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The impact of institutional quality on country-level variations in foreign equity shares in transition economies

Abstract

This paper examines the influence of formal and informal institutional quality on country-level variations in foreign equity shares in transition economies. We use a two-step empirical strategy, identifying clusters of explanatory variables and running GLS random effect estimations to test for the influence of explanatory and control variables on foreign equity shares. Foreign equity share is positively affected by informal institutions and negatively by formal institutions. Complex infrastructure discourages foreign equity shareholdings, and foreign companies use informal practices to overcome unfavourable host country conditions. Government size has a negative effect, and GDP per capita positively affects foreign equity shares.

Keywords: Formal and informal institutions; FDI, transition; infrastructure, human capital

JEL classifications: L26, O25, P2, P3

1. Introduction

Foreign direct investment (FDI) inflow is crucial for economic growth in transition economies (TEs). Globalisation has placed foreign ownership at the forefront of the FDI research agenda. In particular, foreign investors in transition countries are seen as an essential mechanism for knowledge spillovers and other positive externalities for host country's companies (Arslan, Tarba & Larimo, 2015). Much of this spillover effect is caused by knowledge and technology transfers, including new and modern management practices (Kayalvizhi & Thenmozhi, 2018). Therefore, considerable attention has been paid to the determinants of FDI into transition and emerging countries (Bevan, Estrin, & Meyer, 2004; Estrin & Uvalic, 2014), though rarely considering various levels of foreign ownership (Ertuna & Yamak, 2011; Chhabra et al., 2021).

A key concern of policymakers is attracting foreign investors who face considerable risks that may discourage investment in TEs (Lane & Milesi-Ferretti, 2007). There is still mixed evidence on what encourages foreign investors to fund local companies, even less evidence on what encourages them to hold higher equity shares. There is a need for more research to examine if levels of institutional quality play a role not only in attracting but also in encouraging foreign

investors to take more equity shares. This is particularly important for TEs which are characterised by weak institutional frameworks, and wherein the presence of foreign firms has great potential for economic growth (Williams & Vorley, 2015; Bartlett et al., 2019).

While previous studies have investigated the determinants of FDI inflows or the impact of institutions on FDI in different counties at the macro level (Dimitrova, Rogmans & Triki, 2020), there is almost no literature on how foreign investors decide on the level of equity they wish to hold in host country firms. Furthermore, there is also little empirical research on the impact of informal institutions on the level of foreign investment or the share of foreign equity holding in host country firms. The present study is motivated by these gaps in the scholarly literature: (i) a better understanding of the factors affecting the level of foreign firm's equity participation at the firm level and the policy mechanisms for promoting this participation; and (ii) the impact of formal as well as informal institutions on the share of foreign equity in local firms. Drawing on institutional theory, we hypothesise on the influence of formal and informal institutions and their interaction with the speed of transition reforms on the level of foreign equity shares in firms in TEs. The degree of foreign involvement in domestic firms in TEs is a crucial determinant of spillover effects of foreign firms in the local economy. There are numerous examples of FDI not producing expected benefits to local firms as the spillover mechanism was not effective due to a lack of sufficient interaction with local firms or limited absorption capacities of local firms (Orlic et al., 2018; Crespo & Fontoura, 2007).

This is the first study to use the data on the equity share of foreign investors, based on firm-level representative surveys, to develop country-level indicators of foreign ownership in TEs. Studying the level of foreign participation in local firms' ownership helps better understand the effects of FDI on the host economy and inform policymakers of measures necessary to attract foreign investors. Most of the international business research on FDI and MNCs and their entry strategy mode has been based on firm-level analysis (Li et al., 2021; Arslan & Dikova, 2015; Contractor, Lahiri, Elango & Kundu, 2014; Delios & Beamish, 1999; Dikova & Van Witteloostuijn, 2007; Estrin et al., 2009), but have largely ignored whether the same factors that influence firm level shareholdings influence the degree of foreign ownership level at country levels.

