2020) suggest that institutional and foreign shareholdings increase a firm's risk appetite and the chance to default on Japanese companies, indicating that foreign investors increase the cost of equity.

H2: Foreign AIIs contribute positively, and foreign PIIs contribute negatively to the valuation of a company with significant non-domestic revenue exposure

Given a smaller share of holdings by foreign PIIs in Japanese companies, they could be less incentivised to monitor CG as the impact on their investment portfolios would be small. Several studies

[17] The MSCI Japan Index is designed to measure the performance of the large and mid cap segments of the Japanese market. With 237 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in Japan (MSCI, 2023).

[18] Nemoto conducts a qualitative study that explored ten large Japanese companies' investor relations' perception of influence by foreign investors on CG.

argue that institutional investors partially cut costs by spending less on stewardship (Bebchuk et al., 2017; Strampelli, 2018; Boone et al., 2019; Bebchuk and Hirst, 2019).

Shareholder engagement by Institutional Investors

Becht et al. (2021) discuss that, historically, activist engagement[19], which foreign institutional investors practice, has been unsuccessful in Japan as Japanese investors tended to support company management (see also Buchanan et al., 2014; Buchanan et al., 2020). On the one hand, this lack of success can be attributed to significant cross-ownership between affiliated firms and business dealings between asset managers and corporations. Another explanation is the cultural aversion to "losing face", as Japanese investors are averse to contributing to the humiliation of elected directors (Buchanan et al., 2020). However, Buchanan et al. (2020) note that activist interventions harm rather than improve management effectiveness and conclude that foreign activist investors' attempts "to extract [shareholder] value were seen simply as extortion" (p.48).

While activism is unsuccessful, active institutional investors can leverage their stake and threaten "exit" to get through to the management. David et al. (2022) note that exit by foreign minority shareholders in Japan can have an inordinate influence on share prices and thus they can leverage their stake to influence company management. Foreign minority shareholders rely more on financial reports to perform valuation analyses and monitor firm performance and may exit in reaction to negative public information in financial statements. David et al. (2022) find evidence linking foreign investors' "exit" threat to Japanese firms' income smoothing and increase of information transparency.

Becht et al. (2021) find that, while public engagement failed, 'quiet engagements' where an investor or a service provider, such as a proxy voter, reach out to the company management privately have been more successful. Notably, the Japanese Stewardship Code specifically covers states that service providers (such as proxy voting advisors and investment consultants for pensions) should contribute to the enhancement of the functions of the entire investment chain by appropriately providing services for institutional investors to fulfil their stewardship responsibilities (Takahashi, 2020; The Council of Experts on the Stewardship Code, 2020). Masumoto and Takeda (2022) investigate the impact of market reactions to proxy advisors' recommendations against takeover defence measures and find that the relationship is stronger when firms have a higher shareholding ratio of foreign investors.

While most institutional investors have access to proxy advisors, passive investors are likelier to follow proxy advisors at a larger scale. For instance, as portfolios of passive investors are larger in terms of constituents compared to more concentrated portfolios of active investors, they are more likely to use proxy advisors where they cannot do their own analysis. At the same time, active investors can allocate to Japanese equities as a regional strategy rather than on the basis of company selection

[19] Activism engagement is when institutional investors publicly engage with companies,

(Miyajima et al., 2015). Therefore, it is also possible that foreign active investors will be using proxy advisor services more commonly as they would be less concerned with company-level performance. In addition, many active, passive investors, both domestic and foreign, and proxy advisor service providers are signatories to the Japanese Stewardship Code. Therefore, their stewardship objectives are likely to align with the proxy advisor, and hence, their monitoring of investee firm CG would align, leading to a reduction of principal-principal conflict and a decrease in the cost of capital. If this is the case, the "interactive" effect from the coexistence of domestic ETF providers, foreign PIIs and AIIs is likely to impact the cost of capital negatively.

H3: Interaction between Japanese ETF providers, foreign PIIs, foreign AIIs and strategic investors is likely to reduce the cost of capital

4. Data and research methodology

We use data and definitions from the Refinitiv Thomson Reuters Eikon (RTRE) database. We select firms constituting the TOPIX from 2010–2021. We select TOPIX because BOJ buys ETFs tracking this index. TOPIX is a free-float adjusted market capitalisation-weighted index[20]. The start date is determined predominantly by the BOJ buying of ETFs and by the emergence of the passive investment trend globally. We do not exclude any companies from the dataset based on their tenure in the index, but we exclude companies with missing CG data for all years. The data frequency is annual and taken as of calendar year-end.

Investor types

We use four types of institutional investors: domestic ETF providers, foreign ETF providers, foreign active institutional investors and strategic shareholders.

Domestic ETF providers

Nine domestic and international institutional investors offer ETFs tracking the Topix index out of 30 ETFs that track Japanese Equity Market indices listed at Japanese stock exchanges [21] [22]. Out of nine providers of Topix-tracking ETFs, eight are domestic[23]: Daiwa Asset Management[24], Nomura Asset Management, Nikko Asset Management, Mitsubishi UFJ Kokusai Asset Management, Asset Management One, Norinchukin Zenkyoren Asset Management, Sumitomo Mitsui DS Asset Management. We aggregate the holdings of these domestic ETF providers. In this research, we assume that domestic providers have a homogeneous approach to stewardship activities.

[20] https://www.jpx.co.jp/english/markets/indices/topix/
[21] Ten track Nikkei 225 and seven track Nikkei 400; data taken from the Japan Exchange Group website: https://www.jpx.co.jp/english/equities/products/etfs/issues/01-01.html
[22] The remaining five ETFs track indices which are not included in the scope of BoJ's ETF buying
[23] BlackRock Japan is the only foreign asset manager that is licenced to offer Topix-tracking ETFs listed in Japan.
[24] Daiwa Asset Management has two listed ETFs that track Topix: Daiwa ETF-TOPIX and iFreeETF-TOPIX(Quarterly Dividend Type)

Foreign Active and Passive institutional investors

Foreign ownership in Japanese companies is mainly by institutional investors as most foreign retail investors are likelier to invest in Japanese companies via investment products rather than directly buying Japanese companies. We obtain company-level foreign ownership data via Bloomberg. Blackrock, SSGA and Vanguard are the largest passive institutional investors (Bebchuk and Hirst, 2019). We proxy holdings by foreign passive institutional investors with combined ownership of Blackrock, SSGA and Vanguard at a company level. We then subtract ownership by foreign passive institutional investors from total foreign ownership and obtain a proxy for foreign active institutional investors at a company level.

Strategic shareholders

RTRE classifies shareholders by investor type and investment orientation into active and passive investors[25]. Strategic entities are those holding shares to gain market share and/or have control over the company. Strategic entities are mainly Japanese institutional investors.

Ownership data

RTRE ownership data represent consolidated shareholder holdings from different ownership sources, e.g., global stock exchanges, mutual fund portfolios, corporate websites, direct company contacts, and long-standing relationships with institutional investors (Refinitiv 2019, p. 6-8). The ownership data might not aggregate to 100 per cent for an individual company. The data are collected using multiple sources and methods, including shares held by global mutual funds, however, it is not possible to identify all private or retail shareholders below the notifiable disclosure threshold who, in the aggregate, may hold a sizable proportion of a company's shares (Refinitiv 2019, p. 15). Based on the RTRE data, we define PIIs as investment managers with their investment orientation categorised as passive.

For example, Company A might have data on 200 shareholders in a given year, of which 150 are classified as investment managers. Of these 150 investment managers, 100 are classified as having a passive investment orientation. We then select ownership data for these 100 investment managers with a passive investment orientation and calculate the consolidated share of ownership by all PIIs. We perform a similar exercise for all companies in our dataset.

