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# Foreign institutional investors, information asymmetries, and asset valuation in emerging markets

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## ABSTRACT

This study investigates the effects of information asymmetries and asset valuation model differences (investor heterogeneity) between foreign and domestic investors on their distinct portfolio holdings in an emerging market setting. I argue that information asymmetry and investor heterogeneity views significantly interact in explaining the different asset allocation decisions of foreign and domestic investors. Employing a large dataset from Turkey, the findings suggest that both information asymmetry and investor heterogeneity view play a key role in explaining the investment decisions of different investor groups. Specifically, different from domestic investors, foreign investors are more likely to invest in firms with a higher global market performance which supports the investor heterogeneity view. However, this relationship only holds for firms with high information asymmetries. The difference in valuation models between foreign and domestic investors converge when asymmetric information problems between these investor groups weaken. This study contributes to the international finance literature by providing a new explanation of why foreign and domestic investors invest in different assets.

## 1. Introduction

Portfolio preferences of foreign institutional investors have been a central issue in the international finance literature since the liberalization of the stock markets. There is a growing literature, which aims to explain why foreign investors have different portfolio allocation strategies from domestic investors. Several studies in the literature explain this phenomenon through the information asymmetry proposition. According to the information asymmetry view, foreign and domestic investors invest in different assets due to the difference in their information environments. It is argued that foreign investors are in a disadvantaged position due to significant difficulties in accessing reliable information about the domestic firms (Brennan and Cao, 1997; Choe et al., 2005; Kang and Stulz, 1997; Leuz et al., 2009). As a result, they put less weight on firms that have poor information environment and which are less visible to them (Ahearn et al., 2004; Bradshaw et al., 2004; Yildiz et al., 2019). Lower credibility of information increases the information acquisition costs of foreign investors and in turn motivate them to invest in firms with greater visibility and better information environment (Aggarwal et al., 2005; Dahlquist and Robertsson, 2001; Edison and Warnock, 2004; Kang and Stulz, 1997; Lin and Shiu, 2003; Mishra, 2013).

Building on the information asymmetry view, another strand of the literature discusses the role of corporate governance structure on the preferences of foreign investors. For example, Leuz et al. (2009) find that foreign investors invest less in poorly governed firms since information asymmetries between foreign and domestic investors are more pronounced in poorly governed firms. Similarly,

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Yildiz et al. (2019) find that foreign institutional investors are more likely to invest in firms with larger boards and low levels of insider ownership. Supporting the information asymmetry view, Khalil et al. (2019) find that due to agency problems and informational asymmetries, foreign investors demand more conservative reporting from domestic firms due to the benefit of accounting conservatism in alleviating the information problems between insiders and outsiders.

On the other hand, due to their informational advantage, domestic investors are more likely to invest in smaller firms and those operating in the local market which is also referred as the “home bias”<sup>1</sup> (Coval and Moskowitz, 1999; Strong and Xu, 2003). In sum, both of the investor groups try to consolidate their advantageous position and tend to invest in stocks which they are more familiar with. Supporting these arguments, Van Nieuwerburgh and Veldkamp (2009) find that even local investors have the opportunity to learn what foreigners know, they choose not to learn, and rather they try to consolidate their position since investors make more profit if they know what others don’t know. This behaviour also increases the information asymmetry between domestic and foreign investors and leads to different portfolio holding decisions between these two investor groups. As in line with these arguments, prior literature discusses the relationship between domestic investors’ trades and information asymmetries. For example, using a large dataset from Korean market, Chung et al. (2017) find that information asymmetries which is proxied by bid-ask spreads tend to increase with the transactions of the domestic investors. The main reason of this is that domestic institutional investor’s benefit from their superior information by exploiting irrational decisions of individual investors who are generally characterized by uninformed traders.

Although the majority of the studies provide evidence in favour of the information asymmetry view in understanding foreign investor behaviour, there are several arguments that question the relevance of information asymmetry proposition in explaining the different stock holding decisions of domestic and foreign investors. Given that local investors have an informational advantage over the foreigners, it is expected that they perform better than foreign investors in terms of portfolio returns. However, the evidence is quite mixed. For example, Dvořák (2005); Choe et al. (2005) and Kalem et al. (2008) investigate the performance of different investor groups and conclude that due to their superior information, domestic investors make more profitable transactions than foreign investors which supports the information asymmetry view. On the other hand, several other studies find that foreign investors perform better than local investors since they are more sophisticated and informed about the international markets (Chang et al., 2009; Froot et al., 2001; Seasholes, 2000). In their study which aims to compare the investment performance of the foreign and local investors in the Taiwanese market, Chen et al. (2009) find that even both of the investor groups have the same set of information and foreseen strategies, foreign investors perform better. This finding also suggests that informational differences among investors may not be a valid explanation of the different investment strategies.

As an alternative to the information asymmetry view, the investor heterogeneity proposition suggests that foreign and domestic investors invest in different assets due to the difference in their asset valuation models (Kang et al., 2010). Different from domestic investors, foreign investors invest in stocks that yield higher performance within an international valuation framework. Given that foreign investors invest in multiple countries due to the international diversification motive, the performance of their portfolio is evaluated in a global context. On the other hand, domestic investors exhibit “home bias” and base their asset valuation models on a local benchmark. Consequently, these two investor groups end up with different values for the same stock and in turn invest in different assets. Numerous studies in the literature also reveal the importance of heterogeneous expectations, beliefs, and benchmarks, which may result in a different valuation of the same asset by the different investor groups which support the investor heterogeneity view (Basak, 2000; Giat et al., 2010; Harrison and Kreps, 1978).

Although both information asymmetry and investor heterogeneity propositions provide useful insights in understanding the foreign investor behaviour, there is no conclusive evidence on how these different views interact in explaining the preferences of foreign and domestic investors. In this study, I argue that information asymmetry and investor heterogeneity views significantly interact in explaining the asset allocation decisions of foreign and domestic investors. Specifically, I argue that the investor heterogeneity view, which is suggested by, Kang et al. (2010) helps to explain equity holding decisions of different investor groups in conjunction with the information asymmetries within the firm. Due to increasing information flows between local and international markets as a result of globalization in financial markets as well as boardrooms, it is predicted that local and global performances of a stock converge and investor heterogeneity view no longer explains the distinct stock holdings of foreign and domestic investors. In other words, I argue that the investor heterogeneity proposition provides significance in explaining the foreign investors’ decisions when there is a greater level of information asymmetries between domestic and foreign investors. Otherwise, both of the investor groups will end up with the same value for the same stock.

To test how information asymmetry and investor heterogeneity views interact in explaining the foreign institutional investment behaviour, I use two main measures for the information asymmetries between the foreign and domestic investors, namely IFRS adoption of the firms and number of foreign directors on the board. There is ample evidence in the literature that IFRS adoption increases the information quality through comparability of the financial statements and mitigates the disadvantage of outsiders who require reliable and quality information (Hamberg et al., 2013; Yip and Young, 2012). On the other hand, numerous studies in the literature provide evidence on the role of foreign directors in signalling useful information to the outsiders which also help foreign investors to obtain more accurate and reliable firm-specific information about the firms (Masulis et al., 2012; Rhee and Lee, 2008). As a robustness test, I also incorporate bid-ask spread and idiosyncratic volatility as other proxies for the information asymmetries.

