

Determinants of foreign institutional ownership in CEE public companies

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Abstract

There is a substantial dispersion in foreign institutional ownership among CEE countries and companies. Based on a group of 599 public companies from eleven CEE countries, we identify factors that explain the observed dispersion at both the company and country levels. These factors seem to be driven mostly by investment horizon of institutional investors. Long-term investors tend to invest primarily in countries with a higher level of law enforcement. They prefer stocks of bigger companies, avoiding companies controlled by individuals and families. Short-term investors prefer companies with more liquid stocks, higher ownership dispersion, and higher stakes held by domestic institutional investors, avoiding highly concentrated stock markets.

Keywords: institutional ownership, institutional investors, CEE region, corporate finance, ownership structure, corporate governance

JEL Classification: G23; G30; G32; G34

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1. Introduction

Institutional investors (mutual funds, pension funds, insurance companies, etc.) are the largest investor category holding app. 43% of the world market capitalization, as presented in the latest OECD reports (Medina, de la Cruz, and Tang 2022; De la Cruz, Medina, and Tang 2019). Their investment decisions play a significant role in shaping the ownership structure of public companies worldwide. Differences in country- and company characteristics substantially explain cross-country and cross-company variations in institutional ownership, as confirmed by previous studies (Aggarwal, Klapper, and Wyszocki 2005; Li et al. 2006; Ferreira and Matos 2008; Leuz, Lins, and Warnock 2009).

We conduct similar research concentrating on Central and Eastern Europe (CEE) where the mean stake held by institutional investors in an average public company (23.1%) represents only about 50% of the average stake observed for a group of OECD countries. We focus on CEE companies for two main reasons. First of all, previous studies (Li et al. 2006; Ferreira and Matos 2008; Leuz, Lins, and Warnock 2009; Ferreira et al. 2017) tend to concentrate on developed economies and overlook countries from the CEE region¹. Secondly, the CEE region is characterised by unique economic and political features that may influence institutional investors' decisions differently from those in Western countries. Economic transformation, privatisation, and integration with the European Union have significantly altered these countries' investment landscape, creating new challenges and opportunities for foreign institutional investors. Moreover, companies in this region are characterised by relatively high ownership concentration (Gugler, Ivanova, and Zechner 2014; Aminadav and Papaioannou

¹ Li et al. (2006) included in their sample only two countries from the CEE region (Czechia and Poland), Ferreira and Matos (2008) included only companies from Poland and Leuz et al. (2009) included only 6 companies from Czechia in the whole sample of 4,409 companies from 29 countries.

2020), which has been proven to discourage foreign institutional investors. Nevertheless, those investors are still present in many CEE companies, which poses the question of what else drives their decisions to invest in the region. This paper aims to fill this gap by investigating the determinants of the ownership decisions of various groups of institutional investors in eleven CEE countries that are EU members: Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. In our study, we focus on foreign institutional investors, similarly to Ferreira and Matos (2008) and Leuz, Lins, and Warnock (2009). However, we also provide the empirical findings for various sub-groups of institutional investors characterised by their investment horizon (long-term versus short-term investors). It is, to our knowledge, the first study showing that there are different determinants of institutional ownership for long-term and short-term (foreign) institutional investors, in line with our expectations.

The CEE region exhibits significant dispersion in institutional ownership among countries. The highest aggregate institutional ownership (by the market capitalization held) is noted in Slovenia (36.7%) and Poland (31.4%), while the lowest is observed in Slovakia (3.1%) and Lithuania (3.7%). There is also a huge disparity between foreign and domestic institutional ownership in CEE countries. Foreign institutional investors dominate in Czechia, Estonia, and Latvia, where their proportion in the total aggregate stake held by all institutional investors exceeds 90%. On the contrary, there are some countries with substantially higher proportion of local institutional ownership, including Croatia (72%), Romania (72%) and Slovenia (69%).

Our baseline results that refer to the company-level determinants of institutional ownership (regardless of their investment horizon) confirm those of Ferreira and Matos (2008) and Leuz, Lins, and Warnock (2009): higher ownership concentration and individual/family control are consistently associated with lower total institutional ownership. Firm size is positively related to foreign institutional ownership, which may indicate a preference among foreign institutional

investors for liquidity, visibility, and quality of disclosure. Domestic institutions show greater engagement with smaller firms and firms that pay dividends. Contrary to our predictions, leverage is positively associated with foreign holdings, whereas the effects of profitability are weak and inconsistent at most. A value orientation is evident, as the book-to-market ratio is positively related to institutional ownership, particularly among foreign investors. At the same time, momentum patterns differ by origin, with foreign investors tending to avoid firms with strong recent returns, while domestic investors tend to invest in them. At the country level, a stronger rule of law and larger stock markets attract institutional capital. This is consistent with expectations based on existing literature (Ferreira and Matos 2008; Leuz, Lins, and Warnock 2009). The size of the stock market also plays a role, with larger markets attracting both types of ownership, indicating that the proper market infrastructure and liquidity are important factors in institutional capital allocation.

Disaggregating foreign institutional investors by investment horizon, which mostly differentiates our study from the previous ones, reveals significant differences in the results. Long-term foreign institutions appear to be insensitive to ownership concentration, but seem to avoid firms that are controlled by individuals or families. They favour larger companies with a higher book-to-market ratio, and their allocations increase with stronger legal enforcement. In contrast, non-long-term foreign institutions reduce exposure to concentrated firms and pay more attention to trading opportunities that are strongly associated with stock turnover. They are also more likely to invest in companies with domestic institutions already present, which is consistent with the idea of a liquidity buffer and monitoring by local investors. For these investors, higher market concentration at the country level acts as a deterrent. Interestingly, the rule of law seems to have a negative impact on the investment decisions of non-long-term foreign institutional investors at the country-level, which we cannot explain by referring to existing theories or previous findings.

We perform a series of robustness tests to check the credibility of our results derived from regressing different country- and company-level determinants against long-term and non-long-term institutional ownership. Excluding Poland as the dominant market in the initial research sample leaves the main results intact: size, book-to-market, and legal enforcement remain significant, with profitability gaining salience outside Poland. Fixed-effects models reinforce two structural drivers: company size (positive for both horizons) and law enforcement (positive for long-term, negative for foreign investors with shorter investment horizons). Tobit estimations, which account for censoring the dependent variable at zero, again reproduce the headline findings and additionally show stronger roles for profitability, cash holdings, and the presence of domestic institutions, while confirming that short-term foreign investors lean into liquidity and seem to avoid recent high-return stocks. Taken together, our robustness tests show that the results are not artifacts of sample composition or model choice, and that determinants of foreign institutional ownership in CEE firms are systematically different for long and non-long-term-oriented institutional investors.

Data on company ownership and other company characteristics, as well as data on institutional investors, were taken from the Capital IQ database (S&P Global). We also used OECD reports for institutional ownership in other countries, and World Bank datasets and reports to measure shareholder rights and their enforcement (Worldwide Governance Indicators), as well as to get the macroeconomic indicators. We also used datasets from local stock exchanges to get the stock market capitalization and to measure the stock market concentration in each country in our sample. In our analyses, we primarily use OLS regression and panel regression with random effects, but in the robustness tests, we also use panel regression with fixed effects and Tobit regression.