Institutional investors interaction

We proxy institutional investors interaction with a product of their ownership in per cent. Thus, we have proxies for the following six interactions: domestic ETF providers with foreign passive

[25] At a high level, RTRE classifies investors into Investment Managers, Brokerage Firms, Strategic Entities, and Funds. Investment Managers include following types: bank and trust, pension fund, endowment fund, private equity, finance company, venture capital, foundation, investment advisor/hedge fund, hedge fund, sovereign wealth fund, investment advisor, investment management company, insurance company, miscellaneous investment manager, government agency - investment advisor. Brokerage firms include research firm and independent research firm. Strategic entities include: corporation, holding company, individual investor, government agency and other insider investor. Funds include mutual fund, hedge fund portfolio and pension fund portfolio (Refinitiv, 2019, p. 17) Note that RTRE does not identify retail investors as a group, we therefore assume that retail investors hold residual ownership.

institutional investors, domestic ETF providers with foreign active institutional investors, domestic ETF providers with strategic investors, foreign passive institutional investors with foreign active institutional investors, foreign passive institutional investors with strategic investors and foreign active institutional investors with strategic investors.

Institutional ownership during the period 2010-2021

We use company ownership data to extract the total value of holdings and share of ownership by domestic ETF providers, active and passive foreign instructional investors and strategic owners at a company level of all companies that are constituents of Topix. We then aggregate the value bottom-up to estimate the total value of Topix held by various institutional investors.

Domestic revenue exposure

We obtain data for company-level domestic revenue exposure in per cent from Factset. These data are largely sourced from company quarterly and annual reports. We use these data to test the second hypothesis that states that foreign institutional investors' (AIIs and PIIs) impact on Japanese companies differs, subject to domestic or global business orientation. We distinguish companies using per cent of revenue generated in Japan.

Measuring the cost of equity of Japanese companies

We focus on the cost of equity due to the predominant nature of the over-the-counter corporate bond market in Japan and the lack of pricing transparency (Ebihara et al., 2014).

Practitioners criticise the CAPM model for weak empirical support in explaining the returns of Japanese companies (Yonezawa & Hin, 1992; Jagannathan et al., 1995). As a result, multifactor models, such as the Fama-French three-factor model, are more commonly used for Japanese companies (e.g., Roy, 2021; Katagiri et al., 2022). Specifically, Chen et al. (2022) suggest that the Fama-French (1993) model may lead to a more appropriate expected return. For example, Ebihara et al. (2014) deploy the Fama-French three-factor model to research the impact of family ownership on the cost of equity of Japanese companies.

The three-factor model assumes that the cost of equity can be explained by three risk factors, namely, market, size and value. These risk factors are not directly observable, and therefore academics and practitioners use proxies, i.e., market portfolio (market excess returns over a risk-free rate) (MER), difference in returns between small and large stocks—small minus big (SMB)—and between high- and low-book-to-price stocks—high minus low (HML) (4.1):

$$COE = \beta_1 * MER + \beta_2 * SML + \beta_1 * LMS \quad (4.1)$$

Because these factors are not explicitly observable and thus cannot be used directly, academics and practitioners use stock exposures to the three factors obtained from the model outlined by equation

(4.1) in order to analyse the stock-level cost of equity. Practitioners such as institutional investors commonly construct their portfolios in such a way that they can control for their exposures to risk factors. Similarly, a practical approach to analyse the cost-of-equity drivers of Japanese companies would be to evaluate exposures to risk factors.

Where a stock tends to move in-line with the broader stock market, it is said to be a high-market beta stock (above 1). Where a stock is a small (large) cap, it has a positive (negative) exposure to the size risk factor. Where a stock is a low- (high-) value stock, it has a positive (negative) exposure to the value factor.

A common approach for estimating this model is regressing equity returns onto returns of MER, SML and HML portfolios. We proxy the market portfolio with the TOPIX index and use the Japanese government's one-year bond yield (GJGB1 Index) to proxy the risk-free rate. We run two models, M1 and M2. In the first model, M1, for LMS and HML portfolios, we construct top and bottom quintile portfolio-based market capitalisation and book-to-price, respectively. In the second model, M2, we proxy SML and HML portfolios using existing market indices for small caps, large caps, growth and value. We proxy small caps with the TOPIX Small Index, a capitalisation-weighted index designed to measure the performance of the smallest 500 stocks in the TOPIX index. We proxy large caps with TOPIX Core 30, a market-capitalisation-weighted index designed to measure the performance of the 30 largest stocks in the TOPIX index. We proxy high book-to-price and low book-to-price with TOPIX Value and TOPIX Growth[26] indices, respectively.

Thus, based on the three-factor model, we produce three indicators related to the cost of equity of a company: betas for MER, SML and HML portfolios.

To calculate annual betas, we use daily returns over each year. Returns data for indices are obtained from Bloomberg, while returns data for stocks are obtained from Factset. Price-to-book and market capitalisation data used to construct portfolios are obtained from RTRE and Factset to supplement any missing data points.

Control variables

We include the following control variables: total assets, return-on-equity[27], price-to-book, and net-debt-to-equity of each firm. We do not use market capitalisation because we find that active ownership is highly correlated with market capitalisation; instead, we use total assets as a proxy for company size. Larger companies are likely to be more transparent as they operate across various

[26] We assume that companies constituting growth index are low book-to-price by index construction. To construct Value and Growth indices, the TOPIX universe is ranked by according to valuation metric, including book-to-price and then divided into two halves. Companies with high book-to-price are used in the value index, while the rest of the universe is used in the Growth index.

[27] Return-on-assets is also frequently used in the literature, but we do not include return-on-assets because return-on-equity and return-on-assets are highly correlated

legislations and frequently fall under stricter regulations due to their size; hence, we expect company size to have a positive relationship with CG and correspond with the lower cost of equity. We expect that companies with better CG will have higher profitability measured by return-on-equity; hence, we assume that higher profitability is associated with a lower cost of equity. High financial leverage measured by the net-debt-to-equity ratio indicates that the company is likely to comply with higher transparency standards to satisfy creditors, hence having lower agency costs and better CG and correspond with lower cost-of-equity. All company financial data are sourced from RTRE and FactSet. Ownership and financial data are extracted as of end-of-December each year from 2010 to 2021 inclusive with annual frequency.

Interaction terms

We create interaction terms between pairs of investor types. We create the following interaction terms: domestic ETF providers * foreign AIIs, domestic ETF providers * strategic investors, foreign PIIs * foreign AIIs, foreign PIIs * strategic investors[28].

Data Summary

We provide variable definitions in Table 1, and descriptive statistics are reported in Table 2.

Based on M1, an average company in the dataset has a market excess return beta of 0.95, SML beta of 0.36 and HML beta of -0.05, using an approach where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation. Based on M2, an average company in the dataset has a market excess return beta of 0.88, SML beta of 0.50 and HML beta of 0.08, using an approach where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by Small, Core 30, Growth and Value Topix indices. On average, companies have a price-to-book value of 1.73 times.

[Table 1 and Table 2 here]

An average company in the dataset has about 3.33% of voting shares held by domestic ETF providers, about 13.08% held by foreign active institutional investors, about 1.09% held by foreign passive institutional investors and about 30.07% held by strategic shareholders. On average, AUM by domestic ETF providers would increase by 17,870 billion yen per company every year. On average,

[28] We observe high correlation between interaction term for domestic ETF providers and foreign PIIs, and interaction term for foreign PIIs and foreign AIIs (correlation of 0.7). The high correlation could be explained by similarities across shareholding by the foreign PIIs and AIIs (correlation of 0.55, see Table 3) and similarities across shareholding by the foreign PIIs and domestic ETF providers (correlation of 0.58, see Table 3). Therefore, we exclude interaction term for domestic ETF providers and foreign PIIs and keep foreign PIIs and foreign AIIs interaction term.