This study employs 2020 firm-year observations for the period 2005–2015 from the Turkish setting which usually characterized by

<sup>1</sup> Home bias is defined as a strong preference for investing in domestic equities.

high information asymmetries between insiders and outsiders similar to the other emerging markets. The results of this study support my predictions. I find strong evidence that the investor heterogeneity view fails to explain the foreign investors' decisions when accounting statements become more comparable and when firms signal additional information to the foreign investors. Specifically, the valuation difference between local and foreign investors does not explain the different investment preferences of foreign and domestic investor's aftermath of the IFRS adoption and with the presence of foreign directors on board, which are used as main proxies for the information asymmetries between foreign and domestic investors. The results are robust to different methods of estimations and alternative measures of information asymmetries.

This study has several contributions to the existing literature. First, the findings of this study extend the international finance literature by providing a new explanation on why foreign and domestic investors invest in different assets. Second, the study shows that information asymmetries between insiders (local investors) and outsiders (foreign investors) are not only significant in explaining the investment decisions of foreign investors but also have a moderation effect. Third, the results of this study extend the findings of Kang et al. (2010) which provide an alternative investor heterogeneity view in explaining the stock holding decisions of different investor groups. Moreover, the findings of this study contribute to the literature by revealing the role of foreign directors and IFRS adoption in mitigating the information asymmetries between insiders and outsiders. Finally, this study provides evidence from an emerging market, Turkey, which is usually described as having significant information asymmetries among different investor groups. Therefore, the findings of this study help us to understand how and why foreign investors differ in investment decisions from the domestic investors in an investment environment characterized by high information asymmetries.

Following the introduction Section 2, presents the discussion on how information asymmetry and investor heterogeneity views explain the portfolio holding decisions of foreign investors. Section 3 presents the variables used in the study and methodological approaches. Section 4 presents the results of the study and robustness tests. Section 5 concludes the paper.

## 2. Background and hypotheses development

### 2.1. Institutional setting and foreign investors in Turkey

Investigating foreign investment behaviour in an emerging market, such as Turkey, is interesting for several reasons. First, as of 2015, about 63 % of the publicly traded shares in Borsa Istanbul is held by foreign investors. This ratio never falls below 60 % for the previous 10 years<sup>2</sup>. These figures indicate that the firms listed in Borsa Istanbul are largely dependent on foreign capital. Due to their domination in Borsa Istanbul, it is particularly important to understand the preferences of foreign investors and how information asymmetries play a direct or indirect role in their investment decisions. Second, Turkey is characterized as a poor information environment, low investor protection, and low quality of corporate disclosures (Yildiz et al., 2019). This feature of the Turkish investment environment provides us an ideal setting to reveal how information asymmetries play a role in foreign investment behaviour. Finally, foreign investors are able to invest in Borsa Istanbul without any restrictions which enables me to investigate their equity preferences without any concerns.

Apart from these, there are notable differences between investment behaviour of domestic and foreign investors in Borsa Istanbul. Although foreign investors held more than 60 % of the total market capitalization of the listed firms, they only generate around 20 % of the trading volume on Borsa Istanbul. This difference is also supported by the length of the holding periods. In 2015, average length of holding period is 230 (33) days for foreign (domestic) investors. As of 2015, there are more than 1 million investor's trade in the market and less than 1 % of which are foreign investors. This difference comes from the number of individual investors. About 99 % (1 %) of the domestic (foreign) investors are individual investors. In other words, great majority of the foreign investors are institutional investors.

### 2.2. Information asymmetries, investor heterogeneity, and foreign institutional ownership

In this study, I use two main measures of information asymmetries which are the IFRS adoption and internationalization of the boardroom. This study argues that IFRS adoption of Turkish firms and the presence of foreign directors on boards provide more reliable and useful information to the foreign investors to be used in their asset valuation models. This information transmission reduces their informational disadvantage of foreign investors and leads to a convergence in value propositions of domestic and foreign investors. Below, I discuss the role of IFRS adoption and the presence of foreign directors on reducing the information asymmetries between domestic and foreign investors and how these factors play a role in explaining the preferences of foreign institutional investors.

### 2.3. IFRS adoption and information asymmetries

Financial statements are the primary information sources of the investors and have a significant influence on their decision-making process. In this regard, comparability and familiarity of the financial information reduce the information searching costs of outsiders and improves the quality of information used in their portfolio allocation decisions (Bradshaw et al., 2014). The adoption of IFRS around the world is one of the most important developments in the accounting environment. Several studies in the literature

<sup>2</sup> Based on my own calculations from the official reports.

investigate whether IFRS adoption improves the information quality, comparability of financial statements, and also value relevance of accounting numbers in equity valuation (Aharony et al., 2010; Brochet et al., 2013; Christensen et al., 2015; Horton et al., 2013; Landsman et al., 2012; Yip and Young, 2012).

One of the important aspects of IFRS adoption is the comparability of financial information. Accounting/information comparability is particularly important for foreign investors since the main notion of information asymmetry view is that foreign investors are informationally disadvantaged compared to local investors due to dissimilarities in the financial information. In this regard, IFRS adoption is considered as a tool that improves accounting comparability. Yip and Young (2012) investigate the impact of IFRS adoption on financial statements comparability and find that adoption of international standards improves cross-country information comparability due to enhanced accounting convergence and higher information quality. Brochet et al. (2013) examine the impact of IFRS adoption on the abnormal returns associated with insider purchases in firms domiciled in the United Kingdom. They find that insiders earn significantly negative abnormal returns after the adoption of IFRS, which is an indication of the availability of public information to all users and improved comparability of accounting statements after the IFRS adoption. Supporting the earlier findings, Li and Yang (2016) find that mandatory adoption of IFRS significantly increases the frequency of management forecasts and leads to more voluntary disclosure through the channels of improved accounting quality, increased demand from investors (particularly foreign investors) and also from analysts following the firm.

Apart from these studies, there is a growing literature on the direct impact of accounting comparability and IFRS adoption on the preferences of foreign investors. For example, Bradshaw et al. (2004) examine the impact of accounting choice on the preferences of US investors in non-US firms. They find that firms with higher levels of US GAAP conformity have higher levels of institutional ownership due to familiarity with financial information and perceived information quality. Covrig et al. (2007) investigate the impact of International Accounting Standards (IAS) on foreign ownership and find that IAS adoption significantly increases the foreign mutual funds' ownership. They argue that IAS adoption provides more useful and familiar information to foreign investors and has led to reducing home bias. In a similar study, DeFond et al. (2011) find that mandatory IFRS adoption increases foreign mutual fund ownership in European securities due to increasing uniformity in accounting statements. Supporting the earlier findings, Hamberg et al. (2013) find an increase in the foreign institutional ownership in Swedish firms by the mandatory adoption of IFRS. They argue that increased ownership of foreigners is mostly due to accounting comparability. In a recent study, Chauhan and Kumar (2019) investigate the role of accounting comparability on the information disadvantage of foreign investors in India. Their findings suggest that the comparability of accounting statements significantly alleviates the informational disadvantage of foreign investors. They also find that the role of accounting comparability in reducing the informational disadvantage of foreign investors is stronger in firms with stock prices that reflect less firm-specific information. Overall, prior literature acknowledges the importance of accounting comparability in determining international capital flows.