The paper contributes substantially to the literature by focusing on the under-researched CEE region and by identifying specific factors influencing the investment decisions of institutional

investors of certain types. Our study reveals that long-term institutional investors are attracted by high legal standards, well-developed financial markets, and corporate transparency, as these empower their rights and enable monitoring. Conversely, non-long-term investors prefer to invest in countries that offer high stock market liquidity and avoid companies with highly concentrated ownership. All in all, it suggests that foreign investors with a longer investment horizon consider factors that might enable them to monitor insiders via traditional “voice” channel, whereas those with a shorter horizon prefer to utilise an exit threat, as a potential governance mechanism, consistent with predictions from Edmans’s (2009) as well as Admati and Pfleiderer’s (2009) models.

Our results have practical implications not only for company insiders and investors but also for policymakers and regulators in CEE countries. They help them better understand the mechanisms of attracting foreign institutional capital and what may force them to terminate their investments in the region.

2. Literature review

2.1 Drivers of institutional ownership

Previous studies on institutional ownership highlight several country-level factors identified as significant determinants of how institutional investors allocate their capital. One group of such factors captures the quality of legal and institutional frameworks, particularly those related to investor protection and corporate governance (Li et al. 2006; Leuz, Lins, and Warnock 2009). Li et al. (2006) find that institutional investors become blockholders in countries with stronger shareholder rights, better enforcement mechanisms, and extensive financial disclosure because such blockholders are more willing to take an active monitoring role if they can obtain the information needed for monitoring purposes, if they can exert influence, and enforce their rights. Ferreira and Matos (2008) also emphasize the importance of the quality of disclosure standards, legal frameworks, and investor protection. Similarly, Leuz, Lins, and Warnock

(2009) conclude that companies operating in stable and predictable political and legal environments are more attractive to foreign institutional investors. These three empirical studies were based on observations of the ownership structure at the company level. However, other studies take a different perspective, leading to similar conclusions. Aggarwal, Klapper, and Wysocki (2005) examine the portfolio structures of actively managed US mutual funds that invest internationally, finding that they prefer to hold stocks of companies from countries with stronger accounting standards, shareholder rights, and legal frameworks.

The country-level factors mentioned above refer to the country's institutional setting from the perspective of corporate governance practices. Another group of critical factors refers to the size and development of the local capital market. Large and well-developed capital markets offer more investment opportunities and lower transaction costs, which can attract foreign institutional investors. Li et al. (2006) provide evidence that the size of the local stock market (measured with the log of the sum of capitalization of all domestic companies) is positively related to institutional blockholdings. They also find a negative relation between the country's financial development (measured with the quotient of stock market capitalization to GDP) and the level of institutional blockholdings. Ferreira and Matos (2008) present ambiguous results on the relationship between financial market development and institutional ownership. At the total level of institutional ownership, the relationship is negative. It is also negative for domestic institutional ownership but insignificant for foreign institutional ownership.

Previous studies indicate that institutional investors also exhibit a “home bias” reflected not only in overweighting stocks from companies domiciled in their countries. A similar “home bias” is evident in their international allocations. It is manifested in their preference for companies from countries with the same language (Ferreira and Matos 2008), countries physically closer to their local market (Ferreira and Matos 2008), or countries adopting similar accounting standards (Bradshaw, Bushee, and Miller 2004).

Existing studies also highlight several company-level determinants of institutional ownership (Ferreira and Matos 2008; Leuz, Lins, and Warnock 2009). These studies indicate that institutional investors prefer large companies with highly dispersed ownership. Foreign institutional investors seem to prefer companies with cross-listings (especially in the US market) as well as companies whose shares are included in global indices such as MSCI World. The same studies reveal that factors referring to a company's financial performance, stock returns, and stock liquidity have different (or even no) impact on foreign and domestic institutional investors. Ferreira and Matos (2008) demonstrate that stock returns are positively related to foreign institutional ownership but negatively related to domestic institutional ownership while company profitability has proven to be insignificant for both groups of investors, similarly to the book-to-market ratio. Interestingly they find a negative relation between dividend yield and foreign institutional ownership.

We conjecture that these factors are yet significant for some groups of institutional investors, regardless of their origin, but to find this relation, one has to split institutional investors using a different criterion: investment horizon. Long-term investors may have different preferences for stock holdings than institutional investors with shorter investment horizons. Moreover, the company's ownership structure and concentration can also attract (discourage) institutional investors with various investment horizons. Firms with more dispersed ownership structures seem to be more attractive to long-term institutional investors, as they offer greater potential for influence and monitoring (Shleifer and Vishny, 1986). This should, however, not impact short-term investors, who exert monitoring mostly through the exit channel (Admati and Pfleiderer 2009; Edmans 2009), and as such, they should be less concerned about the quality of corporate governance and legal environment (Döring et al. 2021). At the same time and for the same reasons (exerting pressure via the exit channel), mid- and short-term institutional investors should be more concerned about stock liquidity.

2.2 Outcomes of foreign institutional ownership in public companies

The presence of foreign stockholders (especially if they play the role of blockholders) can benefit other groups of existing shareholders in their portfolio companies by improving corporate governance, improving firm performance, and reducing agency costs (Ferreira and Matos 2008; Ferreira et al. 2010; Aggarwal et al. 2011; Bena et al. 2017). Moreover, some studies also highlight the potential benefits of foreign institutional ownership for outside investors (Ferreira et al. 2010; Kacperczyk, Sundareshan, and Wang 2021), mostly because foreign institutional investors increase market liquidity reducing at the same time information asymmetry² and transaction costs.

Foreign institutional investors may be more effective in monitoring insiders as they typically do not have business ties with their portfolio companies (Bena et al. 2017). Foreign institutions from countries with stronger protection of minority shareholders' rights (particularly independent entities, such as mutual funds) act as enhancers of governance systems (Aggarwal et al. 2011), provide monitoring protection of minority shareholders by reducing tunnelling through intercorporate loans (Anderson, Chi, and Liao 2019), and reduce earnings management (Lel 2019). Foreign institutional investors from common law countries “export” good governance practices (Bena et al. 2017; Kim, Pevzner, and Xin 2019). Bena et al. (2017) document that greater foreign institutional ownership fosters long-term investments, employment, and innovation. These findings contradict the common belief that foreign investors force managers of their portfolio companies to focus on short-term benefits (managerial myopia). Nevertheless, Kang et al. (2019) find that short-term foreign blockholders do not act as monitoring institutions and are reluctant to invest in long-term projects such as R&D. Döring et al. (2021) observe that foreign short-term institutional investors do not engage

² A study by Chung et al. (2022) provides evidence that domestic institutional investors are more efficient in reducing information asymmetry.

in monitoring, confirming previous results by McCahery, Sautner, and Starks (2016); however, they discipline managers through credible threats of exit.

Ownership by foreign and independent institutions positively impacts corporate performance and firm valuation (Ferreira and Matos 2008), especially when foreign institutions have longer country-level investment horizons (Rahim, R. U. Mian, and A. Mian 2024). However, Mian et al. (2022) document that the impact of foreign institutional ownership on firm value depends on the legal origin of the firm. Luong et al. (2017) show that foreign institutional ownership has a positive, causal effect on firm innovation. Chen, Harford, and Li (2007) provide evidence that foreign ownership positively affects investment efficiency, mostly due to improved monitoring; however, this effect seems to depend on the legal origin of institutional investors (Ilyas, R. U. Mian, and A. Mian 2024). However, Alvarez, Jara, and Pombo (2018) do not observe any significant relationships between institutional ownership and investment efficiency, and Tran (2020) finds a negative relationship, particularly in financially unconstrained companies.