AUM by passive institutional investors would increase by 8,036 billion yen per year. An average company in the dataset draws about 82.98 per cent of its revenue from the domestic market.

The average firm in our sample has about 635 billion yen in total assets, net-debt-to-equity of 0.15 times, ROE of 7.8 per cent and asset turnover of 1.08 times.

We list the correlation coefficients between the variables used to test our hypotheses in Table 3.

[Table 3 here]

We winsorise all data at the 1 per cent level to eliminate outliers.

Instrumental Variable Selection

There may be issues of endogeneity between ownership by domestic ETF providers and foreign investors and dependent variables, and regression estimates may not necessarily reflect a causal relationship as there may be other unobserved factors covarying with ownership by domestic ETF providers and foreign investors and dependent variables. Therefore, our estimation of the impact of these investors on companies' cost of equity and market valuation has the potential for omitted variable bias, which could confound inferences about the relationship. Ownership by ETF providers and foreign investors could be correlated with additional factors such as firms' access to capital or investment opportunities which could directly affect the cost of equity and market valuation. Previous studies using US data to study the relationship between ownership by passive institutional investors and corporate governance[29] address this challenge by analysing a subset of US companies which migrate between two mutually exclusive indices, the Russell 1000 and the Russell 2000 (Appel et. al, 2016; Schmidt and Fahlenbrach, 2017), selecting the 250 firms with the lowest weighting in the Russell 1000 and the 250 firms with the largest weighting in the Russell 2000, and instrumenting passive ownership using an indicator based on the firm being in either index. Because the Russell indexes are value-weighted, assignment to one or other of these indices has a significant effect on the firm's index weighting; the 1,000th-largest US stock will be included in the Russell 1000 and be given a very small weight within its index, while the 1,001st-largest stock will be included in the Russell 2000 and be given a much larger weighting within that index. However, the AUM passively tracking the two indices may not be the same. In the case of the Russell indices, the AUM tracking the Russell 1000 is not more than 2 to 3 times the AUM tracking the Russell 2000, therefore it can still be expected that moving from inclusion in the tail end of the Russell 1000 to the top of the Russell 2000 could result in a significant increase a firm's PII ownership.

[29] There is a direct link between CG and cost of equity and market valuation such that better CG corresponds which lower cost of equity and a more attractive market valuation

However, we identify some challenges to using this methodology. Firstly, in the Japanese context, there are no equivalents of Russell 1000 and Russell 2000, i.e., there are no investable indices that are highly liquid, have a significant AUM tracked against these indices and are mutually exclusive such that no companies fall in both indices.

Secondly, the proposed methodology significantly reduces the sample of companies in the analysis. In the case of Appel et al. (2016) and Schmidt and Fahlenbrach (2017), the sample was reduced from 3,000 (Russell 1000 + Russell 2000) to 500 (17%) of the overall sample in a given year. We also believe that using only these firms would reduce the validity of the study. Many PIIs tracking large equity indices are unlikely to hedge small allocations to the firms with the smallest weights in the index or they may choose to replicate indices via stratified sampling (where the portfolio is created from a subset of index constituents), which would result in PIIs not holding companies with the smallest weights in the index in their portfolios. Therefore, for a large proportion of the firms in the sample used in these studies, PIIs cannot be viewed as long-term investors, thus contradicting the theory that PIIs would be incentivised to invest in CG in these firms as long-term investors.

We use yen-denominated annual in- and outflows allocated to passive investment in each firm in our sample (the annual change in passively managed AUM invested in a firm), as the instrumental variable in our analysis. Yen flows into an index would be allocated to the firms in that index in proportion to their index weighting, as determined by their relative free-float-adjusted market capitalisation. A PII AUM in- or outflow could have a large or small effect on PII ownership, depending on the company's total market capitalisation. The impact of a change in PII AUM on the CG of an individual firm would be expected to be indirect, impacted by total PII ownership rather than by the change in PII ownership, therefore meeting the requirement for an instrumental variable that it be correlated with the independent variable but not with the dependent variable. The correlation between the flows attracted by domestic ETF providers and ownership by domestic ETF providers is 0.05, while the correlation between flows attracted by foreign PIIs and ownership by foreign PIIs is 0.124 (see Table 3).

Hypotheses testing

We incorporate firm fixed effects to address potential issues of endogeneity resulting from omitted variables correlated with CG or ownership by domestic ETF providers, and foreign passive and active institutional investors. Additionally, to control for possible time series dependence caused by the omission of controls for unobservable firm characteristics and are not driven by the aggregate upward trend in ownership by passive investors, we include time-fixed effects[30] (Appel et al., 2016). In order

[30] We perform Wu–Hausman (Wu, 1974; Hausman, 1978) tests to examine the appropriateness of using year, time, country and sector fixed over random effects in our regressions. The variances for the parameters in the two sets of estimates for firm fixed effects are very close but we include them for robustness. For country and sector fixed effects the estimates do not change, therefore we do not include them.

to account for any heteroskedasticity and serial correlation, we cluster standard errors at the firm-level. We test for endogeneity between ownership by domestic ETF providers, foreign passive and active institutional investors and dependent variables, and to address the issue, we utilise two-stage least squares regression analysis, using firm-level euro-denominated PII annual in- and outflows, to instrument for PII ownership. $Ownership_{it}$ denotes the percentage of ownership of voting shares by an institutional investor (domestic ETF providers, foreign passive and active institutional investors). AUM_flow_{it} denotes annual AUM inflow/outflow in yen associated with an institutional investor, per company *i* at time *t*.

For the first stage estimation, we estimate the following:

$$Ownership_{it} = \beta_0 + \beta_1 AUM\_flow_{it} + \sum_{i=2}^{k} \beta_i ControlVariable_{it} + e_{it} \quad (4.2)$$

To test hypotheses H_1 we run the regression model as outlined in equation (4.3).

$$\beta_i^t = \alpha_0 + \alpha_1 JP\_ETF_i^t + \sum_{l=2}^{k} \alpha_l Controls_i^t + e \quad (4.3)$$

Where β_i^t is the estimated beta at a company level from the three-factor model. We run separate regressions using betas obtained for market excess return, SMH and HML factors. $JP\_ETF_i^t$ refers to ownership level in per cent at a company level.

To test hypotheses H_2 we run a regression model as outlined in equation (4.4).

$$\beta_i^t = \alpha_0 + \alpha_1 Foreigners_i^t + \alpha_2 JP\_Rev_i^t + \sum_{l=3}^{k} \alpha_l Controls_i^t + e \quad (4.4)$$

$Foreigners_i^t$ refer to ownership by foreign institutional investors at a company-level. We run separate regressions for passive and active institutional investors. $JP\_Rev_i^t$ refers to a share of company revenue sourced from Japan.

To test hypotheses H_3 we run the regression model as outlined in equation (4.5).

$$\beta_i^t = \alpha_0 + \alpha_1 Interaction_i^t + \sum_{l=7}^{k} \alpha_l Controls_i^t + e \quad (4.5)$$

$Interaction_{ji}^t$ refers to the interaction between ETF providers, foreign active investors, and strategic investors.

Robustness check

In the main analysis, we use a three-factor model where market excess return is proxied by the TOPIX index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation. As a robustness check, we run an analysis using a three-factor model where market excess return is proxied by the

TOPIX Index and Japan Government One Year Yield. SML and HML are proxied by Small, Core 30, Growth and Value Topix indices. Using existing independently constructed indices allows us to ensure the quality of our results.