As another important dimension of information quality, several studies investigate the role of IFRS adoption on the value relevance of earnings and earnings announcements. For example, Aharony et al. (2010) investigate the value relevance of accounting numbers before and after the IFRS adoption in 14 European countries. They find that IFRS adoption increased the value relevance of accounting numbers such as goodwill, R&D expenses, and equity revaluation. Landsman et al. (2012) find that IFRS adoption increases in the value relevance of earnings announcements in 16 countries. Similarly, Chalmers et al. (2011) investigate the impact of IFRS adoption on the value relevance of earnings in the Australian setting and find strong evidence on the impact of IFRS adoption on the relationship between earnings and firm value. Da Silva and Nardi (2017) provide strong evidence on the role of IFRS adoption in increasing the earnings quality and reducing the cost of capital as a result of a reduction in information asymmetries and a more efficient allocation of resources.

The impact of IFRS adoption on the information quality can also be explained by the accuracy of analysts' forecasts. Byard et al. (2011) examine the impact of IFRS adoption on the analyst information environment and forecast errors for the European firms. Their results suggest a significant decrease in the forecast errors and forecast dispersion after the implementation of international standards. However, this impact only holds for the firms domiciled in countries with accounting standards significantly differ from the international standards. In a similar vein, Jiao et al. (2012) find that forecast accuracy and the agreement on forecasts among analysts significantly increased after switching to IFRS in EU firms.

Based on the prior evidence, I argue that IFRS adoption of firms significantly reduces the information asymmetries between foreign and domestic investors due to improved accounting quality and financial statements comparability, and also the availability of financial information to the foreign investors. Therefore, it is expected that the impact of asset valuation differences between foreign and domestic investors significantly weakens after the IFRS adoption. Specifically, I predict that following the IFRS adoption in Turkish firms, available accounting information becomes more useful and familiar to the foreign investors in making investment allocation decisions and the difference in asset valuation models no longer explains the distinct stock holdings of foreign and local investors. Therefore, I form the first hypothesis as;

**H1.** *The impact of asset valuation differences between domestic and foreign investors on investment decisions weakens by the adoption of IFRS.*

#### 2.4. Foreign directors and information asymmetries

Prior studies in the literature reveal that outside/foreign directors play a key role within corporate governance framework and have a strong influence on the corporate decisions and firm performance (Bouwman, 2011; Estéyri and Nisar, 2016; Giannetti et al., 2015; Masulis et al., 2012). However, the importance of foreign directors on board is not limited to firm performance. Recent research shows

that foreign investors also signals relevant information to the outsiders, which in turn reduce the information asymmetries between insiders and outsiders (Masulis et al., 2012; Rhee and Lee, 2008). Given that foreign investors tend to invest in firms that they are more familiar with, the signalling function of foreign directors becomes particularly important for them. Rhee and Lee (2008) study the signalling role of outside directors by investigating how the presence of outside directors on board affects the investment decision of foreign investors. They find that firms become more attractive to foreign investors if they have directors with foreign degrees and if they have outside directors with experience in the same industry. They argue that the presence of foreigners on board reduces the information disadvantage of foreign investors and motivates them to hold equity stakes in these firms. The presence of foreign directors on board is also related to firm internationalization. Oxelheim et al. (2013) investigate the role of foreign directors on the internationalization of Nordic firms and find that firms with foreign directors or national directors with foreign experiences have a higher level of exports, a greater percentage of foreign investors, and are more inclined to be listed in foreign exchanges. This finding suggests that foreign directors reduce the information asymmetries between insiders and outsiders through the internationalization channel.

The impact of board structure on the decision-making process of the investors is generally explained by the signalling theory. According to the signalling theory, decision-makers use legitimate signals when they are in a situation of information asymmetries (Spence, 1973). Given that foreign investors are in a disadvantaged position due to a lack of available or familiar information to them, firms may facilitate access to firm-specific information by appointing reputable or well-known directors on board (Certo, 2003). Deutsch and Ross (2003) develop a model to assess the credibility of those signals to the outsiders and find that appointing reputable directors serves as a signalling mechanism and provides important non-financial information to the outsiders.

The globalization of boardroom is particularly important for firms domiciled in emerging markets. Given the monitoring and the advisory role of foreign directors, one can expect that impacts of board internationalization on financial outcomes will be stronger in emerging markets due to weak governance practices, inefficient stock markets, and a greater level of information asymmetries in these markets (Gibson, 2003). Giannetti et al. (2015) find that performance of the firms in emerging markets increases after hiring directors with foreign experience due to the adoption of high-quality governance practices and internationalization. In a recent study, Iliev and Roth (2018) investigate whether globalization of the boardroom increases the transmission of knowledge among countries. Their findings show that firms can transfer better governance practices and knowledge by hiring directors having foreign experiences. In other words, foreign experience leads to convergence of board mechanisms and governance practices across countries. As another important finding of the study, they show that this transmission mechanism works better in firms domiciled in countries with weak governance practices. In other words, the presence of foreign directors transmit relevant information to the outsiders, makes them more familiar to the local firms, and reduces their informational disadvantage. Therefore, I form my hypothesis as:

**H2.** *The impact of asset valuation differences between domestic and foreign investors on investment decisions weakens by the presence of foreign directors on board.*

### 3. Data and methodology

The sample of this study includes 192 non-financial firms listed in Borsa Istanbul and 2020 firm-year observations for the period 2005–2015. The sample period starts from 2005 due to the availability of foreign institutional ownership data. The data for the firm-specific foreign institutional ownership is obtained from the Central Securities Depository of Turkey, which is a governmental agency keeping the records for the securities listed in Borsa Istanbul. Accounting and stock price data are obtained from Datastream. The data for the governance variables are hand collected from the annual financial reports.

In this study, I focus on the impact of asset valuation differences between foreign and local investors and argue that the relationship weakens by the presence of foreign directors on board and by the adoption of IFRS. Since these factors reduce the information asymmetries among different investor groups, I predict that local and global measures of performance will converge and asset valuation differences will not be able to explain the distinct stock holdings of these groups. Following Kang et al. (2010), I form the asset valuation model of domestic investors as follows:

$$R_{i,t} = \alpha_i^D + \beta_i^D R_{D,t} + \varepsilon_{i,t}^D \quad (1)$$

In Eq. 1,  $R_{i,t}$  denote the Turkish Lira denominated return of stock  $i$  in day  $t$  excess of the risk-free rate and  $R_{D,t}$  is the return of the domestic benchmark in day  $t$ . I use BIST100 index as a domestic market benchmark.  $\alpha_i^D$  corresponds to the stock return of firm  $i$  which is not explained by the market movements. In order to obtain a risk-adjusted local performance measure (*Local performance*), I scaled  $\alpha_i^D$  with the standard deviation of the residuals ( $\varepsilon_{i,t}^D$ ).