Foreign institutional investors act as facilitators in the international market for corporate control, reducing transaction costs and information asymmetry (Ferreira et al. 2010). The authors found that cross-border M&As are more likely to occur in countries where foreign institutions hold a higher fraction of the local stock market.

Recent research has identified institutional investors' growing influence on environmental, social, and governance (ESG) objectives, with a particular focus on the role of foreign institutional investors in shaping corporate sustainability practices (Choi, Gao, and Jiang 2020; Dyck et al. 2019; Ilhan et al. 2023; Matos 2020; Tang and Zhang 2020). Evidence suggests that foreign institutional ownership promotes convergence of corporate governance practices worldwide. This is because cross-border investment flows encourage capital allocation in a manner that is both long-term and efficient (Matos 2020). Furthermore, Dyck et al. (2019) show

that foreign investors from countries with robust environmental and social norms tend to enhance their portfolio companies' ESG performance. Foreign institutional investors exert a considerable influence on the extent of climate-related disclosure. A study by Ilhan et al. (2023) indicates that "climate-conscious investors," including those from countries with comprehensive stewardship codes, can exert considerable influence on firms to enhance climate risk transparency.

3. Main variables and empirical models

3.1. Institutional ownership measures

For each public company from our sample, we calculate the proportion of stocks held by all institutional investors at the end of each year (IO). Then, we calculate the weighted average institutional ownership for each CEE country in each year using the end-of-year market capitalization of each public company as weights. Thus, our average aggregate institutional ownership measure (IO_AGG) represents the market capitalization held in a given country and in a given year by institutional investors, and as such, it is comparable to a measure used in OECD reports (Medina, de la Cruz, and Tang 2022; De la Cruz, Medina, and Tang 2019). Similarly, we calculate foreign (FIO) and domestic (DIO) institutional ownership at the company and then at the country level, replacing in our primary measure all institutional investors with foreign and domestic ones, respectively.

We measure each institutional investor's horizon using portfolio turnover over a three-year horizon, similarly to Derrien, Kecskés, and Thesmar (2013). We then divide institutional investors into long-term, mid-term, and short-term investors, using the terciles of portfolio turnover distribution, separately for each year. We classify investors as long-term if they fall into the first tercile. Finally, for each company in each year, we calculate the proportion of stocks held by all institutional investors classified as long-term, mid-term, and short-term

investors, that is, the long-term (LTIO), the mid-term (MTIO), and the short-term institutional ownership (STIO), respectively. We then aggregate mid-term and short-term investor ownership into non-long-term investor ownership (NLTIO).

3.2. Company- and country-level determinants of institutional ownership

As company-level determinants, we included in our analyses variables proven to be significant in previous studies (Ferreira and Matos 2008; Leuz, Lins, and Warnock 2009), such as: company size (SIZE), ownership concentration (OWN_CONC), a dummy variable informing whether the company is controlled by an individual or family (INDIV_CONTR), financial leverage (LEV), profitability (EBITDA/A), financial liquidity measured as cash over assets (CASH/A), a dummy variable informing whether a company paid a dividend in a given year (DIV_DUMMY), log of book-to-market ratio (BM), previous year stock return (RET), and stock liquidity measured with share turnover (SHARE_TURN).

In accordance with the findings of Ferreira and Matos' study (2008), it is anticipated that all categories of institutional investors will demonstrate a positive association with company size (SIZE) and a negative correlation with ownership concentration (OWN_CONC). Furthermore, in accordance with the findings of Leuz, Lins, and Warnock (2009), it is anticipated that there will be a negative correlation between the institutional ownership and insider control (INDIV_CONTR). We also expect institutional investors to be more inclined to invest in less indebted (LEV), more profitable companies (EBITDA/A), and companies with higher financial liquidity (CASH/A), which was also revealed by previous studies. The outcomes of other company-level characteristics may vary contingent on the geographical provenance of institutional investors. For instance, Ferreira and Matos (2008) found that, in contrast to domestic institutions, foreign institutional investors engage in companies with higher momentum (RET), higher book-to-market ratios (BM), and with lower dividend yields. The

potential use of exit transactions as a means of monitoring by foreign institutional investors, particularly those with a shorter investment horizon, leads us to expect a positive relationship between stock liquidity (STOCK_TURN) and non-long-term foreign institutional investors.

We also regress institutional ownership on a set of variables referring to a country's market data, such as stock market size (LN_STMCAP), financial development (STMCAP/GDP), and stock market concentration (STM_CONC). As Ferreira and Matos (2008) have previously observed, particularly in the context of U.S. institutions, a clear preference for less developed markets is evident. However, this preference does not necessarily extend to all foreign institutional investors. The expected association between institutional ownership and market-level concentration is shown to be conditional on the drivers of that concentration. When concentration reflects a few very large, liquid, and visible firms with substantial free float (e.g., MSCI constituents and cross-listed blue chips), institutional holdings – especially foreign and independent ones – tend to be higher, consistent with documented preferences for size, liquidity, index membership, cross-listing, and low insider dominance (Ferreira and Matos 2008). Conversely, when concentration emanates from firms with pronounced insider or family control and inadequate investor protection or disclosure frameworks, foreign investors systematically underweight these firms, even after controlling for liquidity and momentum (Leuz, Lins, and Warnock 2009). Due to the mixed results of the above-mentioned papers, together with the international character of institutional investors included in our research sample, we do not formulate particular expectations on the relationship between a country's stock market characteristics and institutional investors' engagement.

To control for the institutional setting at the country level, we use the measure referring to the law enforcement (RULE_LAW) taken from the Worldwide Governance Indicators (WGI) project. According to the WGI project, it reflects “perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract

enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence”.

The detailed definitions of all variables are presented in the Appendix.

3.3. Model specification and study design

Our primary analysis is based on a pooled OLS regression with year, country, and industry dummy variables. Below is the general specification of our main pooled OLS model:

$$IO_{i,t} = \alpha + \sum_{k=1}^n \beta_k \times COMP_VAR_{k,i,t-1} + \sum_{l=1}^n \beta_l \times COUNTRY_VAR_{l,i,t-1} + \sum_{m=1}^{10} \beta_m \times YEAR_m + \sum_{n=1}^{11} \beta_n \times COUNTRY_{n,i} + \sum_{o=1}^{10} \beta_o \times IND_{o,i} + \varepsilon_{i,t}, \quad (1)$$

where $IO_{i,t}$ refers to institutional ownership for a company i in year t , $COMP_VAR_{i,t-1}$ is a vector of variables referring to company-level determinants for a company i in year $t-1$; $COUNTRY_VAR_i$ is a vector of variables referring to country-level determinants for a company i in year $t-1$ including both, market data and law enforcement data, $YEAR$ is a year dummy variable, $COUNTRY_i$ is a country dummy variable for a company i , IND_i is an industry dummy variable for a company i , based on the first level of GICS classification, α is the intercept, and $\varepsilon_{i,t}$ represents the error term.

In subsequent analyses, we replace our dependent variable – institutional ownership (IO) with variables referring to the given category of institutional ownership, namely: foreign (FIO), domestic (DIO), foreign long-term (LTFIO), and foreign non-long-term (NLTFIO).

We also implement panel regressions with random effects. Additionally, in the robustness tests, we use panel regressions with fixed effects and Tobit regressions, because our dependent variable (ownership) is censored at zero

4. Data and sample overview

We measure institutional ownership for 599 CEE companies listed between 2011 and 2020 on stock exchanges in 11 countries that are currently EU members (Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia). In total, our initial sample captures 4,302 firm-year observations. Nevertheless, the results of our regressions are based on an unbalanced panel of 3,602 firm-year observations (566 companies) due to the missing data stemming from lagged independent variables³. All company-level data were obtained from the Capital IQ database (S&P Global).