We reserve these indices for robustness check because these indices have some inherent biases such as index construction and rebalancing, i.e., the Core 30 index represents a small fraction of large caps in the market compared to Topix which is about 2,000 stocks.

Second, although cost-of-equity is an established measure used by investors and management of companies globally, Japanese regulators specifically pay attention to price-to-book metrics. Therefore, we perform analysis using the price-to-book metric in addition to the cost of equity. Similar to cost-of-equity, price-to-book tends to be lower for companies with better CG practices. Therefore, we expect that we will obtain similar results.

We perform a Hausman (1978) test to determine whether to use fixed or random effects in our model[31]. We also follow Appel (2016) and include year fixed effects to ensure that our estimates are identified using within-year variation in ownership and are not driven by passive investors' aggregate upward trend in ownership. Our parameter estimates are calculated using robust standard errors clustered by firm (Appel, 2016)[32].

Findings

We report estimates of the first-stage regression of ownership by domestic ETF providers, foreign active and passive institutional investors onto the Instrumental Variable, domestic ETF providers flows and foreign PIIs flows, equation (4.2) in Tables 4 and 5, respectively, and find that AUM flow has a positive and strongly significant effect on ownership by domestic ETF providers and foreign PIIs. For robustness check, we include foreign AIIs and strategic shareholders and don't find significant evidence of impact on ownership by either.

The results from equations (4.3) and (4.3) are presented in Tables 6, 7 and 8. Table 6 depicts results from the second-stage regression of betas onto ownership by domestic ETF providers, foreign active and passive institutional investors. The betas are obtained from the three-factor model, where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation. We present robustness check results in Tables 7 and 8. Table 7 uses betas obtained from a three-factor model, where the market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by Small, Core 30, Growth and Value Topix indices. Table

[31] The test determines that we should use fixed effects for all the models, results can be shared upon request

[32] We do not add country and sector fixed effects because we do not find significant model improvement from adding these effects.

8 shows results from second-stage regression of price-to-book onto ownership by domestic ETF providers, foreign active and passive institutional investors.

Results from equation (4.4) are shown in Tables 9 and 10; Table 9 shows results obtained for domestic ETF providers, while Table 10 depicts results for foreign PIIs.

Japanese ETF providers and market valuations of Japanese companies

First, we discuss the results shown in Table 6. We find significant evidence of negative relationship between ownership by Japanese ETF providers and MER beta such that a one per cent increase in ownership by domestic ETF providers is associated with a 1.1 per cent decline in the MER beta of the company. We find that Japanese ETF providers negatively impact HML beta such that a one per cent increase in ownership by domestic ETF providers is associated with a 3.8 per cent increase in the HML beta of the company. We do not find a significant evidence of Japanese ETF providers impaction SML betas.

In addition, from the results outlined in Table 7, we find evidence that Japanese ETF providers negatively impact HML beta (same as in Table 6). From the results outlined in Table 8, we note the positive significant relationship between Japanese ETF providers and company price-to-book, which aligns with observations of a significant relationship between domestic ETF providers and company HML beta (HML uses inversed measure of book-to-equity, therefore negative impact using HML beta is equivalent to positive impact using price-to-book). We do not find a significant evidence of Japanese ETF providers impacting MER and SML betas.

Foreign active and passive institutional investors and the cost of equity of Japanese companies

First, we discuss the results shown in Table 6. We find evidence of negative relationship between ownership by foreign AIIs and SML beta such that an increase in ownership by foreign AIIs is associated with a 0.7 per cent decrease in beta. We find evidence of a negative relationship between ownership by foreign AIIs and HML beta such that an increase in ownership by foreign AIIs is associated with a 0.3 per cent increase in beta. Moreover, we find that companies tend to have an additional decrease in HML beta by 0.4 per cent with a one per cent increase in domestic revenue exposure. We do not find a significant evidence of foreign AIIs impacting MER betas.

We find evidence of negative relationship between ownership by foreign PIIs providers and MER beta such that an increase in ownership by foreign PIIs is associated with a 3.6 per cent decrease in MER beta. We find evidence of a positive relationship between ownership by foreign PIIs and HML beta such that an increase in ownership by foreign ETF providers is associated with a 10.6 per cent decrease in HML beta. Moreover, we find that companies tend to have an additional decrease in HML beta by 0.4 per cent with a one per cent increase in domestic revenue exposure.

The results outlined in Table 7 show a significant positive relationship between ownership by foreign AIIs and market excess beta such that an increase in ownership by foreign AIIs is associated with a 0.3 per cent increase in beta. Moreover, we find that companies tend to have an additional increase in beta by 0.1 per cent with a one per cent increase in domestic revenue exposure. We find evidence of negative relationship between ownership by foreign AIIs and SML beta such that an increase in ownership by foreign AIIs is associated with a 0.02 per cent decrease in SML beta. Albeit beta tends to be higher for companies with more exposure to the domestic market. We find evidence of a negative relationship between ownership by foreign AIIs and HML beta such that an increase in ownership by foreign AIIs is associated with a 1.5 per cent increase in beta. Similarly, HML beta tends to be lower for companies with more exposure to the domestic market.

We find evidence of a positive relationship between ownership by foreign PIIs and MER beta such that an increase by foreign PIIs is associated with 0.2 per cent increase in MER beta. We find evidence of negative relationship between PIIs and HML beta such that an increase in ownership by foreign ETF providers is associated with a 41.2 per cent decrease in HML beta. Moreover, we find that companies tend to have an additional decrease in beta by 0.5 per cent with a one per cent increase in revenue exposure.

From the results in Table 8, we note the positive significant relationship between foreign AIIs and price-to-book and between foreign PIIs and price-to-book, which supports observations related to HML beta drawn from Tables 6 and 7.

Impact of interaction between domestic ETF providers and other shareholders

We find evidence of a negative impact form interaction between domestic ETF providers and foreign AIIs on HML beta such that an increase in combined ownership by one percent each of type of shareholders is equivalent to decline in HML beta by 0.1 per cent, according to results from Model 1 outlined in Table 9 column 3 or 0.4 per cent according to results from Model 2 outlined in Table 9 column 6. Moreover, we find evidence of significant impact on price-to-book, such that an increase in combined ownership by one percent each of type of shareholders is equivalent to an increase in price-to-book ratio by 0.9 per cent (see Table 9, column 7).

We observe a negative effect from the interaction between domestic ETF providers and strategic shareholders on HML beta. A one percent rise in combined ownership by each shareholder type corresponds to a 0.2 per cent decline in HML beta (Model 1, Table 10, column 3) or a 0.6 per cent decline (Model 2, Table 10, column 6). Additionally, a one percent increase in combined ownership by each shareholder type leads to a noteworthy impact on the price-to-book ratio, resulting in a 1.6% increase (Table 10, column 7).

We do not find a strong or significant evidence on the impact on MER[33] and SML betas.

Impact of interaction between foreign PIIs and other shareholders

We find evidence of a negative impact form interaction between foreign PIIs and foreign AIIs on HML beta, indicating a 0.3 per cent decrease in beta if ownership by foreign PIIs providers and foreign AIIs increases by 1 per cent each, according to results from Model 1 outlined in Table 11 column 3. Results from Model 2, outlined in Table 11 column 3 indicate a decline by 1.1 per cent. Moreover, we find evidence of significant impact on price-to-book, such that an increase in combined ownership by one percent each of type of shareholders is equivalent to an increase in price-to-book ratio by 2.5 per cent (Table 11, column 7).

We observe a negative impact from the interaction between foreign PIIs and strategic shareholders on HML beta. A 1% increase in combined ownership by both foreign PIIs and strategic shareholders leads to a 0.9% decrease (Model 1, Table 12, column 3) and a 2.6% decrease (Model 2, Table 12, column 6) in beta. Additionally, there is a noteworthy impact on the price-to-book ratio, with a 1% increase in combined ownership resulting in a 6.2% rise (Table 12, column 7).