Similarly, I form the asset valuation model of foreign investors as follows:

$$R_{i,t} = \alpha_i^F + \beta_i^F R_{F,t} + \varepsilon_{i,t}^F \quad (2)$$

In Eq. 2,  $R_{i,t}$  and  $R_{F,t}$  correspond to the excess return on stock  $i$  and global benchmark in day  $t$ . Following Kang et al. (2010) I use the MSCI World Index as the global benchmark and Eurodollar return as a proxy of the global risk-free rate. To obtain a global risk-adjusted performance measure, I scale  $\alpha_i^F$  with the standard deviation of the error terms ( $\varepsilon_{i,t}^F$ ). All returns in Eq. 2 are dollar-denominated.

Although I use separate models to obtain local and global performance measures, it cannot be argued that these measures are independent of each other. To dissociate the global performance measure from the local one, similar to Kang et al. (2010), I orthogonalize global scaled alpha to the local scaled alpha by using the following equation.



$$\alpha_i^F / \text{std}(\varepsilon_{i,t}^F) = \alpha_i^D / \text{std}(\varepsilon_{i,t}^D) + \varepsilon_{i,t}^F \quad (3)$$

In Eq. 3, I regress risk-adjusted (scaled) foreign  $\alpha$  level with the risk-adjusted local  $\alpha$  level and estimate the error terms for each year, which indicates the global performance of the stock which is not related to the local valuation. In other words, error terms of Eq. (3) correspond to the risk-adjusted global performance of each stock which is separated from the local effects (orthogonal global alpha). Hereafter  $\varepsilon_{i,t}^F$  will be referred to *Global performance* which is purified from the local valuation effects.

To investigate the impact of local and global market performance on the preferences of foreign institutional investors, I estimate the following model.

$$\text{Foreign ownership}_{i,t} = \alpha + \beta_1 \text{Local Performance}_{i,t} + \beta_2 \text{Global Performance}_{i,t} + \beta_{3-12} \text{Control Variables}_{i,t} + \varepsilon_{i,t} \quad (4)$$

In Eq. 4, the dependent variable, *Foreign ownership*, denote float-based foreign corporate ownership ratio of firm  $i$  in time  $t$ . Although prior literature provides evidence of a significant impact of individual investors on information asymmetries (e.g. [Chung and Wang, 2016](#)), I exclude foreign individual investors from the sample for two reasons. First, ownership of foreign individual investors in Turkish firms is less than 1% and majority of the firms have zero foreign individual ownership level. Second, individual investors are generally less informed about the local stocks and exhibit behavioural biases which makes the performance metrics less relevant for them. *Local Performance* <sub>$i,t$</sub>  and *Global Performance* <sub>$i,t$</sub>  correspond to the local and global stock performance of the stock  $i$  in time  $t$ .  $\beta_1$  to  $\beta_{12}$  denote the coefficient of variables including the control variables. A significant coefficient of  $\beta_2$  indicates that the global performance of the stock is an important factor for the foreign investors in their portfolio holding decisions.

Following prior literature, I include several control variables into the model which are expected to have an influence on foreign investment behaviour ([Kang and Stulz, 1997](#); [Kang et al., 2010](#); [Yildiz et al., 2019](#)). The first control variable is *Firm size* which is measured as the natural logarithm of total assets. It is predicted that foreign investors prefer large firms due to the visibility of these firms ([Batten and Vo, 2015](#); [Kang and Stulz, 1997](#)). *Liquidity* is the ratio of current assets to current liabilities, which is a proxy for short-term financial distress. Given that Turkish firms face significant challenges in meeting the short-term requirements due to volatile exchange rate and limited access to credit markets, I expect that foreign investor underweight firms with a lower current ratio in their portfolio composition. *Profitability* is the ratio of net income before extraordinary items to the total assets. Prior evidence suggests that foreign investors prefer firms with higher accounting performance ([Kang and Stulz, 1997](#); [Liu et al., 2014](#)). *Dividend* is the ratio of total cash dividends paid to the market capitalization of the firm. There are two mechanisms that dividend payments affect foreign investor behaviour. First, it is commonly argued that high dividend payouts serve as a governance mechanism by reducing the free cash flow available to managers ([La Porta et al., 2000](#)). Besides, higher dividend payments increase the monitoring power of the outsiders due to need of the firms for raising additional capital in the stock markets. Therefore, a positive relationship between dividend payouts and foreign ownership is predicted. *Market-to-book* is the ratio of book value of total assets minus the book value of equity plus the market value of equity to the book value of total assets. Market to book ratio is usually used as a proxy for the growth opportunities, however, the relationship between market to book ratio and foreign ownership is quite mixed. For example, [Dahlquist and Robertsson \(2001\)](#) and [Yildiz et al. \(2019\)](#) find a positive impact of market to book ratio on foreign institutional ownership. On the other hand, [Lin and Swanson \(2003\)](#) and [Zou et al. \(2016\)](#) find that foreign investors underweight firms with high market to book ratio in their portfolios. As another control variable, I use *Leverage* which is measured as the ratio of total debt to total assets. There are different channels that leverage might have an impact on foreign investment behaviour. First, leverage used a proxy for financial distress, which may negatively affect foreign investment behaviour. Second, a high level of debt might be used as a governance tool to mitigate the agency problems within the firm (e.g. [Harvey et al., 2004](#)), which may increase the incentives of foreign investors to have equity stakes in the target firm. *Debt maturity* is the ratio of long-term debt to short-term debt. The impact of debt maturity on foreign ownership is ambiguous. It is argued that firms with a high degree of information asymmetry use shorter debt to alleviate the adverse selection costs ([Mitchell, 1991](#)). However, higher levels of short-term debt increase the refinancing costs which discourage foreign investors to invest in these firms. Another important factor that is highly relevant to the information asymmetry argument is the internationalization level of the firm. To mitigate the informational disadvantage, foreign investors prefer firms with more international operations since they can obtain more information about these firms. *International sales* which is measured as the ratio of total exports to total sales is used as a proxy for the internationalization level. Prior literature argues that one of the important factors that affect the decisions of foreign investors is the stock liquidity ([Kang and Stulz, 1997](#); [Kang et al., 2010](#)). Supporting the information asymmetry argument, I expect that foreign investors are more likely to invest in firms with high stock liquidity since more information is reflected in stock prices in firms with a higher degree of stock liquidity. As a measure of stock liquidity, I use *Turnover*, which is the average daily turnover over the year divided by the total number of shares outstanding.

Prior literature argues that the governance characteristics of the firms are also important in explaining the foreign investor behaviour ([Leuz et al., 2009](#)). I include four governance variables into the model which are likely to be correlated to foreign ownership. First, I include *Board size*, which is the total number of board members. [Cheng \(2008\)](#) argues that larger boards have lower variability in corporate performance due to less extreme decisions which may motivate foreign investors to invest in firms with larger boards. On the other hand, slow decision making and higher agency conflicts in large boards may reduce the incentives of foreign investors to take equity stakes in these firms. *Independence* as the ratio of independent board members to the board size. The presence of independent directors on boards alleviates the agency problems and expropriation of minority investors through external monitoring ([Fama and Jensen, 1983](#)). Therefore, I predict that foreign institutional investors tend to invest in firms with more independent directors. *Concentration* as the ratio of the ownership of the largest shareholder to the ownership of the second largest shareholder. The impact of

ownership concentration on foreign ownership is not clear-cut. On the one hand, it is suggested that ownership concentration is an effective governance mechanism in countries with a low level of investor protection (Heugens et al., 2009). On the other hand, Wang and Shelier (2015) find that ownership concentration may harm firm performance particularly in emerging markets which may also have a negative impact on foreign ownership. As a final variable, *Foreign directors* is the ratio of the total number of foreign directors on board to the board size. As it is discussed before, the presence of foreign directors on board mitigates the disadvantageous position of foreign investors by revealing more firm-specific information to them. The full definition of the variables is presented in Table 1.