Our sample of CEE public companies was created with some filters that we applied. First of all, to be included in the initial sample, a company had to be listed for at least one year between 2011 and 2020. Secondly, it should have a minimum average market capitalization of EUR 10m.⁴ Thirdly, the company should be listed in the country of incorporation, and it should also be the country in which it has its headquarters. Lastly, the data on the equity stake of the major shareholder should be available in Capital IQ. Table 1 presents the distribution of the final sample by country and sector.

INSERT TABLE 1 HERE

Using the Capital IQ database, we identified 2,190 institutional investors holding equity stakes in our sample companies during the period 2011-2020. We then limited the sample of institutional investors to those institutions that hold equity stakes in at least 10 companies from

³ Moreover, some companies were delisted in 2012, so they were included only in our preliminary analysis of institutional ownership dispersion for the period 2011-2020 but not in regression models based in fact on the period 2012-2020.

⁴ It was calculated as the average over the whole period between 2011 and 2020. For companies from countries with other currency than EUR we converted their market capitalizations derived in local currencies to euro using exchange rate from the end of 2020.

the CEE region. For this subsample consisting of 621 institutional investors, we checked whether the institutional investor is from the same country as the portfolio company. If so, we denoted it as a domestic institutional investor for that given company. Similarly, we identified foreign institutional investors from the perspective of each sample company. For each company, we aggregated stakes held by its domestic and foreign institutional investors. To get the aggregate average institutional ownership in a given year at the country level, we calculate the weighted average institutional ownership with the market capitalization of companies as weights. Table 2 presents the average aggregate capitalization held by institutional investors in eleven countries from our CEE sample.

INSERT TABLE 2 HERE

A substantial dispersion in institutional ownership is observable among CEE countries. In Estonia, Hungary, Poland, and Slovenia, the average stake held by institutional investors is relatively high (exceeding 25%), while in Czechia, Slovakia, and Lithuania it is much lower (below 10%). Furthermore, substantial discrepancies in foreign and domestic institutional ownership are evident. In Czechia, Estonia, Latvia, Slovakia, Lithuania, and Hungary, foreign institutional investors are predominant. By contrast, in Croatia, Romania, Slovenia, and Bulgaria, domestic institutional investors hold a significantly higher proportion of the market (averaging at least 50% in each country). Poland appears to be an exception to this phenomenon, as the proportions held by both groups of institutional investors are comparable.

Table 3 presents the summary statistics of our main variables.

INSERT TABLE 3 HERE

As presented in Table 3, there is a clear indication of significant heterogeneity in the level of institutional involvement across CEE firms. The mean stake of all institutional investors,

irrespective of their geographical classification (IO), is 23.1%. Domestic institutional investors have been found to dominate, with an average shareholding of 14.6%, in comparison to 8.5% for foreign institutional investors. Long-term foreign institutional investors marginally dominate the latter group in comparison with non-long-term investors (the average shareholding is 4.9% and 3.6%, respectively).

Upper-tail skewness is observed in the data. The distributions of both LTFIO and NLTFIO are concentrated at zero with very low medians (0.6% and 0.5%, respectively), yet feature a long upper tail (75th percentile equals 5.8% and 5.3%, respectively) that elevates the means to 4.9% and 3.6%, respectively. The sample encompasses a substantial number of firms that do not have long-term foreign institutional investors (exceeding 1,600 observations), along with a modest subset that holds substantial stakes. This signifies the presence of a pronounced right-tailed distribution, which is notably concentrated among a select group of firms.

Ownership concentration is high, as the average (median) stake held by three largest owners equals 59.2% (64.4%). Roughly one-fifth of firms are controlled by individuals/families (INDIV_CONTR dummy equals 19.5%), which could limit free float and external blockholding. Average firm size measured with market capitalization is app. US\$330m with a median of US\$58m, which shows the structure of CEE stock markets dominated by relatively small companies.

An analysis of market data at the country level shows, above all, that stock markets in the CEE region are relatively small compared to other emerging markets, not to mention developed ones. The average stock market capitalization, calculated as the sum of the capitalization of domestic listed companies (STMCAP), amounted to only approximately \$27 billion. There is also considerable variation in the size of capital markets in the CEE region. The largest market is Poland, with a stock market capitalization of \$180 billion at the end of the period analyzed, and

the smallest is Latvia (approximately \$1 billion). The degree of capital market development, measured as the ratio of the stock market capitalization to GDP, is also relatively low in the CEE region, with high variation. The average MCAP/GDP ratio is only 15.4%. The highest development measure is observed in Croatia (37.5%) and Poland (31.1%), and the lowest in Latvia (3.5%) and Slovakia (8.0%). Another distinguishing feature of the CEE region is the relatively high concentration of the stock market, measured by the share of the largest local listed company in the total stock market capitalization (STM_CONC). The average value of the ratio for the CEE region is 29.2%. The highest concentration is found in the Slovak market, where the capitalization of the largest Slovak company accounts for almost half of the total capitalization of the entire Slovak stock market (48.1%), followed by the Czech market (46.4%). In comparison, the lowest concentration is found in the Bulgarian market (5.9%) and the Polish market (8.7%).

5. Baseline results

The main aim of our study was to identify country- and company-level determinants of foreign institutional investors' allocation decisions in the CEE region. We started with the baseline model presented in Equation (1) in Section 3. Table 4 presents the results of pooled OLS regressions on the determinants of institutional ownership in CEE public companies over the period 2011-2020. The dependent variables are defined as total institutional ownership (IO), foreign institutional ownership (FIO), and domestic institutional ownership (DIO).

INSERT TABLE 4 HERE

At the company level, the results indicate that ownership concentration (OWN_CONCTR) is a major obstacle for institutional investors. Across all models and subsamples, higher ownership concentration is negatively associated with institutional ownership. This effect is robust for both foreign and domestic institutions, which confirms previous results by Ferreira and Matos

(2008). Similarly, the presence of an individual or family as a controlling shareholder (INDIV_CNTRL) deters institutional investors. Although the effect is statistically stronger for domestic institutional investors, it is also evident for foreign institutions once country and industry heterogeneity are taken into account. The aforementioned observations are consistent with the findings reported in the literature (Ferreira and Matos 2008; Leuz, Lins, and Warnock 2009).

Firm size (SIZE) is another important determinant of IO, but its role differs depending on the type of investor. Foreign institutional investors prefer larger companies, which are typically more liquid, more transparent, and subject to stricter disclosure standards. On the other hand, domestic institutions seem not to be afraid of investing in smaller companies. This divergence illustrates the distinct informational positions of the two groups: while FIO mitigates information asymmetry by investing in large and well-known firms, DIO, familiar with local markets and business practices, are better positioned to invest in smaller and less transparent companies.

Contrary to our expectations based on the literature, financial leverage (LEV) is positively related to institutional ownership, although this effect is driven mainly by foreign investors. Rather than treating leverage as a signal of potential financial distress, foreign institutions may interpret it as an indication of capital discipline and growth opportunities, especially in countries where access to credit markets has been limited historically. Profitability, on the other hand, does not appear to play a consistent role, with only a weak positive effect (significant at a 10% level) for foreign investors in the baseline model without control for country and industry heterogeneity. Inconsistent results regarding profitability were also found in Ferreira and Matos (2008).