[33] For MER beta, Model 1 and Model 2 produce very low coefficients which are significant at 5 and 10 per cent levels (see Table 9, columns 1 and 4, respectively). We disregard these results because the models' results do not agree on the sign of coefficients and the value of these coefficients is small.

Discussion and conclusions

First, we find that ownership by domestic ETFs providers and foreign PIIs can correspond with reduction of the cost of equity of Japanese companies which have higher market risk and lower market valuations.

Similarly to Katagiri et al. (2022), we find that ETF purchases decrease MER beta[34]. MER betas are always positive[35], higher MER beta indicates stock that have higher market risk, while lower betas indicate stocks with lower market risk. The negative impact from ownership on MER beta would correspond with a decrease in the cost of equity for companies. While Katagari links changes in beta to specific periods of BoJ's ETF program, we provide further evidence linking declines in betas to ownership by domestic ETF providers and thus to BoJ's monetary policy.

Moreover, we find that all investors that we analyse, Japanese ETF providers, foreign AIIs and PIIs, negatively impact HML beta of Japanese companies. HML beta can be positive and negative (see Table 2): higher/positive HML beta indicates a company with high book-to-price (low price-to-book) while lower/negative HML beta indicates a company with low book-to-price (high price-to-book). We interpret impact from ownership of these investors as that they decrease cost of equity for companies with high book-to-price (low price-to-book)[36] and increase cost of equity for companies traded at low book-to-price (high price-to-book). Companies with low price-to-book could include those companies where investors systematically undervalue potential of cash and cash equivalent holdings. Evidence that led by the BoJ domestic ETF providers decrease cost of equity for these companies could indicate that the BoJ's policies are not disruptive to the CG reform, against fears of some critics (Whiffin, 2019; Koll, 2021). This impact on cost of equity be possibly related to alignment of interest with regards undervalued companies as regulators, domestic ETF providers and foreign investors focus on unlocking value from undervalued cash and cash equivalent holdings (as we also find that foreign AIIs and PIIs have a similar impact on cost of equity of companies with high book-to-price). Contrary, the impact of increase of cost of equity for companies with high low book-to-price (high price-to-book) could indicate that there is a lack of agreement across shareholders and stakeholders.

On the other hand, this result could be partially explained by the investment approach where domestic ETF providers and foreign PIIs track a market capitalisation weighted index such as TOPIX or MSCI Japan. If a company stock price increased, therefore its market capitalisation and price-to-book also increased. When index rebalances, it would assign higher weight to companies with higher market capitalisation and higher price-to-book. As a result, institutional investors tracking this index

[34] Katagari et al. (2022) use CAPM model to estimate beta for Japanese companies. Fundamentally the three-factor model is an expansion of the CAPM model and MER beta has similar fundamental grounds to beta obtained from CAPM model

[35] All companies in our dataset have positive MER beta, see Table 2

[36] The impact for cost equity would be HML beta of the company, which is positive, multiplied by regression coefficient obtained during analysis, which is negative, thus yielding negative impact, assuming all other factors held constant. See table 2 for betas and tables 6 and 7 for coefficients

would increase their AUM in companies with higher valuations and lower AUM in companies with lower valuations. This rebalancing would create an inorganic demand for highly valued companies and increase their cost of equity, and similarly inorganic outflows from companies with low price-to-book and lower their cost of equity.

We also find evidence that ownership by Japanese ETF providers, foreign AIIs and PIIs positively corresponds with a price-to-book valuation of a company. Given that regulators specifically focus on improving the cost of capital and stock price, particularly among companies with an extra low price-to-book-value ratio, our findings could be interpreted by the regulators as that domestic ETF ownership facilitates regulators' efforts to provide better CG and a better environment for shareholders (which would be associated with lower cost of equity).

Therefore, secondly, we conclude that ownership by foreign AIIs and foreign PIIs impact Japanese companies in a similar way with respect to company value risk: they decrease cost of equity of undervalued companies and increase cost of equity of overvalued companies. Moreover, their impact is more pronounced for companies the domestic revenue orientation: companies with higher domestic exposure will see decrease in cost of equity. Contrary, Nemoto (2022) observes that firms with large revenue exposures to the domestic market tend to be critical and unwelcoming of foreign investors and therefore, therefore agency costs would increase cost of equity.

Furthermore, we find that ownership by foreign AIIs can impact investee company SML beta, while we do not find any evidence that foreign PIIs or domestic ETF providers can impact it. SML beta can be negative and positive: a negative beta would indicate a large cap, while positive beta would indicate a small cap. We interpret impact from foreign AIIs providers as they decrease cost of equity for small caps (companies with positive SML beta) and increase cost of equity for large companies, assuming exposures to other factors held constant. As Miyajima et al., 2015 observe, foreign investors tend to invest in companies with larger market capitalisation, therefore, intuitively, foreign investors will invest in small companies strictly if they have a strong conviction about the potential of this investment. The reduction of cost of equity of small caps corresponding with ownership by foreign AIIs could be related foreign investors monitoring capability to encourage improvements in the governance and performance of firms to (Miyajima et al., 2015, see also theory *c* in *Impact of Institutional ownership on firms and their cost of capital*)). Particularly, some small firms may have aligned interests with outside shareholders if they can benefit from expertise of foreign investors, which could also be reflected in reduction in cost of equity. On the other hand, we observe that foreign AIIs can correspond with an increase in cost of equity of large caps. This could be explained by the agency costs and misalignment of interests with other shareholders (see theories *a* and *b* in *Impact of Institutional ownership on firms and their cost of capital*).

We find that interaction between domestic ETF providers and foreign PIIs and other shareholders can impact cost of equity, subject to company value risk, and price-to-book value. This aligns with our observation that these investors also affect the cost of equity on an individual level

through HML beta. This result reinforces the notion that most shareholders share similar objectives related to company value, indicating aligned interests. This alignment is anticipated, especially in the context of corporate governance reforms and stewardship codes that emphasize investor accountability to stewardship responsibilities.

This research has following weaknesses:

In this research, we assume that domestic ETF providers, foreign AIIs and foreign PIIs have a homogeneous approach to stewardship activities within each subgroup, for example, we do not distinguish stewardship activities of Nomura from other ETF providers.

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Tables

Table 1: Variable definitions

Variable Name	Definition
Dependent variables	
MER, SML and HML betas (M1)	Market excess return (MER), Small-minus-Large (SML) and High-minus-Low (HML) betas estimated using the Fama-French three-factor model, where MER is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation.
MER, SML and HML betas (M2)	Betas estimated using the Fama-French three-factor model, where MER is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by Small, Core 30, Growth and Value Topix indices
Price-to-book	Company stock price dividend by book per share
Independent variables	
Domestic ETF providers	Percentage of a firm's voting shares owned by Domestic ETF providers
Foreign AIIs	Percentage of a firm's voting shares owned by Foreign Active Institutional Investors
Foreign PIIs	Percentage of a firm's voting shares owned by Foreign Passive Institutional Investors
Strategic owners	Percentage of a firm's voting shares owned by Strategic owners such as cross-shareholders
Domestic ETF providers flows	Annual change in AUM held by Domestic ETF providers, in bn yen
Foreign PIIs flows	Annual change in AUM held by Foreign Passive Institutional Investors, in bn yen
% JP ETF x % foreign AIIs	Interaction term between Japanese ETF providers and foreign AIIs proxied by product of % of ownership by two types of shareholders
% JP ETF x % strategic	Interaction term between Japanese ETF providers and strategic shareholders proxied by product of % of ownership by two types of shareholders
% foreign PIIs x % foreign AIIs	Interaction term between foreign PIIs and foreign AIIs proxied by product of % of ownership by two types of shareholders
% foreign PIIs x % strategic	Interaction term between foreign PIIs and strategic shareholders proxied by product of % of ownership by two types of shareholders
Domestic revenue exposure	Company revenue exposure to Japan
Control variables	
Total Assets	Company total assets in bn yen
Net Debt-to-Equity	Company net debt divided by total equity
Return-on-Equity	Company return on equity
Asset Turnover	Company asset turnover

Note: these variables are used in regressions models outlined by equations 4.2 – 4.5 where results are shown in Tables 4-12. To calculate annual betas for M1 and M2, we use stock-level and index daily returns over each year 2010-2021. For stocks, we use ~2,100 firms that constituted TOPIX Index during the period 2010-2021.