Institutional context plays a vital role in shaping the potential impact of entrepreneurial activity (Aidis & Mickiewicz, 2006; Autio & Fu, 2013; Estrin, Korosteleva, & Mickiewicz, 2013;

Sadeghi, Nkongolo-Bakenda, Anderson & Dana, 2019), but there is limited understanding about which institutions matters, and notably how different institutions impact foreign firms and their ownership strategy decisions. Understanding what influences foreign investors to increase or decrease their ownership stake in local firms is crucial for policymakers and entrepreneurs.

Given the need for a greater understanding of the institutional drivers of foreign ownership in local firms, this paper examines how institutions shape the degree of foreign ownership in private firms across 26 TEs. We focus on what factors explain the magnitude of the foreign equity shares at the country level. Explaining the degree of foreign ownership in firms in transition expands the recent debate on the quality of firm activities, not only the volume of FDI (Belitski et al., 2016; Krasniqi and Desai, 2016; Bowen and De Clerq, 2008). Our findings complement the previous research on the attraction of foreign firms to invest in transition countries as influenced by economic institutions (e.g. Araujo et al., 2016; Shinkle & Kriauciunas, 2010; Olney, 2016) and the quality of human capital (e.g. Ganotakis & Love, 2012), and managerial characteristics (e.g. Leonidou et al., 1998).

Our study contributes to the literature in three key ways. First, we find that formal institutions positively influence the level of foreign equity shares held, while informal institutions have a negative influence. This moves forward understanding of the asymmetry of institutions and their influence on equity shares of foreign firms. While there has been some research on the interplay between formal and informal institutions for cross-border investments (Soleimani & Yang, 2022) and growth (Efendic, et al., 2011; Efendic and Pugh, 2015), this has not extended to study of equity shares of foreign firms in local joint ventures. We posit that the positive influence of informal institutions is because investors utilise informal practices to overcome complex formal institutional frameworks.

Second, we demonstrate that despite the positive influence of informal institutions on foreign shareholdings, the outcomes of the institutional environment has a negative impact on foreign equity shares holdings, with government size holding back investment. We posit that the larger government role in the economy leads to more administrative burdens, which will hold back FDI. This means that government efforts to encourage FDI will not be very effective if its size is too large because the large size of government may add to the complex formal institutions.

Third, the study is unique because it is based on firm-level survey data on the share of foreign equity holding used to obtain country-level averages. We examine whether cross-country

differences in the institutional environment help explain the cross-country variation in the size of foreign equity shareholding in the private sector in transition economies. We adopt a unique approach by averaging firm-level data to produce country-specific variables to identify the determinants of the extent of foreign ownership in private sector companies across countries and time (Krasniqi & Desai, 2016). The significant variations in the institutional environments of transition countries make the analysis of this issue valuable (Boubakri, Cosset, Guedhami, & Omran, 2007; Fainshmidt, Judge, Aguilera & Smith, 2018). The advantage of conducting a cross-country study rather than focusing on one country is to control for institutional differences among countries. It also allows us to capture the effect of institutional and macro-economic factors relevant to foreign equity holdings.

The remainder of the paper is structured as follows. First, the theoretical framework and literature is discussed, followed by the methodology and empirical analysis. We then present a discussion of results and finally set out the theoretical and policy implications of the study.

2. Theory and hypotheses

The choice of ownership and entry modes has received considerable attention in international business literature (Demirbag, Tatoglu & Glaister, 2009; Elia, Larsen & Piscitello, 2019). Firms entering foreign markets are confronted with several strategic choices. FDI takes different forms, such as full ownership of a subsidiary or joint venture. Foreign investors can choose to set up the business alone with full ownership or jointly with local partners. Institutional economics argues that the quality of institutions may affect these strategic choices (Peng, 2003; Peng, Wang, & Jiang, 2008). On the other hand, transaction cost theories explain these strategic options based on the related cost benefits associated with these choices. The remainder of this section will discuss institutional theory and transaction cost theory to frame the empirical strategy of the study.