Table 2 presents the evolution of the main variables of interest over time. Foreign corporate ownership in percentage terms is highest in 2007 as 16.6 %. However, due to the 2007–2008 financial crisis, foreign ownership in Turkish firms gradually decrease until 2011. With the mandatory adoption of IFRS, the percentage foreign ownership starts to increase and reaches 11.8 % in 2015. Regarding the IFRS adoption of Turkish firms, the most important year is 2012 which is the first year of mandatory adoption of IFRS for Turkish firms. From 2013–2015 almost 100 % of the companies use IFRS in their financial statements reporting. The foreign director ratio represents an interesting pattern over the years. In 2009 and 2010, the percentage of foreign directors on boards is highest at 16.1 %. However, it starts to decrease after the mandatory IFRS adoption in 2012. Therefore, it seems like IFRS adoption and appointment of foreign directors on boards substitutes each other.

Table 3 presents the descriptive statistics of the variables used in this study.

#### 4. Empirical results

In this section, I present the determinants of foreign corporate ownership by providing results for the full sample and sub-samples based on IFRS adoption and foreign directors, which are the main proxies for the information asymmetries between domestic and foreign investors. Starting from the estimation results for the full sample which is presented in Table 4, I find that the global performance of the firms is one of the main determinants of foreign corporate ownership in Turkish firms. The positive coefficient of *Global performance* implies that other than the local market performance of the firms, foreign corporate investors are more likely to invest in firms with higher global performance due to their global diversification motive. This finding is in line with the investor heterogeneity view proposed by Kang et al. (2010). Other than global performance, firm size and presence of foreign directors on board have a positive impact on the investment decisions of foreign institutional investors. This finding supports the information asymmetry view, which suggests that foreign investors are more likely to invest in firms that they have more information. Given that large firms and firms with foreign directors signal more information to the outsiders, foreign investors tend to eliminate their disadvantageous position by investing in these firms. Moreover, ownership concentration has a positive, turnover has a negative impact on the foreign institutional ownership.

Regarding the results for the pre- and post-IFRS periods, I find that the global performance of the firms no longer explains foreign corporate ownership during the post-IFRS period, which supports Hypothesis 1. Increasing accounting quality and financial statements comparability by the adoption of IFRS lead to convergence in the valuation models of foreign and domestic investors. This result is in line with the earlier findings, which emphasize the importance of IFRS adoption in terms of quality of information and cross-country comparison of financial statements (Byard et al., 2011; Covrig et al., 2007; Yip and Young, 2012).

Similar to the arguments for IFRS adoption, the presence of foreign directors on board signals important financial and non-financial information to the outsiders, which in turn leads to convergence of value. The results provided in Table 4 support Hypothesis 2. *Global performance* is only significant in explaining foreign ownership when board is composed of local members. It is evident that foreign investors base their valuation models on global criteria when they are less informed about the target company. On the other hand, the presence of foreign investors on board facilitates accessing valuable information and eliminates the disadvantageous position of

**Table 1**  
Variable definitions.

Variable	Definition
Foreign ownership	Total market value of shares held by foreign corporate investors divided by the total market value of floating shares
Firm size	Natural logarithm of the total assets
Liquidity	The ratio of current assets to current liabilities
Profitability	The ratio of net income before extraordinary items to the total assets
Dividend	The ratio of total cash dividends paid to the market capitalization
Market-to-book	The ratio of the book value of total assets minus the book value of equity plus the market value of equity to the book value of total assets
Leverage	The ratio of total debt to total assets
Debt maturity	The ratio of long-term debt to short-term debt
International sales	The ratio of total exports to total sales
Board size	Total number of directors on board
Independence	The ratio of independent directors to the board size
Concentration	The ratio of the ownership of the largest shareholder to the ownership of the second larger shareholder
Foreign director	The ratio of total number of foreign directors to the board size
Turnover	Average daily trading volume over year divided by the number of shares outstanding
Local performance	Local performance measure of the stock
Global performance	Global performance measure of the stock
IFRS	Dummy variable equals to 1 if the firm adopt International Financial Reporting Standards, 0 otherwise.

This table present the definitions of the variables used in this study.

**Table 2**

Foreign ownership, IFRS adoption, and foreign directors over years.

	Foreign ownership (%)	IFRS adoption (% of total firms)	Foreign directors (%)
2005	0.123	0.216	0.131
2006	0.147	0.237	0.143
2007	0.166	0.250	0.146
2008	0.109	0.235	0.156
2009	0.101	0.234	0.161
2010	0.104	0.237	0.161
2011	0.090	0.266	0.157
2012	0.090	0.818	0.134
2013	0.092	0.990	0.137
2014	0.114	1.000	0.140
2015	0.118	1.000	0.129

This table presents the percentage of foreign corporate ownership, percentage of firms adopted IFRS, and percentage of foreign directors on boards.

**Table 3**

Descriptive statistics.

	Mean	Std. dev.	Median	Min	Max
Foreign ownership	0.113	0.196	0.018	0.000	0.971
Firm size	19.423	1.642	19.314	15.059	24.587
Liquidity	0.092	0.106	0.054	0.000	0.775
Profitability	0.029	0.105	0.032	−0.602	0.835
Dividend	0.021	0.043	0.000	0.000	0.428
Market-to-book	1.443	1.133	1.152	0.335	13.510
Leverage	0.218	0.198	0.179	0.000	1.282
Debt maturity	0.329	0.323	0.268	0.000	1.000
International sales	0.220	0.236	0.141	0.000	0.997
Foreign director	0.145	0.249	0.000	0.000	1.000
Board size	6.735	2.054	7.000	3.000	15.000
Independence	0.124	0.156	0.000	0.000	0.600
Concentration	0.323	0.329	0.157	0.000	0.995
Turnover	0.015	0.021	0.008	0.000	0.248
Local performance	0.006	0.063	0.004	−0.191	0.268
Global performance	0.000	0.011	0.000	−0.047	0.052

This table presents the descriptive statistics of the variables used in this study.

Variable definitions are given in [Table 1](#).

foreign investors which in turn leads to an insignificant coefficient of *Global performance*. These findings are in line with the prior studies, which discuss the informational role of foreign directors ([Certo, 2003](#); [Deutsch and Ross, 2003](#)). Overall, sub-sample analysis of IFRS adoption and the presence of foreign directors indicate that information asymmetries between foreign and domestic investors have both direct and indirect effects on foreign strategic ownership. The valuation model difference between these investor groups fails to explain their distinct stock holding decisions if the information asymmetry within the firm is relatively low.