Table 2: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variables					
Market beta (M1)	23,573	0.95	0.39	0.12	2.01
SML beta (M1)	23,573	0.36	0.43	-0.49	1.77
HML beta(M1)	23,573	-0.05	0.48	-1.82	1.00
Market beta (M2)	23,561	0.88	0.35	0.06	1.77
SML beta (M2)	23,561	0.50	0.38	-0.34	1.75
HML beta(M2)	23,561	0.08	0.69	-1.99	1.90
Price-to-book	24,161	1.73	2.18	0.25	14.86
Independent variables					
Domestic ETF providers	26,196	3.33	3.69	0.00	18.03
Foreign AIIs	23,493	13.08	11.42	0.05	51.53
Foreign PIIs	26,196	1.09	1.48	0.00	6.27
Strategic owners	26,196	30.07	20.57	0.00	77.32
Domestic ETF providers flows, bn yen	24,013	17,870	84,471	-136,875	606,900
Foreign PIIs flows, bn yen	24,013	8,036	47,004	-118,766	329,388
% JP ETFs x % foreign AIIs	23,493	62.63	101.44	0.00	1157.18
% JP ETFs x % strategic	26,196	83.13	101.09	0.00	1202.07
% foreign PIIs x % foreign AIIs	23,493	25.54	44.82	0.00	404.40
% foreign PIIs x % strategic	26,196	22.20	32.27	0.00	507.36
Domestic revenue exposure	23,552	82.98	24.60	12.47	100.00
Control Variables					
Total Assets, bn yen	25,067	635.3	1,984.5	1.4	14,500.0
Net Debt-to-Equity	23,864	0.15	0.94	-1.82	4.79
Return-on-Equity	24,355	7.80	10.21	-38.95	41.18
Asset Turnover	24,108	1.08	0.68	0.00	8.94

Note: This table reports summary statistics of our key variables: ~2,100 firms during the period 2010-2021. Definitions of all variables are provided in Table 2. Ownership and accounting variables are winsorised at 1% level.

Table 3. Correlation matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1	MER beta (M1)																						
2	SML beta (M1)	0.47***																					
3	HML beta(M1)	-0.03***	-0.15***																				
4	MER beta (M2)	0.88***	0.15***	-0.11***																			
5	SML beta (M2)	0.39***	0.62***	-0.24***	0.31***																		
6	HML beta(M2)	0.24***	0.09***	0.63***	0.04***	-0.05***																	
7	Price-to-book	0.06***	0.17***	-0.54***	0.08***	0.21***	-0.42***																
8	JP ETFs	0.25***	-0.04***	-0.01	0.28***	-0.03***	0.00	0.10***															
9	F AIIs	0.13***	-0.36***	-0.07***	0.28***	-0.25***	-0.08***	0.10***	0.32***														
10	F PIIs	0.14***	-0.37***	0.08***	0.25***	-0.28***	0.06***	0.03***	0.58***	0.55***													
11	Strategic owners	-0.15***	0.29***	-0.24***	-0.25***	0.19***	-0.17***	0.23***	-0.23***	-0.38***	-0.35***												
12	JP ETFs flows	0.00	-0.2***	-0.05***	0.07***	-0.23***	-0.12***	0.11***	0.29***	0.28***	0.34***	-0.15***											
13	F PIIs flow	-0.02***	-0.17***	-0.06***	0.05***	-0.19***	-0.11***	0.10***	0.12***	0.24***	0.31***	-0.11***	0.59***										
14	Inter JP ETFs vs F AIIs	0.17***	-0.21***	-0.03***	0.25***	-0.19***	-0.04***	0.11***	0.81***	0.62***	0.64***	-0.40***	0.40***	0.22***									
15	Inter JP ETFs vs strategic	0.17***	0.19***	-0.17***	0.15***	0.19***	-0.15***	0.26***	0.62***	0.02***	0.13***	0.29***	0.07***	0.00	0.28***								
16	Inter F PIIs vs F AIIs	0.10***	-0.35***	0.01	0.21***	-0.33***	-0.02**	0.08***	0.47***	0.72***	0.85***	-0.43***	0.39***	0.37***	0.73***	0.01							
17	Inter F PIIs vs strategic	0.08***	-0.25***	-0.04***	0.17***	-0.07***	-0.06***	0.13***	0.29***	0.31***	0.63***	0.1***	0.13***	0.13***	0.25***	0.38***	0.39***						
18	Domestic revenue exposure	-0.32***	0.11***	-0.09***	-0.37***	0.18***	-0.11***	0.08***	-0.28***	-0.36***	-0.31***	0.27***	-0.19***	-0.15***	-0.35***	-0.01**	-0.34***	-0.13***					
19	Total Assets	0.06***	-0.22***	0.16***	0.09***	-0.31***	0.21***	-0.1***	0.11***	0.27***	0.38***	-0.24***	0.31***	0.27***	0.19***	-0.08***	0.37***	0.12***	-0.07***				
20	Net Debt-to-Equity	0.05***	-0.05***	0.12***	0.04***	-0.08***	0.17***	-0.11***	0.00	-0.05***	0.04***	-0.1***	0.02***	0.01**	-0.01	-0.08***	0.00	-0.02***	-0.03***	0.09***			
21	Return-on-Equity	-0.01*	0.04***	-0.32***	0.02***	0.09***	-0.26***	0.36***	0.07***	0.12***	0.02***	0.12***	0.05***	0.05***	0.11***	0.14***	0.08***	0.06***	0.07***	-0.04***	-0.16***		
22	Asset Turnover	-0.14***	0.13***	-0.19***	-0.17***	0.13***	-0.17***	0.17***	-0.13***	-0.17***	-0.24***	0.27***	-0.09***	-0.08***	-0.13***	0.04***	-0.18***	-0.1***	0.17***	-0.29***	-0.09***	0.21***	

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. JP ETFs stands for domestic Japanese ETF providers, F AIIs stands for foreign Active institutional investors (AIIs), F PIIs stands for foreign Passive Institutional Investors (PIIs)

Table 4. First-stage estimation ownership by domestic ETF providers, foreign active and passive institutional investors

Dependent variable	% of ownership by JP ETF providers	% of ownership by strategic shareholders	% of ownership by active foreign investors	% of ownership by passive foreign investors
	(1)	(2)	(3)	(4)
JP ETF providers flows	5.727***	-1.462*	0.150	0.822***
	(0.197)	(0.734)	(0.405)	(0.069)
Control Variables	Yes	Yes	Yes	Yes
Fixed effects: Year	Yes	Yes	Yes	Yes
# of firms	2,139	2,139	2,139	2,139
Observations	21,961	21,961	21,961	21,961
R-squared	0.516	0.019	0.123	0.467
F-statistic	1,405.49***	25.46***	179.87***	1,156.65***

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. We report estimates of the first-stage regression of ownership by domestic ETF providers, foreign active and passive institutional investors onto the Instrumental Variable, JP ETF providers flows. We find that AUM flow has a positive and strongly significant effect on ownership by domestic ETF providers and foreign PIIs. For robustness check, we include foreign AIIs and strategic shareholders and don't find significant evidence of impact on ownership by either.