Dividend policy (DIV_DUMMY) proves to be an essential determinant of IO; however, firms

paying dividends are more attractive for domestic institutional ownership, which confirms the results obtained by Ferreira and Matos (2008). In turn, the book-to-market ratio (BM) is positively related, especially to foreign institutional ownership, which is also in line with our expectations. This suggests that foreign institutional investors tend to favour firms, which are perceived as more mature and stable. It can suggest their value-oriented approach emphasizing undervaluation and tangible fundamentals. In contrast, domestic institutional investors appear to rely more on dividend payouts as a signal of firm quality.

The findings referring to past returns (RET) contradict our initial expectations, which were based on the extant literature (Ferreira and Matos 2008). Foreign investors appear to avoid companies with strong recent performance, as indicated by the negative and significant coefficients on returns. In contrast, domestic investors are more inclined to invest in companies that have recently experienced growth. These contrasting behaviors might highlight the heterogeneity in investment strategies: foreign institutions seem to adopt a more value-based approach, while domestic investors tend to pursue yield. Stock liquidity (SHARE_TURN) has only a limited effect, with a weak positive association for foreign ownership in one specification, suggesting that while liquidity is relevant in a certain setting, it is not the primary factor driving institutional investors' allocation decisions in the CEE region.

At the country level, the rule of law index (RULE_LAW), as expected, exerts a significant and positive influence on institutional ownership. This finding confirms that institutional investors are highly sensitive to the quality of legal enforcement and investor protection when operating in CEE markets. Stock market size (STMCAP) also plays a decisive role, with larger markets attracting both foreign and domestic institutional ownership. This reinforces the idea that larger capital markets provide the necessary infrastructure and liquidity for institutional investment.

Overall, the results presented in Table 4 underscore the importance of distinguishing between

foreign and domestic institutions when analysing determinants of institutional ownership structures in CEE firms. While some determinants, such as ownership concentration and stock market size, appear to be universal, others differ systematically between investor groups. Foreign institutions are guided primarily by concerns about ownership structure, legal protection, and firm stability, whereas domestic institutions display stronger engagement with smaller, paying dividends, and higher-return companies.

Table 5 extends the analysis by distinguishing between foreign institutional investors with different investment horizons. We report the results of pooled OLS and random effects panel regressions, where the dependent variable is foreign institutional ownership disaggregated into long-term and non-long-term investors⁵.

INSERT TABLE 5 HERE

The results indicate that the determinants of ownership differ substantially between long-term (LTFIO) and non-long-term oriented foreign institutions (NLTFIO). This provides evidence that investment horizon plays a critical role in shaping institutional investors' allocation decisions in CEE companies.

For long-term foreign institutional investors, ownership concentration (OWN_CONCTR) is not statistically significant, suggesting that these investors are less sensitive to concentrated ownership when making investment decisions. By contrast, non-long-term foreign investors avoid firms with concentrated ownership (as evidenced by the consistently negative and significant coefficients on OWN_CONCTR in Model 3 and Model 6). It is important to

⁵ The Hausman test ($\chi^2 = 25.66$, $p = 0.22$) does not reject the null hypothesis that random effects are consistent, which justifies the use of the random effects specification as the main model. Accordingly, the RE estimates are treated as our preferred results, while fixed effects are employed only for robustness checks.

interpret these results together with our next findings referring to the type of controlling shareholders. Our study reveals that long-term investors are strongly deterred by individual/family control, indicating that concentrated individual ownership represents a significant barrier for those investors who intend to remain engaged in firms over a longer horizon. Non-long-term foreign investors, on the other hand, are largely indifferent to individual dominance in ownership structure. All in all, this suggests that their strategies are driven more by trading opportunities than by governance considerations, which in turn seems to be crucial for long-term foreign institutional investors.

Firm size (SIZE) remains a powerful determinant across both groups of foreign investors. Larger firms attract more foreign capital regardless of investment horizon. Also, both groups display some preference for more leveraged (LEV) firms. Profitability and financial liquidity do not seem to play a consistent role in shaping foreign institutional investment, regardless of horizon. We observe some preference for dividend-paying firms among non-long-term foreign institutions.

The book-to-market ratio (BM) is positively associated with ownership in both groups, but its effect is stronger for long-term investors, who appear to be more oriented towards value strategies. In contrast, non-long-term foreign institutional investors react more to past returns (RET) and stock turnover (SHARE_TURN). They avoid firms with strong recent returns, possibly due to concerns about overvaluation. However, they exhibit a strong positive preference for stocks with high liquidity, consistent with their trading-oriented strategies.

In our regressions with FIO as the dependent variable, we also control for domestic institutional ownership (DIO), included as a covariate. Non-long-term foreign institutional investors are strongly attracted to firms that already have significant domestic institutional owners, while this effect is absent for long-term investors. This suggests that the presence of domestic investors

provides a liquidity buffer, which is especially valuable for shorter-horizon foreign institutional investors. It can also be associated with the fact that domestic institutional investors have oversight of the portfolio company's management, and therefore limit the governance cost for short-term-oriented foreign investors.

The findings of our study demonstrate that there is a correlation between foreign investors' investment horizons and their country-level determinants. Investors with a long-term outlook tend to prefer companies listed in countries that are characterised by high legal standards and well-developed financial markets, which can enforce their rights (Chen, Harford, and Li 2007; McCahery, Sautner, and Starks 2016). In contrast, non-long-term investors tend to invest in countries that offer relatively limited legal protection and high market liquidity. The ensuing discussion pertains to the voice vs exit mechanism of monitoring insiders. It is evident that long-term institutions benefit from several factors, including credible legal enforcement, protection of minority rights, higher disclosure standards, and market infrastructure. Conversely, non-long-term investors can behave myopically, as suggested by Bushee et al. (1998 2001) and exert pressure on insiders mostly via exit channel, as suggested by Döring et al. (2021) based on Edman's (2009) model demonstrating a preference for environments where governance frictions and less concentrated markets create trading opportunities, provided sufficient liquidity is available

6. Robustness tests

In order to verify the reliability of the results obtained, a series of robustness tests were conducted. Firstly, given that companies listed on the Warsaw Stock Exchange (WSE) accounted for 58% of the initial research sample, these companies were excluded, and the regressions were rerun. Secondly, despite the Hausmann test results, we apply fixed-effects models. Finally, given that the dependent variable is censored at zero (that is, institutional

ownership is not permitted to be negative), we have performed Tobit regressions. Table 6 reports the results of a series of robustness checks.

INSERT TABLE 6 HERE

The exclusion of Poland (Models 1 and 2) is motivated by the country's dominant role in the CEE region in terms of participation in the sample size. If the results were primarily driven by Poland, one would expect the coefficients to lose significance or reverse sign once the country is removed from the sample. However, the results show that the central determinants - firm size, leverage, book-to-market ratio, and the rule of law - continue to exert significant effects, especially for long-term foreign institutional investors. Interestingly, the significance of some country variables diminishes in the restricted sample, such as ownership concentration and individuals/family control, which suggests that the impact of these features is particularly strong in the Polish market. Nevertheless, the positive role of legal enforcement for long-term foreign institutional ownership remains robust. At the same time, non-long-term institutions continue to rely more on stock liquidity and avoid firms with high previous returns.