#### 4.1. Endogeneity and alternative specifications

One of the significant problems in financial studies is the endogeneity of the variables. It can be argued that local and global performance measures are endogenously determined. Although the model controls for several firm-specific variables, the results may be biased due to unobservable factors that are not included in the model. In other words, it can be argued that omitted variables may lead to an endogeneity as a result of the significant association between the error terms in the model and endogenous variables. To avoid these concerns, I employ generalized methods of moments (GMM) estimation proposed by [Blundell and Bond \(1998\)](#). Specifically, I include one year lagged foreign ownership ( $\text{Foreign ownership}_{t-1}$ ) into the model and treat lagged *Foreign ownership*, *Local performance*, and *Global performance* as endogenous variables and use all of the available lags as instruments.

[Table 5](#) presents the results of dynamic GMM estimation. The estimated coefficient of *Global performance* is positive and significant at 5% for the pre-IFRS period, which supports earlier findings. However, the impact of global performance in explaining foreign ownership during the post-IFRS period significantly weakens. The results for the sub-samples based on the presence of foreign directors tell a similar story. *Global performance* is only significant in explaining foreign investor behaviour when foreigners are not represented in the boardroom. These results support the prior literature and earlier findings of the paper.

To ensure the robustness of the results, I also employ Tobit regression. Tobit regression considers the observations with zero ownership as censored data. The results presented in [Table 6](#) suggest that the impact of *Global performance* on foreign institutional ownership is largely determined by the information asymmetries which is in line with the earlier results. Overall, the results are not sensitive to different methods of estimations and endogeneity of the main variables of interest.



**Table 4**  
Multivariate regressions.

	Full sample	Pre-IFRS	Post-IFRS	Foreign director = 0	Foreign director > 0
Local performance	0.079 (0.078)	−0.012 (0.088)	0.038 (0.092)	0.041 (0.057)	0.252 (0.188)
Global performance	0.540** (0.264)	1.067** (0.493)	0.364 (0.364)	0.641*** (0.232)	0.672 (0.633)
Firm size	0.039*** (0.008)	0.042*** (0.012)	0.038*** (0.008)	0.037*** (0.006)	0.040** (0.018)
Liquidity	−0.106 (0.073)	−0.105 (0.119)	−0.123* (0.067)	0.008 (0.039)	−0.417** (0.176)
Profitability	−0.065 (0.074)	0.022 (0.066)	−0.131 (0.110)	−0.052 (0.037)	−0.178 (0.150)
Dividend	−0.160 (0.147)	−0.180 (0.149)	−0.131 (0.203)	0.096 (0.113)	−0.495 (0.433)
Market-to-book	0.022 (0.016)	0.015 (0.020)	0.029** (0.013)	0.011 (0.009)	0.023 (0.024)
Leverage	−0.051 (0.038)	−0.078 (0.050)	−0.040 (0.040)	−0.049* (0.029)	−0.125 (0.110)
Debt maturity	−0.013 (0.020)	0.027 (0.033)	−0.033 (0.021)	0.018 (0.016)	−0.081 (0.052)
International sales	−0.031 (0.031)	−0.022 (0.041)	−0.047 (0.044)	−0.002 (0.025)	−0.003 (0.092)
Foreign director	0.242*** (0.054)	0.243*** (0.062)	0.258*** (0.067)		
Board size	0.001 (0.005)	−0.002 (0.008)	0.002 (0.005)	−0.000 (0.005)	0.003 (0.010)
Independence	0.017 (0.055)	0.062 (0.084)	−0.147** (0.058)	0.010 (0.036)	0.052 (0.155)
Concentration	0.064* (0.037)	0.065 (0.055)	0.081** (0.038)	−0.008 (0.020)	0.171** (0.083)
Turnover	−0.530** (0.236)	−0.790** (0.346)	−0.485** (0.234)	−0.085 (0.161)	−1.589* (0.915)
Constant	−0.682*** (0.140)	−0.738*** (0.213)	−0.651*** (0.143)	−0.623*** (0.113)	−0.599* (0.357)
R <sup>2</sup>	0.335	0.285	0.382	0.304	0.249
# of observations	2020	965	1013	1367	653

\*\*\*, \*\*, and \* denote the significance level at 1 %, 5 %, and 10 %, respectively.

#### 4.2. Alternative measure of foreign ownership

Some of the studies in the literature estimate foreign ownership relative to the market portfolio. Following [Dahlquist and Robertsson \(2001\)](#), I specify the dependent variable as the ratio of foreign investors' weight in firm *i* to the weight of firm *i* in the value-weighted market portfolio. The alternative calculation of foreign institutional ownership is as follows:

$$\text{Foreign ownership}_{i,t} = \frac{w_{i,t}^F}{w_{i,t}^M} - 1 \quad (5)$$

In Eq. (5),  $w_{i,t}^F$  represent the weight of firm *i* in the foreign investors' portfolio in year *t* and  $w_{i,t}^M$  represents the weight of firm *i* in the market portfolio in year *t*. A positive value indicates that foreign institutional investors hold disproportionately more shares in firm *i*.

As it is shown in [Table 7](#), the results are not sensitive to the different specifications of foreign ownership. The impact of global performance on foreign ownership disappears during the post-IFRS period and also with the presence of foreign directors in the boardroom.

#### 4.3. Alternative measure of information asymmetries

As another robustness check, I use bid-ask spread and idiosyncratic volatility as an ex-post measure of the information asymmetries. I use the standard deviation of residuals from the market model as a measure of idiosyncratic volatility. Prior literature suggests that higher bid-ask spread and idiosyncratic volatility indicate a higher level of information asymmetries ([Chung and Wang, 2016](#); [Copeland and Galai, 1983](#); [Liu et al., 2018](#)). Therefore, I predict that the global performance of the firms provides greater significance in determining foreign ownership for the firms with a high bid-ask spread and idiosyncratic volatility. Results in [Table 8](#) support my predictions and also earlier results. Therefore, the main results are robust to an alternative measure of information asymmetries within the firm.