Table 5. First-stage estimation ownership by domestic ETF providers, foreign active and passive institutional investors

Dependent variable	% of ownership by JP ETF providers	% of ownership by strategic shareholders	% of ownership by active foreign investors	% of ownership by passive foreign investors
	(1)	(2)	(3)	(4)
Foreign PIIs AUM change	0.569*	-1.861	0.116	3.088***
	(0.336)	(1.226)	(0.678)	(0.114)
Control Variables	Yes	Yes	Yes	Yes
Random effects	Yes	Yes	Yes	Yes
# of firms	2,139	2,139	2,139	2,139
Observations	21,961	21,961	21,961	21,961
R-squared	0.495	0.019	0.123	0.482
F-statistic	1294.59***	25.64***	179.86***	1230.43***

Note: We report estimates of the first-stage regression of ownership by domestic ETF providers, foreign active and passive institutional investors onto the Instrumental Variable, foreign PIIs flows. We find that AUM flow has a positive and strongly significant effect on ownership by foreign PIIs. For robustness check, we include foreign AIIs and strategic shareholders and don't find significant evidence of impact on ownership by either.

Table 6. Second-stage estimation: ownership by domestic ETF providers, foreign AIIs and PIIs and three factor betas (M1)

Dependent variable	MER beta					SML beta					HML beta				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Domestic ETF providers	-0.011***					0.005					-0.038**				
	(0.004)					(0.004)					(0.006)				
Foreign AIIs		0.0001	0.0001	-0.036***	-0.036***		-0.007***	-0.007***	-0.008	-0.005		-0.003***	-0.003***		
		(0.0004)	(0.0004)	(0.010)	(0.010)		(0.0004)	(0.0004)	(0.012)	(0.012)		(0.001)	(0.001)		
Foreign PIIs														-0.106***	-0.106***
														(0.017)	(0.017)
Domestic revenue exposure			0.0003		-0.001			0.0003		-0.0005			-0.004***		-0.004***
			(0.0007)		(0.0005)			(0.0003)		(0.0004)			(0.001)		(0.018)
Control variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Instrumented variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
# of firms	2110	2125	2122	2110	2109	2110	2125	2122	2110	2109	2130	2125	2122	2130	872
Observations	21,385	22,583	21,978	21,385	21,129	21,385	22,583	21,978	21,385	21,129	21,405	22,583	21,978	21,405	5,032
R-squared	0.120	0.114	0.116	0.117	0.114	0.116	0.130	0.132	0.122	0.122	0.130	0.165	0.155	0.101	0.118
F-statistic	124.64***	163.90***	153.10***	124.79***	21.44***	175.31***	190.18***	177.97***	177.67***	166.77***	218.00***	236.31***	234.13***	204.91***	193.74***
Endogeneity test, Chi-squared	5.803**	n/a	n/a	10.021***	10.193***	4.531***	n/a	n/a	4.038***	4.471***	27.220***	n/a	n/a	52.873***	50.308***

Note: This table reports results from a second-stage regression of betas obtained from a three-factor model onto ownership by domestic ETF providers, foreign AIIs and foreign PIIs ownership plus additional controls. The three-factor model is a Fama-French model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation. Standard errors are clustered at the firm level and reported in parentheses. ***, ** and * indicates significance at the 1% and 5% and 10% levels, respectively. A negative R-squared is possible for 2SLS models because unlike in the case of OLS, the R-squared from IV estimation can be negative because sum squared regression (SSR) for IV can be larger than total sum of squares (SST) (see Wooldridge (2012), p. 523, section “Computing R-Squared after IV Estimation”).

Table 7. Second-stage estimation: ownership by domestic ETF providers, foreign AIIs and PIIs and three factor betas (M2)

Dependent variable	MER beta					SML beta					HML beta				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Domestic ETF providers	0.005					0.005					-0.138***				
	(0.003)					(0.004)					(0.010)				
Foreign AIIs		0.003***	0.003***				-0.002***	-0.002***				-0.015***	-0.015***		
		(0.0004)	(0.0004)				(0.0005)	(0.0005)				(0.001)	(0.001)		
Foreign PIIs				0.020**	0.020**				-0.001	0.003				-0.401***	-0.413***
				(0.010)	(0.010)				(0.010)	(0.010)				(0.033)	(0.034)
Domestic revenue exposure			0.001***		0.0001			0.001***		0.0003			-0.005***		-0.006***
			(0.0003)		(0.0005)			(0.0003)		(0.0004)			(0.001)		(0.001)
Control variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Instrumented variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
# of firms	2,109	2,124	2,124	2,109	2,108	2,109	2,124	2,121	2,109	2,109	2,129	2,124	2,124	2,129	2,125
Observations	21,374	22,571	21,966	21,374	21,118	21,374	22,571	21,966	21,374	21,129	21,384	22,571	21,966	21,394	21,135
R-squared	0.059	0.063	0.056	0.054	0.050	0.098	0.096	0.095	0.099	0.095	0.043	0.129	0.158	0.034	0.045
F-statistic	75.05***	76.99***	69.60***	73.54***	64.96***	147.39***	134.77***	122.47***	147.48***	133.02***	58.27***	94.42***	94.42***	60.62***	55.91***
Endogeneity test, Chi-squared	1.337	n/a	n/a	7.963***	7.688***	1.334	n/a	n/a	2.483	3.050*	106.461***	n/a	n/a	152.409***	150.672***

Note: This table reports results from a second-stage regression of betas obtained from a three-factor model onto domestic ETF providers, foreign AIIs and foreign PIIs ownership plus additional controls. The three-factor model is a Fama-French model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by Small, Core 30, Growth and Value Topix indices. Standard errors are clustered at the firm level and reported in parentheses. ***, ** and * indicates significance at the 1% and 5% and 10% levels, respectively. A negative R-squared is possible for 2SLS models because unlike in the case of OLS, the R-squared from IV estimation can be negative because sum squared regression (SSR) for IV can be larger than total sum of squares (SST) (see Wooldridge (2012), p. 523, section "Computing R-Squared after IV Estimation").

Table 8. Second-stage estimation: ownership by domestic ETF providers, foreign AIIs and PIIs and price-to-book

Dependent variable	Price-to-book				
	(1)	(2)	(3)	(4)	(5)
% of ownership by JP ETF providers	0.332***				
	(0.034)				
% of ownership by active foreign investors		0.027***	0.027***		
		(0.002)	(0.002)		
% of ownership by passive foreign investors				0.883***	0.911***
				(0.083)	(0.086)
% of revenue exposure to domestic market			-0.0001		0.007**
			(0.0013)		(0.002)
Control variables	yes	yes	yes	yes	yes
Instrumented variables	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
# of firms	2,131	2,133	2,128	2,131	2,126
Observations	21,536	22,700	22,041	21,536	21,205
R-squared	-	0.105	0.102	-	-
F-statistic	55.88***	150.28***	132.42***	55.58***	21.44***
Endogeneity test, Chi-squared	82.598***	n/a	n/a	87.976***	86.457***

Note: This table reports results from a second-stage regression of price-to-book valuations onto ownership by domestic ETF providers, foreign AIIs and foreign PIIs ownership plus additional controls. Standard errors are clustered at the firm level and reported in parentheses. ***, ** and * indicates significance at the 1% and 5% and 10% levels, respectively. A negative R-squared is possible for 2SLS models because unlike in the case of OLS, the R-squared from IV estimation can be negative because sum squared regression (SSR) for IV can be larger than total sum of squares (SST) (see Wooldridge (2012), p. 523, section "Computing R-Squared after IV Estimation").