2.1. Institutional theory

Institutions refer to 'rules of the game', the constraints developed by a society within which people and firms structure their interactions (North, 1990). These constraints can shape predicted rewards and risks (Krasniqi & Desai, 2016), influence the incentives for value-adding behaviour (North, 1990) and therefore affect the range of possible activities undertaken by entrepreneurs and companies (Young, Welter & Conger, 2018). Formal institutions, which represent codified

frameworks and rules, include business regulations, including entry regulations for foreign firms, intellectual property rights protections, tax regime, and licensing regulations, including regulations specific to FDI, and compliance with international regulations and standards for export. The establishment and development of new institutions (property rights, regulatory systems, courts and enforcement mechanisms) were among the essential features of the transition process to a market system in TEs. Furthermore, the institutional environment in these countries has been characterised by frequent changes in regulations and policy volatility (Welter & Smallbone, 2011; Smallbone & Welter, 2001). The institutional context in TEs can have strong and significant influences on firm behaviour and strategic choices (Peng, 2003; Peng and Heath, 1996), including their entry in foreign markets and their ownership decisions. Investing in foreign countries can be significant for a firm in terms of resources and commitment, especially under changing conditions of transition which require flexible decision making and adaptations. Also, the slower moving TEs may also have ineffective formal institutional frameworks, which lead to the greater significance of informal institutions for regulating economic behaviour (Krasniqi & Desai, 2016; North, 1990).

In addition to formal institutions, in each society, there are also informal institutions, the unwritten codes of behaviour, attitudes, areligious and cultural norms, reliance on personal and family links and networks, which also constrain the behaviour of individuals and firms (Williams & Vorley, 2015). Informal institutions can be deeply entrenched, path-dependent, and much slower to change than formal institutions. In TEs, these institutions are likely to include various forms of corruption that can become both standard practice and deeply entrenched (Kim, Weng & Lee, 2018). In addition, they may also include reliance on personal networks and informal business practices, e.g. anti-competitive practices. While formal institutions were established relatively quickly in the early transition period, informal institutions have been changing only very slowly, and some remain unchanged. Efendic et al. (2011) and De Sotto (2000) have argued that a good institutional arrangement, one in which the formal and informal institutions are in harmony with each other, will facilitate decision-making and improve economic performance. Other authors have shown that, at least in the case of TEs, the formal and informal institutions are substitutes – when formal institutions fall short of expectations and cannot be relied upon entirely, there is greater reliance on informal institutions (Krasniqi & Desai, 2016; North, 1990; Aidis et al., 2007; Efendic, et al. 2011; Efendic and Pugh, 2015; Webb et al., 2019; and Ledeneva and Efendic, 2020).

Firms' adaptation to new contexts is complex, given the variety of institutional frameworks (Gaur, Kumar, & Singh, 2014; Ahlstrom and Bruton, 2010; Gaur, Delios, & Singh, 2007; Kostova & Roth, 2002). In TEs, the rewards to firms can be communicated through formal institutions if they actually work and are effectively enforced (Krasniqi & Desai, 2016). For example, legal frameworks determine the effectiveness of contractual agreements available to firms, protecting the firm's interests and facilitating the activities necessary for their growth. In particular, in a TE, when firms become involved in international contractual relationships, there will be greater reliance on legal frameworks to enforce and implement contracts and manage relationships rather than relying on relational or informal ties (Peng, 2003). The relevance of formal institutions, especially for foreign firms operating in TEs, may be even greater than for local firms. Foreign firms need to ensure they can protect their assets, investment, and intellectual property rights to benefit from their investment. Therefore, countries that established more effective property and legal rights protections and implemented them over time have experienced a higher FDI inflow and greater involvement of local firms.