**Table 5**  
Endogeneity and GMM estimation.

	Full sample	Pre-IFRS	Post-IFRS	Foreign director = 0	Foreign director > 0
Foreign ownership <sub>t-1</sub>	0.787*** (0.037)	0.686*** (0.059)	0.845*** (0.046)	0.561*** (0.072)	0.825*** (0.031)
Local performance	0.129*** (0.047)	0.153* (0.082)	0.050 (0.044)	0.064 (0.039)	0.230* (0.127)
Global performance	0.384** (0.176)	0.783** (0.380)	0.355* (0.186)	0.359** (0.175)	0.619 (0.439)
Firm size	0.009*** (0.002)	0.014*** (0.005)	0.005** (0.002)	0.015*** (0.003)	0.003 (0.004)
Liquidity	0.015 (0.030)	0.084 (0.068)	−0.019 (0.022)	0.040 (0.035)	−0.045 (0.050)
Profitability	−0.070* (0.038)	−0.116 (0.071)	−0.014 (0.020)	−0.003 (0.019)	−0.219** (0.110)
Dividend	−0.122* (0.066)	−0.172* (0.088)	0.013 (0.066)	0.002 (0.060)	−0.214 (0.132)
Market-to-book	0.004 (0.004)	−0.002 (0.006)	0.005 (0.004)	0.004 (0.006)	0.002 (0.004)
Leverage	−0.027 (0.019)	−0.053 (0.037)	0.008 (0.014)	−0.006 (0.013)	−0.105* (0.055)
Debt maturity	0.004 (0.010)	0.017 (0.020)	−0.010 (0.008)	−0.002 (0.010)	0.025 (0.025)
International sales	−0.020* (0.012)	−0.011 (0.020)	−0.034** (0.014)	−0.006 (0.012)	−0.044 (0.033)
Foreign director	0.077*** (0.018)	0.102*** (0.026)	0.070*** (0.021)		
Board size	−0.003 (0.002)	−0.005 (0.004)	−0.001 (0.002)	−0.001 (0.002)	−0.003 (0.003)
Independence	−0.054* (0.028)	−0.057 (0.056)	−0.034 (0.029)	−0.005 (0.019)	−0.109* (0.063)
Concentration	0.010 (0.010)	0.015 (0.020)	0.010 (0.011)	−0.005 (0.010)	0.021 (0.022)
Turnover	−0.276** (0.114)	−0.529*** (0.177)	−0.113 (0.079)	−0.056 (0.083)	−0.652** (0.257)
Constant	0.000 (0.000)	−0.211** (0.089)	0.000 (0.000)	−0.275*** (0.058)	−0.027 (0.100)
AR(1)	0.000	0.000	0.002	0.000	0.000
AR(2)	0.564	0.928	0.636	0.780	0.322
Hansen (p-value)	0.418	0.238	0.577	0.998	1.000
# of observations	1828	824	965	1228	600

\*\*\*, \*\*, and \* denote the significance level at 1 %, 5 %, and 10 %, respectively. Foreign ownership<sub>t-1</sub>, Local performance, and Global performance variables are treated endogenous and all available lags are used as instruments. Variable definitions are given in Table 1. AR(1) and AR(2) test the first and second order correlation among residuals under the null hypothesis of no serial correlation. Hansen is a test of instrument validity under the null hypothesis of instruments are valid.

#### 4.4. Estimations for the domestic institutional investors

Although one may implicitly assume that the opposite results will hold for the domestic institutional investors, it may not be necessarily true since domestic individual investors account for almost 50 % of the total market capitalization held by domestic investors. Therefore, prior results may also hold for the domestic institutional investors. To avoid these concerns, I re-estimate my models for the domestic institutional investors. Table 9 presents the results.

As it is evident by its insignificant coefficient, *Global performance* is not a determinant of domestic institutional ownership. This result also supports the “home bias” argument which suggests that global valuation of a stock is irrelevant for the portfolio holding decisions of the domestic institutional investors.

#### 4.5. Difference-in-difference tests for the impact of IFRS adoption

As a final robustness check, I employ difference-in-difference test for the impact of IFRS adoption on the relationship between global performance of a stock and foreign corporate ownership. The results in Table 10 suggests that there is a significant difference of foreign corporate ownership between the firms with high and low global market performance for the pre-IFRS period. On the other hand, the impact of global performance significantly reduces after the IFRS adoption of the firm. Importantly, difference-in-difference analysis suggests that the impact of global market performance of a stock on foreign corporate ownership is significantly different for the pre- and post-IFRS periods.

**Table 6**  
Tobit estimation.

	Full sample	Pre-IFRS	Post-IFRS	Foreign director = 0	Foreign director > 0
Local performance	0.100 (0.084)	−0.110 (0.115)	0.092 (0.109)	0.050 (0.065)	0.262 (0.194)
Global performance	1.010** (0.422)	1.517** (0.762)	0.870* (0.511)	1.063*** (0.333)	0.787 (0.950)
Firm size	0.069*** (0.004)	0.067*** (0.007)	0.064*** (0.005)	0.062*** (0.003)	0.055*** (0.010)
Liquidity	−0.162*** (0.050)	−0.168** (0.082)	−0.174*** (0.063)	−0.065 (0.041)	−0.377*** (0.107)
Profitability	0.032 (0.059)	0.114 (0.084)	−0.045 (0.084)	0.033 (0.050)	−0.163 (0.130)
Dividend	−0.060 (0.117)	−0.149 (0.155)	0.061 (0.179)	0.208** (0.092)	−0.403 (0.262)
Market-to-book	0.027*** (0.004)	0.022*** (0.007)	0.034*** (0.006)	0.014*** (0.004)	0.030*** (0.008)
Leverage	−0.079*** (0.029)	−0.078* (0.045)	−0.096** (0.038)	−0.096*** (0.024)	−0.076 (0.068)
Debt maturity	−0.017 (0.017)	0.023 (0.026)	−0.025 (0.024)	0.020 (0.013)	−0.077* (0.042)
International sales	−0.034 (0.022)	−0.035 (0.034)	−0.044 (0.031)	−0.006 (0.017)	−0.017 (0.057)
Foreign director	0.314*** (0.019)	0.292*** (0.027)	0.343*** (0.027)		
Board size	0.004 (0.003)	0.003 (0.004)	0.002 (0.004)	0.002 (0.002)	0.007 (0.006)
Independence	0.080 (0.057)	0.056 (0.079)	−0.114** (0.045)	0.048 (0.047)	0.147 (0.122)
Concentration	0.087*** (0.015)	0.088*** (0.022)	0.090*** (0.021)	−0.000 (0.012)	0.167*** (0.031)
Turnover	−0.613** (0.264)	−0.471 (0.365)	−0.995** (0.406)	−0.043 (0.205)	−1.527** (0.607)
Constant	−1.300*** (0.077)	−1.326*** (0.133)	−1.229*** (0.095)	−1.143*** (0.062)	−1.019*** (0.192)
LR(Chi-Squared)	1030.90***	364.82**	584.48***	730.43***	195.13***
# of observations	2020	965	1013	1367	653

\*\*\*, \*\*, and \* denote the significance level at 1 %, 5 %, and 10 %, respectively. Variable definitions are given in Table 1.

## 5. Conclusion

The aim of this paper is to reveal how information asymmetries and investor heterogeneity views interact in explaining the foreign investment behaviour in an emerging market setting. According to the information asymmetry view, foreign investors are in a disadvantageous position compared to the local investors in terms of availability of information. To alleviate this disadvantage, foreign investors are more likely to invest in firms that have a higher quality of corporate information available to outsiders (Kang and Stulz, 1997). On the other hand, the investor heterogeneity view suggests that the valuation model difference between foreign and domestic investors is stronger in explaining foreign ownership behavior (Kang et al., 2010). In this study, I investigate how information asymmetry and investor heterogeneity views interact in determining the behaviour of foreign institutional investors.

Employing a sample of firms listed in Borsa Istanbul for the period 2005–2015, the results suggest that different from local investors; foreign investors use a global benchmark in valuing local firms and make their investment decisions accordingly. Specifically, they invest in firms with higher global performance since they invest in different markets and base their valuation models on global benchmarks. However, this relationship only holds when there is a high degree of information asymmetries between foreign and domestic investors. The low level of information asymmetries between these two investor groups, which are proxied by the IFRS adoption and presence of foreign directors on board, leads to convergence of valuation models of domestic and foreign investors. As a result, they end up with the same value for the same stocks and the global performance of the stocks fails to explain the foreign institutional investor behaviour. The results are robust to alternative measures of foreign ownership and information asymmetries as well as different methods of estimations.