Table 9. Second-stage estimation: interaction between domestic ETF providers and foreign AIIs

Dependent variable	MER beta (M1) (1)	SML beta (M1) (2)	HML beta (M1) (3)	MER beta (M2) (4)	SML beta (M2) (5)	HML beta (M2) (6)	Price-to-Book (7)
% ownership JP ETFs x % ownership foreign AIIs	-0.0003**	0.00008	-0.001***	0.0002*	0.00003	-0.004***	0.009***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0003)	(0.001)
Control variables	yes	yes	yes	yes	yes	yes	yes
Instrumented variables	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes
# of firms	2,108	2,108	2,108	2,107	2,107	2,107	2,127
Observations	21,078	21,078	21,078	21,067	21,067	21,067	21,231
R-squared	0.127	0.124	0.167	0.056	0.101	-	0.002
F-statistic	128.74***	183.93***	230.16***	72.73***	145.94***	66.21***	62.71***
Endogeneity test, Chi-squared	0.023	20.733***	25.642***	8.803***	10.119***	90.187***	57.877***

Note: This table reports results from a second-stage regression of betas obtained from a three-factor model onto domestic ETF providers and their interaction with foreign AIIs plus additional controls. Betas in equations (1) – (3) correspond with the three-factor model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation (M1). Betas in equations (4) – (6) correspond with the three-factor model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by Small, Core 30, Growth and Value Topix indices (M2).
Standard errors are clustered at the firm level and reported in parentheses. ***, ** and * indicates significance at the 1% and 5% and 10% levels, respectively. A negative R-squared is possible for 2SLS models because unlike in the case of OLS, the R-squared from IV estimation can be negative because sum squared regression (SSR) for IV can be larger than total sum of squares (SST) (see Wooldridge (2012), p. 523, section "Computing R-Squared after IV Estimation").

Table 10. Second-stage estimation: interaction between domestic ETF providers and strategic shareholders

Dependent variable	MER beta (M1) (1)	SML beta (M1) (2)	HML beta (M1) (3)	MER beta (M2) (4)	SML beta (M2) (5)	HML beta (M2) (6)	Price-to-Book (7)
% ownership JP ETFs x % ownership strategic shareholders	-0.0004	0.0001	-0.002***	0.0003***	0.0005***	-0.006***	0.016***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0005)	(0.001)
Control variables	yes	yes	yes	yes	yes	yes	yes
Instrumented variables	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes
# of firms	2,110	2,110	2,110	2,109	2,109	2,109	2,131
Observations	21,385	21,385	21,385	21,374	21,374	21,374	21,536
R-squared	0.112	0.012	0.102	0.065	0.098	-	-
F-statistic	122.98***	176.43***	201.52***	77.34***	150.56***	56.36***	49.09***
Endogeneity test, Chi-squared	17.097***	1.643	75.210***	0.161	3.187*	165.376***	128.206***

Note: This table reports results from a second-stage regression of betas obtained from a three-factor model onto domestic ETF providers and their interaction with strategic shareholders plus additional controls. Betas in equations (1) – (3) correspond with the three-factor model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation (M1). Betas in equations (4) – (6) correspond with the three-factor model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by Small, Core 30, Growth and Value Topix indices (M2). Standard errors are clustered at the firm level and reported in parentheses. ***, ** and * indicates significance at the 1% and 5% and 10% levels, respectively. A negative R-squared is possible for 2SLS models because unlike in the case of OLS, the R-squared from IV estimation can be negative because sum squared regression (SSR) for IV can be larger than total sum of squares (SST) (see Wooldridge (2012), p. 523, section “Computing R-Squared after IV Estimation”).

Table 11. Second-stage estimation: interaction between foreign PIIs and foreign AIIs

Dependent variable	MER beta (M1) (1)	SML beta (M1) (2)	HML beta (M1) (3)	MER beta (M2) (4)	SML beta (M2) (5)	HML beta (M2) (6)	Price-to-Book (7)
% ownership foreign PIIs x % ownership foreign AIIs	-0.0007**	-0.0002	-0.003***	0.0008**	0.0002	-0.011***	0.025***
	(0.0003)	(0.0004)	(0.0005)	(0.0003)	(0.0003)	(0.0009)	(0.002)
Control variables	yes	yes	yes	yes	yes	yes	yes
Instrumented variables	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes
# of firms	2,108	2,108	2,108	2107	2107	2107	2,127
Observations	21,078	21,078	21,078	21067	21067	21067	21,231
R-squared	0.125	0.129	0.154	0.054	0.102	-	-
F-statistic	128.08***	184.82***	222.70***	71.89	145.88***	68.94***	60.14***
Endogeneity test, Chi-squared	1.182	12.992***	42.577***	12.202***	11.908***	128.445***	82.223***

Note: This table reports results from a second-stage regression of betas obtained from a three-factor model onto foreign PIIs and their interaction with foreign AIIs plus additional controls. Betas in equations (1) – (3) correspond with the three-factor model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation (M1). Betas in equations (4) – (6) correspond with the three-factor model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by Small, Core 30, Growth and Value Topix indices (M2).
Standard errors are clustered at the firm level and reported in parentheses. ***, ** and * indicates significance at the 1% and 5% and 10% levels, respectively. A negative R-squared is possible for 2SLS models because unlike in the case of OLS, the R-squared from IV estimation can be negative because sum squared regression (SSR) for IV can be larger than total sum of squares (SST) (see Wooldridge (2012), p. 523, section "Computing R-Squared after IV Estimation").

Table 12. Second-stage estimation: interaction between foreign PIIs and strategic shareholders

Dependent variable	MER beta (M1) (1)	SML beta (M1) (2)	HML beta (M1) (3)	MER beta (M2) (4)	SML beta (M2) (5)	HML beta (M2) (6)	Price-to-Book (7)
% ownership foreign PIIs x % strategic shareholders	-0.002***	-0.001**	-0.009***	0.002***	0.0003	-0.026***	0.062***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.005)
Control variables	yes	yes	yes	yes	yes	yes	yes
Instrumented variables	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes
# of firms	2,110	2,110	2,110	2,109	2,109	2,109	2,131
Observations	21,385	21,385	21,385	21,374	21,374	21,374	21,536
R-squared	0.105	0.128	-	0.052	0.098	-	-
F-statistic	122.26***	177.34***	164.94***	73.40***	146.43	52.16***	50.20***
Endogeneity test, Chi-squared	18.633***	0.341	103.039***	6.940***	1.052	197.234***	117.608***

Note: This table reports results from a second-stage regression of betas obtained from a three-factor model onto foreign PIIs and their interaction with strategic shareholders plus additional controls. Betas in equations (1) – (3) correspond with the three-factor model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by portfolios constructed using bottom and top quintiles by price-to-book and market capitalisation (M1). Betas in equations (4) – (6) correspond with the three-factor model where market excess return is proxied by Topix Index and Japan Government One Year Yield, SML and HML are proxied by Small, Core 30, Growth and Value Topix indices (M2). Standard errors are clustered at the firm level and reported in parentheses. ***, ** and * indicates significance at the 1% and 5% and 10% levels, respectively. A negative R-squared is possible for 2SLS models because unlike in the case of OLS, the R-squared from IV estimation can be negative because sum squared regression (SSR) for IV can be larger than total sum of squares (SST) (see Wooldridge (2012), p. 523, section "Computing R-Squared after IV Estimation").

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Data availability

The data underlying this article will be shared on reasonable request to the corresponding author.