The fixed effects specifications in Table 6 confirm that some determinants of foreign institutional ownership are highly robust. Firm size consistently attracts both long- and short-term foreign investors, reinforcing the view that larger companies are more preferable regardless of investment horizon. Equally robust is the role of the institutional environment: long-term investors show a persistent positive association with a stronger rule of law, while short-term investors react oppositely, reducing their holdings in countries with more effective legal enforcement. These two factors, firm size and institutional environment, clearly emerge as the structural drivers of foreign institutional ownership in CEE firms. At the same time, other relationships appear less stable. These could suggest that cross-sectional differences partly drive determinants such as value orientation, stock liquidity, and previous returns. However,

importantly, the Hausman test indicates that the random effects specification is statistically preferred over fixed effects in our dataset. This result justifies the use of random effects models as our main empirical framework (as reported in Table 5), while fixed effects estimations are employed primarily as a robustness check.

Finally, the Tobit regressions (columns 5 and 6 in Table 6) address the issue that institutional ownership shares are bounded between zero and one, which could bias OLS estimates⁶. The results of Tobit models again confirm the main findings. Long-term foreign institutional investors allocate more capital to larger and more leveraged companies, particularly in countries with stronger legal protection, avoiding firms that are overvalued and controlled by individuals. Non-long-term foreign institutional investors, by contrast, display stronger sensitivity to stock liquidity, weaker rule of law, and lower concentrated markets, in line with their preference for trading-oriented strategies. Importantly, in the Tobit setting, the coefficients on profitability, financial liquidity, and domestic institutional investors' presence are statistically significant, supporting the view that well-governed and monitored by DIO companies are more preferred by foreign institutional investors.

Taken together, the robustness tests show that the results are not dependent on sample composition, model specification, or estimation method. The persistence of differences between long-term and short-term foreign institutions across all models reinforces the central contribution of the study: the determinants of institutional ownership in CEE companies vary within foreign institutional investors, depending on their investment horizon.

7. Summary and conclusions

The study explores the determinants of institutional ownership in Central and Eastern European

⁶ We decided to use primarily OLS regressions because they were also used in previous studies, which enables direct comparisons.

(CEE) public companies. The analysis covers eleven EU member states in the CEE region between 2011 and 2020 and distinguishes not only between domestic and foreign institutional investors but also between foreign investors with long- and short-term investment horizons. This distinction allows us to provide new insights into how different categories of institutional investors make allocation decisions in a region characterized by economic transformation, high ownership concentration, and evolving legal and market institutions. Our findings reveal that institutional ownership levels vary widely across the CEE region. Moreover, the balance between domestic and foreign institutions differs substantially across markets.

Stronger rule of law and larger stock markets attract greater institutional ownership, confirming the importance of legal protection, enforcement, and market infrastructure in foreign investors' allocation decisions. At the company level, ownership concentration and family or individual control strongly discourage institutional investment, particularly by foreign investors, whereas larger and more transparent firms consistently attract them. Company size seems to be the most important firm-specific determinant of institutional ownership for foreign investors.

Once foreign institutional investors are divided according to their investment horizons, important differences emerge. Long-term investors are less deterred by concentrated ownership but strongly avoid firms controlled by individuals or families, and they consistently allocate more capital to larger, value-oriented firms in countries with robust legal systems. Short-term investors, by contrast, reduce exposure to firms with concentrated ownership, prioritize liquidity and turnover opportunities, and are more likely to follow domestic institutions as a sign of stability and monitoring. Interestingly, while long-term investors are attracted to countries with a strong rule of law, short-term investors seem to avoid them, a finding that does not align with existing theoretical models.

Our study shows that the CEE region presents a unique investment environment where both

firm-specific and country-level factors shape institutional ownership decisions. Importantly, investment horizon significantly differentiates institutional investors' capital allocation decisions, which has not been documented in previous studies. Long-term foreign investors rely on governance and legal protections, while short-term investors seek liquidity and exit opportunities. These insights have practical implications for both policymakers, who can attract more stable foreign capital by strengthening legal and market institutions, and for companies, whose ownership structures and disclosure practices directly influence their appeal to investors.

While our research has provided valuable insights, we acknowledge its limitations and the potential for further research. It would be worthwhile to add more dimensions in splitting institutional investors into various groups, including indexers and non-indexers, and add more country-level characteristics referring to the economic and political stability. It would also be valuable to extend the analysis by capturing more corporate governance mechanisms at the company level.

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Appendix - Variable Definitions

Variable	Variable Definition
Institutional ownership	
IO	Equity stake held by all institutional investors in a given company
FIO	Equity stake held by foreign institutional investors in a given company
DIO	Equity stake held by domestic institutional investors in a given company
LTFIO	Equity stake held by long-term foreign institutional investors, where long-term institutional investors are defined as those with an overall three-year portfolio turnover rate in the first tercile. Portfolio turnover is computed as the fraction of the investor's portfolio that is no longer held at the end of the three-year period. See Derrien, Kecskés, and Thesmar (2013) for computing investor portfolio turnover.
NLTFIO	Equity stake held by non-long-term institutional investors.
IO_AGG	Market capitalization held by all institutional investors at a country level (weighted average equity stake held by institutional investors at a country level)
FIO_AGG	Market capitalization held by foreign institutional investors at a country level (weighted average equity stake held by foreign institutional investors at a country level)
DIO_AGG	Market capitalization held by domestic institutional investors at a country level (weighted average equity stake held by domestic institutional investors at a country level)
LTFIO_AGG	Market capitalization held by long-term foreign institutional investors at a country level (weighted average equity stake held by long-term foreign institutional investors at a country level)
NLTFIO_AGG	Market capitalization held by non-long-term foreign institutional investors at a country level (weighted average equity stake held by non-long-term foreign institutional investors at a country level)
Market-related variables	
STMCAP	The market capitalization of all listed companies in a given country as of the end of a given year
LN_STMCAP	Logarithm of the market capitalization of all listed companies in a given country as of the end of a given year
STMCAP/GDP	Total market capitalization of all listed companies in a given country scaled by GDP as of the end of a given year
STM_CONC	Stock market concentration calculated as a quotient of the market capitalization of the largest domestic company to the sum of the market capitalizations of all domestic companies in a given country in a given year
Other country-level variables	

RULE_LAW	Governance indicator: one of the dimensions of enforcement from the Worldwide Governance Indicators (WGI) project. According to the WGI project, it reflects "perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence."
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Company-specific variables

SIZE	Log of the market capitalization of a given company
OWN_CONC	The sum of holdings of the top three investors in a given company
INDIV_CONTRL	Dummy variable, which equals one if the major shareholder is an individual, zero otherwise.
LEV	The ratio of total interest-bearing debt to total assets in a given company
EBITDA/A	The profitability ratio of EBITDA over total assets in a given company
CASH/A	Cash and marketable securities over assets in a given company
DIV_DUMMY	Dummy variable, which equals one if a dividend was paid, 0 otherwise
BM	The log of the ratio of the book-to-market value of equity in a given company
RET	The rate of return on a company's stock in a given year
SHARE_TURN	Share turnover is based on the average value of shares traded and the market capitalization of a given company

Table 1. Sample distribution by country and industry

INDUSTRY / COUNTRY*	BGR	CRO	CZE	EST	HUN	LVA	LTU	POL	ROU	SVK	SVN	TOT	TOT(%)
Communication Services	1	2	1	1	2	0	1	35	0	0	1	44	7.3%
Consumer Discretionary	3	19	1	3	2	0	5	50	5	1	4	93	15.5%
Consumer Staples	6	14	3	3	1	2	7	30	3	0	3	72	12.0%
Energy	1	2	0	0	1	2	1	6	8	1	0	22	3.7%
Health Care	5	2	0	0	2	2	1	24	4	2	2	44	7.3%
Industrials	15	18	1	5	4	0	2	91	7	1	4	148	24.7%
Information Technology	2	1	0	0	2	1	0	38	1	1	0	46	7.7%
Materials	6	3	1	0	1	1	1	40	6	0	3	62	10.4%
Real Estate	4	1	0	1	4	0	1	24	1	0	1	37	6.2%
Utilities	5	0	1	1	4	1	6	10	3	0	0	31	5.2%
TOT	48	62	8	14	23	9	25	348	38	6	18	599	100.0%
TOT (%)	8.0%	10.4%	1.3%	2.3%	3.8%	1.5%	4.2%	58.1%	6.3%	1.0%	3.0%	100.0	