The findings of this study are important to understand the investment behaviour of foreign institutional investors in an emerging market which is characterized by the presence of high information asymmetries between different investor groups. Moreover, the results shed additional light on how IFRS adoption and internationalization of boardroom play a role in reducing the information asymmetries within the firm. Consequently, the findings of this study encourage new studies to identify the portfolio holding decisions of different investor groups with varying challenges, motives, and expectations.

## CRedit authorship contribution statement

**Yilmaz Yildiz:** Conceptualization, Methodology, Writing - original draft, Writing - review & editing, Formal analysis.

**Table 7**

Alternative measure of foreign institutional ownership.

	Full sample	Pre-IFRS	Post-IFRS	Foreign director = 0	Foreign director > 0
Foreign ownership <sub>t-1</sub>	0.835*** (0.035)	0.838*** (0.052)	0.844*** (0.050)	0.778*** (0.040)	0.847*** (0.033)
Local performance	0.337 (0.215)	0.439 (0.354)	0.041 (0.240)	0.250 (0.157)	0.358 (0.615)
Global performance	1.302* (0.782)	2.915** (1.417)	1.246 (0.921)	1.631** (0.822)	0.862 (1.978)
Firm size	0.035*** (0.009)	0.042*** (0.014)	0.027** (0.011)	0.035*** (0.009)	0.021 (0.022)
Liquidity	0.059 (0.108)	0.391* (0.221)	-0.090 (0.113)	0.096 (0.109)	-0.189 (0.230)
Profitability	-0.290* (0.166)	-0.582* (0.329)	-0.029 (0.088)	0.054 (0.072)	-0.902* (0.504)
Dividend	-0.334 (0.267)	-0.697* (0.370)	0.299 (0.295)	0.175 (0.234)	-1.408** (0.688)
Market-to-book	0.007 (0.015)	-0.030* (0.018)	0.024 (0.021)	0.008 (0.025)	0.004 (0.020)
Leverage	-0.100 (0.081)	-0.198 (0.165)	0.031 (0.067)	0.015 (0.043)	-0.413* (0.251)
Debt maturity	0.024 (0.039)	0.051 (0.075)	-0.022 (0.044)	-0.002 (0.033)	0.067 (0.091)
International sales	-0.087* (0.046)	-0.033 (0.069)	-0.143** (0.069)	-0.028 (0.032)	-0.156 (0.128)
Foreign director	0.332*** (0.075)	0.340*** (0.097)	0.328*** (0.109)		
Board size	-0.014* (0.007)	-0.020 (0.014)	-0.013* (0.008)	-0.006 (0.007)	-0.009 (0.015)
Independence	-0.305** (0.133)	-0.379 (0.233)	-0.246* (0.138)	-0.040 (0.074)	-0.625* (0.320)
Concentration	0.042 (0.043)	0.059 (0.072)	0.038 (0.053)	-0.023 (0.028)	0.104 (0.099)
Turnover	-0.996** (0.462)	-1.941*** (0.751)	-0.371 (0.363)	-0.209 (0.370)	-2.051 (1.282)
Constant	-0.655*** (0.184)	0.000 (0.000)	-0.511** (0.205)	-0.856*** (0.196)	0.000 (0.000)
AR(1)	0.000	0.002	0.002	0.000	0.000
AR(2)	0.370	0.323	0.753	0.148	0.142
Hansen (p-value)	0.585	0.342	0.739	0.996	1.000
# of observations	1828	824	965	1228	600

\*\*\*, \*\*, and \* denote the significance level at 1 %, 5 %, and 10 %, respectively. Foreign ownership<sub>t-1</sub>, Local performance, and Global performance variables are treated endogenous and all available lags are used as instruments. Variable definitions are given in Table 1. AR(1) and AR(2) test the first and second order correlation among residuals under the null hypothesis of no serial correlation. Hansen is a test of instrument validity under the null hypothesis of instruments are valid.

**Table 8**

Alternative measure of information asymmetries.

	Low spread	High spread	Low idiosyncratic volatility	High idiosyncratic volatility
Foreign ownership <sub>t-1</sub>	0.743*** (0.049)	0.748*** (0.074)	0.735*** (0.070)	0.585*** (0.083)
Local performance	0.059 (0.058)	0.168** (0.070)	0.113* (0.063)	0.147* (0.078)
Global performance	0.200 (0.252)	0.542** (0.263)	0.512* (0.285)	0.864** (0.341)
Controls	Yes	Yes	Yes	Yes
AR(1)	0.001	0.000	0.017	0.000
AR(2)	0.136	0.209	0.332	0.852
Hansen (p-value)	0.974	1.000	0.814	0.917
# of observations	960	868	848	980

\*\*\*, \*\*, and \* denote the significance level at 1 %, 5 %, and 10 %, respectively. Foreign ownership<sub>t-1</sub>, Local performance, and Global performance variables are treated endogenous and all available lags are used as instruments. Variable definitions are given in Table 1. AR(1) and AR(2) test the first and second order correlation among residuals under the null hypothesis of no serial correlation. Hansen is a test of instrument validity under the null hypothesis of instruments are valid.

**Table 9**

GMM estimations for domestic institutional ownership.

	Full sample	Pre-IFRS	Post-IFRS	Foreign director = 0	Foreign director > 0
Domestic ownership $t-1$	0.918*** (0.028)	0.832*** (0.062)	0.937*** (0.038)	0.909*** (0.024)	0.828*** (0.084)
Local performance	0.089 (0.058)	0.052 (0.077)	0.105 (0.084)	0.152** (0.064)	−0.051 (0.089)
Global performance	−0.021 (0.288)	−0.179 (0.591)	−0.014 (0.289)	−0.057 (0.328)	0.165 (0.565)
Controls	Yes	Yes	Yes	Yes	Yes
AR(1)	0.000	0.006	0.000	0.000	0.037
AR(2)	0.818	0.726	0.936	0.683	0.657
Hansen (p-value)	0.732	0.359	0.766	1.000	1.000
# of observations	1828	824	965	1228	600

\*\*\*, \*\*, and \* denote the significance level at 1 %, 5 %, and 10 %, respectively. The dependent variable is the Domestic ownership which is the ratio of domestic institutional ownership level in values to the market capitalization of the firm. Domestic ownership $_{t-1}$ , Local performance, and Global performance variables are treated endogenous and all available lags are used as instruments. Definitions for the other variables are given in Table 1. AR(1) and AR(2) test the first and second order correlation among residuals under the null hypothesis of no serial correlation. Hansen is a test of instrument validity under the null hypothesis of instruments are valid.

**Table 10**

Difference in Difference test for the impact of IFRS adoption.

	Pre-IFRS foreign ownership	Post-IFRS foreign ownership
Low global performance	0.116	0.099
High global performance	0.143	0.096
Difference	0.027**	−0.002
Difference in Difference	−0.029*	

This table presents the impact of IFRS adoption on the relationship between Global Performance and Foreign Institutional Ownership. \*\*\*, \*\*, and \* denote the significance level at 1 %, 5 %, and 10 %, respectively.

## Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.ribaf.2021.101381>.

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