*CEE Countries: BGR – Bulgaria; CRO – Croatia; CZE – Czechia; EST – Estonia; HUN – Hungary; LVA – Latvia; LTU – Lithuania; POL – Poland; ROU – Romania; SVK – Slovakia; SVN – Slovenia

Table 2. Institutional ownership by countries in the CEE region

COUNTRY	IO_AGG	FIO_AGG	DIO_AGG
Bulgaria	10.0%	3.3%	6.7%
Croatia	13.6%	3.8%	9.8%
Czechia	9.3%	9.1%	0.2%
Estonia	28.6%	26.4%	2.2%
Hungary	31.1%	24.1%	7.0%
Latvia	13.2%	11.3%	1.8%
Lithuania	3.7%	2.9%	0.8%
Poland	31.4%	17.3%	14.0%
Romania	16.3%	4.5%	11.8%
Slovakia	3.1%	2.6%	0.5%
Slovenia	36.7%	11.3%	25.4%

The table presents institutional ownership aggregated at the country level, calculated as means taken for the period 2011-2020.

Table 3. Variable distributions - summary statistics

VARIABLES	No	Mean	25th	Median	75th	SD
Institutional ownership						
<i>IO</i>	4,302	23.1%	4.3%	17.9%	33.8%	22.3%
<i>FIO</i>	4,302	8.5%	0.0%	3.7%	12.1%	12.7%
<i>DIO</i>	4,302	14.6%	0.7%	9.5%	22.1%	17.4%
<i>LTFIO</i>	4,302	4.9%	0.0%	0.6%	5.8%	10.4%
<i>NLTFIO</i>	4,302	3.6%	0.0%	0.5%	5.3%	6.1%
Company characteristics						
<i>OWN_CONC</i>	4,302	59.2%	44.9%	64.4%	79.0%	26.3%
<i>INDIV_CONTR (dummy)</i>	4,302	0.2	0.0	0.0	0.0	0.4
<i>SIZE (m\$)</i>	4,302	329.7	24.6	57.9	179.1	1,035.2
<i>LEV</i>	4,302	20.8%	7.3%	18.9%	31.0%	17.0%
<i>EBITDA/A</i>	4,302	23.3%	9.7%	18.1%	30.1%	24.5%
<i>CASH/A</i>	4,302	9.8%	2.4%	5.8%	12.8%	11.8%
<i>DIV_DUMMY</i>	4,302	0.6	0.0	1.0	1.0	0.5
<i>BM</i>	4,302	1.2	0.6	0.9	1.5	1.1
<i>RET</i>	4,302	13.1%	-16.5%	0.0%	22.3%	151.4%
<i>SHARE_TURN</i>	4,302	14.8%	2.9%	7.8%	17.3%	21.5%
Country-level characteristics						
<i>RULE_LAW</i>	110	0.7	0.4	0.7	1.0	0.4
<i>STMCAP/GDP</i>	110	15.4%	8.6%	12.2%	18.1%	10.3%
<i>STM_CONC</i>	110	29.2%	19.7%	28.9%	37.9%	14.9%
<i>STMCAP (billions of \$)</i>	110	26.8	4.4	13.4	23.6	45.8
A detailed description of the variables can be found in the Appendix.						

Table 4. Determinants of institutional ownership in CEE companies (2011-2020)

	IO	FIO	DIO	IO	FIO	DIO
	(1)	(2)	(3)	(4)	(5)	(6)
INTERCEPT	−0.302*** (−3.569)	−0.196*** (−3.611)	−0.107* (−1.742)	−0.006 (−0.070)	−0.159*** (−3.366)	0.155** (2.343)
COMPANY-LEVEL VARIABLES						
OWN_CONCTR	−0.093*** (−3.325)	−0.035*** (−2.608)	−0.058*** (−2.740)	−0.091*** (−3.358)	−0.038*** (−2.826)	−0.053** (−2.577)
INDIV_CNTRL	−0.057*** (−2.895)	−0.013 (−1.375)	−0.044*** (−2.981)	−0.062*** (−3.241)	−0.019* (−1.947)	−0.044*** (−3.036)
SIZE	0.010 (1.418)	0.018*** (4.278)	−0.009** (−2.154)	0.023*** (3.373)	0.025*** (5.763)	−0.003 (−0.547)
LEV	0.091* (1.703)	0.087*** (3.004)	0.003 (0.083)	0.113** (2.207)	0.092*** (3.176)	0.120 (0.513)
EBITDA/A	0.017 (0.475)	0.042* (1.709)	−0.025 (−0.987)	−0.011 (−0.299)	0.028 (1.270)	−0.039 (−1.487)
DIV_DUMMY	0.033** (2.352)	0.006 (0.7440)	0.027** (2.470)	0.028** (2.093)	0.004 (0.560)	0.027** (2.264)
BM	0.017* (1.877)	0.011** (2.427)	0.006 (0.822)	0.017* (1.732)	0.016*** (3.004)	0.001 (0.057)
RET	0.001 (0.163)	−0.006** (−2.277)	0.007** (1.982)	−0.001 (−0.037)	−0.005** (−2.200)	0.005 (1.220)
SHARE_TURN	0.017 (0.521)	0.032* (1.789)	−0.157 (−0.628)	0.025 (0.073)	0.024 (1.430)	0.001 (0.024)
COUNTRY-LEVEL VARIABLES						
RULE_LAW	0.073*** (2.998)	0.067*** (3.890)	0.006 (0.344)	0.093*** (2.963)	0.004 (0.026)	0.091*** (3.486)
STMCAP/GDP	−0.087 (−0.592)	−0.081 (−1.208)	−0.005 (−0.039)	0.097 (1.203)	0.040 (1.058)	0.060 (0.863)
STM_CONC				0.051 (0.592)	−0.012 (−0.271)	0.061 (0.870)
STMCAP	0.044*** (4.477)	0.015*** (2.649)	0.029*** (3.592)			
YEAR DUMMIES	YES	YES	YES	YES	YES	YES
COUNTRY DUMMIES	NO	NO	NO	YES	YES	YES
INDUSTRY DUMMIES	NO	NO	NO	YES	YES	YES
N (observations)	3,602	3,602	3,602	3,602	3,602	3,602

N (companies)	566	566	566	566	566	566
Adjusted R ²	0.11	0.13	0.07	0.18	0.19	0.37

The table presents the results of pooled OLS regressions of total, foreign, and domestic institutional ownership (IO, FIO, DIO, respectively) on firm-specific and country-specific determinants. All models include year dummies. Models 4-6 also include country and industry dummies. All regressors are lagged one year. A detailed description of the variables can be found in the Appendix. We estimate t-statistics (in parentheses) using robust standard errors. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 5. Determinants of foreign institutional ownership in CEE companies – impact of investment horizon (2011-2020)

	Pooled OLS regression			Panel regression (random effects)		
	FIO	LTFIO	NLTFIO	FIO	LTFIO	NLTFIO
	(1)	(2)	(3)	(4)	(5)	(6)
INTERCEPT	−0.171*** (−3.646)	−0.184*** (−4.411)	0.013 (0.635)	−0.067*** (−2.577)	−0.063*** (−2.985)	0.007 (0.511)
COMPANY-LEVEL VARIABLES						
OWN_CONCTR	−0.035*** (−2.742)	−0.015 (−1.434)	−0.020*** (−3.899)	−0.012* (−1.668)	−0.004 (−0.697)	−0.010*** (−3.015)
INDIV_CNTRL	−0.017* (−1.672)	−0.168** (−2.223)	−0.001 (−0.019)	−0.021** (−2.310)	−0.019*** (−2.670)	−0.002 (−0.443)
SIZE	0.026*** (5.849)	0.017*** (4.352)	0.008*** (5.340)	0.025*** (6.906)	0.017*** (4.352)	0.011*** (7.370)
LEV	0.091*** (3.155)	0.064** (2.550)	0.027** (2.191)	0.039** (2.291)	0.001 (0.004)	0.034*** (3.185)
EBITDA/A	0.031 (1.374)	0.015 (0.822)	0.015 (1.625)	0.009 (0.719)	0.008 (0.760)	0.004 (0.627)
CASH/A	0.028 (0.961)	0.016 (0.632)	0.012 (0.985)	0.023 (1.298)	0.025 (1.154)	0.001 (0.043)
DIV_DUMMY	0.003 (0.406)	−0.001 (−0.248)	0.005 (1.641)	0.005 (0.994)	−0.001 (−0.235)	0.005** (2.064)
BM	0.016*** (3.037)	0.010** (2.190)	0.006*** (3.080)	0.011*** (3.352)	0.007** (2.357)	0.003* (1.751)
RET	−0.005** (−2.267)	−0.002 (−1.600)	−0.003** (−2.501)	−0.003* (−1.892)	−0.001 (−1.178)	−0.002* (−1.862)
SHARE_TURN	0.024 (1.446)	0.002 (0.169)	0.022*** (2.872)	0.010 (1.154)	0.004 (0.664)	0.008*** (7.240)
DIO	0.057** (2.230)	0.005 (0.225)	0.053*** (5.127)	0.016 (0.887)	−0.002 (−0.138)	0.027*** (2.856)
COUNTRY-LEVEL VARIABLES						
RULE_LAW	0.001 (0.025)	0.053*** (3.852)	−0.053*** (−6.132)	−0.023* (−1.759)	0.033*** (3.125)	−0.057*** (−7.240)
STMCAP/GDP	0.036 (0.955)	0.071** (2.357)	−0.035 (−1.487)	0.036 (1.076)	0.071** (2.969)	−0.034 (−1.508)
STM_CONC	−0.017 (−0.362)	0.051 (1.335)	−0.068** (−2.391)	−0.043 (−1.032)	0.023 (0.738)	−0.065*** (−2.730)

YEAR DUMMIES	YES	YES	YES	YES	YES	YES
COUNTRY DUMMIES	YES	YES	YES	YES	YES	YES
INDUSTRY DUMMIES	YES	YES	YES	YES	YES	YES
N (observations)	3,602	3,602	3,602	3,602	3,602	3,602
N (companies)	566	566	566	566	566	566
Adjusted R ²	0.20	0.11	0.25	-	-	-

The table presents the results of pooled OLS regressions (Models 1-3) and panel regressions with random effects (Models 4-6) of foreign institutional ownership. All regressors are lagged one year. A detailed description of the variables can be found in the Appendix. We estimate t-statistics (in parentheses) for Models 1-3 using robust standard errors. Similarly, we estimate z-statistics for panel regression with robust standard errors for Models 4-6 (in parentheses).

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

Table 6. Robustness tests

	Poland excluded		Fixed effects		Tobit regression	
	LTFIO	NLTFIO	LTFIO	NLTFIO	LTFIO	NLTFIO
	(1)	(2)	(3)	(4)	(5)	(6)
INTERCEPT	−0.280 (−1.429)	−0.053 (−0.564)	−0.033 (−1.452)	−0.001 (−0.089)	−0.539* (−1.904)	−0.337** (−2.009)
COMPANY-LEVEL VARIABLES						
OWN_CONCTR	−0.001 (−0.049)	−0.003 (−0.698)	−0.005 (−0.715)	−0.006 (−1.525)	−0.010 (−0.908)	−0.022*** (−4.279)
INDIV_CNTRL	0.002 (0.177)	−0.007 (−0.921)			−0.023*** (−3.979)	0.005* (1.675)
SIZE	0.007*** (4.352)	0.008** (2.562)	0.010* (1.891)	0.016*** (4.339)	0.038*** (15.450)	0.018*** (18.010)
LEV	0.057* (1.799)	0.025 (1.572)	−0.0156 (−0.914)	0.043*** (2.697)	0.118*** (6.088)	0.053*** (5.564)
EBITDA/A	0.079* (1.944)	0.049** (2.268)	0.007 (0.602)	−0.002 (−0.161)	0.029** (2.157)	0.019*** (2.728)
CASH/A	−0.017 (−0.456)	0.015 (0.695)	0.027 (1.144)	−0.004 (−0.260)	0.059** (2.611)	0.032*** (2.862)
DIV_DUMMY	−0.003 (−0.304)	0.001 (0.015)	−0.001 (−0.050)	0.006* (1.942)	0.009 (1.551)	0.013*** (4.652)
BM	0.011** (1.984)	0.009*** (2.890)	0.006 (1.235)	0.006* (1.686)	0.020*** (5.652)	0.013*** (7.081)
RET	−0.002 (−1.265)	−0.004*** (−3.169)	−0.001 (0.963)	−0.002 (−1.623)	−0.009** (−2.352)	−0.006*** (−3.238)
SHARE_TURN	0.025 (1.562)	0.059*** (3.461)	0.003 (0.520)	0.004 (0.637)	0.019* (1.647)	0.032*** (4.353)
DIO	−0.029 (−1.034)	0.007 (0.805)	−0.003 (−0.165)	0.012 (0.876)	0.055*** (3.670)	0.084*** (10.830)
COUNTRY-LEVEL VARIABLES						
RULE_LAW	0.040* (1.689)	−0.001 (−0.032)	0.035*** (3.185)	−0.056*** (−6.544)	0.077*** (3.706)	−0.084*** (−8.433)
STMCAP/GDP	−0.035 (−0.269)	0.029 (0.451)	0.063*** (2.690)	−0.038* (−1.651)	0.134 (0.769)	−0.222** (−1.788)
STM_CONC	0.082* (1.903)	−0.068** (−2.178)	0.033 (−1.047)	−0.066** (−2.446)	0.190** (2.435)	−0.152*** (−3.387)
YEAR DUMMIES	YES	YES	YES	YES	YES	YES

COUNTRY DUMMIES	YES	YES	NO	NO	YES	YES
INDUSTRY DUMMIES	YES	YES	NO	NO	YES	YES
N (observations)	1,563	1,563	3,602	3,602	3,602	3,602
N (companies)	235	235	566	566	566	566
Adjusted R ²	0.09	0.37	-	-	-	-

The table presents the results of robustness tests: exclusion of Poland from the sample (Models 1 and 2); fixed effects panel regression (Models 3 and 4), and Tobit regression (Models 5 and 6). A detailed description of the variables can be found in the Appendix. We estimate t-statistics (in parentheses) using robust standard errors.

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