TEs can significantly vary in terms of the quality and consistency of their regulatory frameworks (part of formal institutions). Some of TEs are characterised by frequent changes, making institutions less predictable (Ahlstrom and Bruton, 2010). Cumbersome regulations or their inconsistent and discretionary implementation can raise costs for businesses (Autio and Fu, 2013). These higher costs raise the uncertainty surrounding payoffs of the ownership strategy decision and may lead foreign investors to choose not to increase their share of equity holding or increase the local ownership stake as a safer option (see Carlin et al., 2001). On the other hand, in some TEs where formal institutions are predictable and not cumbersome, the environment for FDI would be more supportive, and they will be happy to have a higher stake in joint ventures with local firms. It can be expected that strong formal institutions will be positively associated with higher foreign equity shares.

We examine both formal and informal institutions because the interplay of both reflects the extent to which a firm can rely on an environment of stability, consistency and predictability (Smallbone & Welter, 2012; LiPuma et al., 2013) and it critical for understanding investment decisions of firms (Williams & Vorley, 2015; Efendic et al. 2011). They can influence foreign investors towards different forms of entry and different geographical locations by raising or

lowering costs specific to investment and business activities, considering that both formal and informal institutions are relevant for studying the foreign firms' equity shareholding decisions of firms in TEs. If formal institutions are not adequate or absent, there is room for the ascendency of stronger informal institutions. Based on the above, we formulate the following hypotheses:

H1a: The share of foreign equity in a country is negatively related to informal institutions barriers

H1b: The share of foreign equity in a country is negatively related to formal institutional barriers

H1c: The share of foreign equity in a country is negatively related to the interaction of formal and informal institutional barriers

2.2.Transaction cost theory

The transaction cost theory posits that the choice between partial and full ownership is a function of the potential costs and benefits of equity joint ventures compared to wholly-owned subsidiaries. From the transaction cost theory viewpoint, the full equity ownership preference indicates the firm's intention to minimise the transaction costs. Transaction cost theory (TCT) has been extensively applied in explaining the ownership preferences of MNEs and their affiliates (Parkhe, 1993; Demirbag, Glaister & Tatoglu, 2007; Khalid & Ali, 2017). According to TCT, firms select a specific governance structure that minimises total transaction costs (Williamson, 1985, 2000). Transaction costs include the costs of negotiating a joint venture agreement, monitoring the venture's performance, and monitoring the other partner's subsequent behaviour. Once a foreign investor decides to embark on an equity joint venture with a partner from the host country, its managers are confronted with a significant decision of how much equity should be held in the joint venture in order to maximise its benefits (Brouthers, Brouthers, & Werner, 2008; Surdu & Mellahi, 2016). Therefore, an appropriate equity ownership structure should effectively and efficiently control and monitor business operations in the joint venture while minimising the costs.

Transactions between foreign investors and local partners involve many contracts and associated risks and uncertainties. Several scholars have addressed uncertainty and how it impacts the entry choice (Bevan & Estrin, 2004; Brouthers & Hennart, 2007; Estrin et al., 2009). Based on the transaction cost theory, in the case of high uncertainty, vertical integration may be a better

option for foreign investors. However, due to bounded rationality and a high level of uncertainty, the anticipation of all future events and contingencies of contractual arrangements with partners is difficult. Under these conditions, the internationalisation of a firm may contribute to the internalisation of the external uncertainty (Klein et al. 1990; Agarwal 1994). Brouthers et al. (2008) point out that TCT fails to take into account the strategic flexibility (Brouthers et al. 2008), and this is where the resources based view (RBV) comes into play, suggesting that a high country risk implies the need to save firm resources and suggests the avoidance of wholly-owned subsidiaries (Larimo & Arslan, 2013; Larimo & Nguyen, 2015; Ramaswami, 1992). In addition, Delios and Beamish (1999) examine the share of equity owned by MNCs in FDIs of Japanese firms and find that this share is negatively associated with country risk. In TEs, the business environment is unstable and turbulent, which can add to the cost of transactions and uncertainty regarding prices, inflation, and courts' efficiency and formal institutional mechanisms' developments. The process of transition to a market system in TEs was intervened with the establishment and development of new institutions. As these institutions develop and are consolidated, the environment becomes more specific, stable and predictable, thus creating conditions in which foreign owners will feel comfortable (and wish to) increase their shareholding in joint ventures with domestic firms. In line with this discussion, we propose the following hypothesis:

H2a: The share of foreign equity in a country is positively related to the country's level of institutional reform

2.3. Government size

The size and role of government activism is another crucial dimension of the formal institutional framework (Tang, 2019). The government can increase the bureaucratic apparatus, creating more opportunities for public officials to engage in corrupt practices (Fogel, 2006). Some authors have documented that heavily regulated economies tend to have more procedures and bureaucracy and thus lower rates of entrepreneurship (Aidis et al., 2012; Verheul, Stel, & Thurik, 2006) and discourage high growth aspiration entrepreneurs (Estrin et al., 2013). In particular, complicated taxation procedures often force small firms to employ outside advisors, thus increasing the cost of doing business. The higher administrative burden and the longer time entrepreneurs spend dealing with public officials pose higher barriers for entrepreneurial activity

and their growth (Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2002) and create potential opportunities for corruption (Fries, Lysenko, & Polanec, 2007; Vorley & Williams, 2016). There is also a large volume of research demonstrating that the large size of government, which also leads to large deficits and debt, has an adverse effect on productivity and growth as it often competes with, and crowds out, the private sector (see, amongst others, Barro, 1990; Bleaney and Nishiyama 2002; Bjornskov and Foss, 2013; Urbano and Aparicio, 2016; Miller et al., 2018). Foreign investors are very much affected by the large size of the government as are domestic investors. In these circumstances, foreign investors will decrease their ownership stake and let the local companies in a joint venture to deal with excessive regulation coupled with corrupt officials. Foreign firms cannot usually enter the host country without obtaining the necessary permits. Thus, they are affected by formal institutions that affect all firms and the set of informal institutions specific to local informal practices in TEs. Therefore, foreign firms will increase the involvement of local companies as the managers of MNCs, especially those from developed economies, do not have sufficient knowledge of the informal practices (e.g. specific forms of corruption) specific to individual countries. In line with this discussion, the following hypothesis is proposed:

H3: The share of foreign equity in a country is negatively related to the size of the government

2.4. **Institutional quality and the stage of transition**

The process of transition has progressed differently in different TEs. In some, the new formal institutions of a market economy were established rapidly in the early 1990s, and, with better-motivated governments, they were consolidated and strengthened over time and soon reached levels deemed satisfactory for EU accession. For various reasons, including the dominance of corruption and state capture, formal institutions remained weak for a long time. Some thirty years at the beginning of the transition, some countries suffered from institutional problems such as the judiciary's lack of independence and corruption amongst public officials.[1] We expect the impact of institutions to vary as the country progresses in the transition process. Different aspects of

[1] In the most recent *Transition Report (2019-20),* e.g., countries like Turkmenistan and Tajikistan score poorly on some dimensions of progress in transition.

'Progress in Transition' in different sectors and for different major reforms have been monitored by the European Bank for Reconstruction and Development (EBRD) and graded on a 1 to 4^+ scale[2] (these are reported regularly in its annual *Transition Reports* since the mid-1990s. The 'Transition Score' has been recognised as one of the most reliable indicators of progress in transition and is very widely and extensively used in research on transition economies.[3] In this paper, we also use this score and interact it with formal and informal institutional barriers to assess how the role of institutions affects the share of foreign equity holding in different stages of transition. In more advanced stages of transition, with formal institutions working reasonably well, there is less need to rely on personal networks and unofficial channels and thus less need for local partners' knowledge and networks. The foreign investors will increase their equity holding in such conditions. However, there is a greater need for local partners and their networks and informal relations in the lower stages of transition with weak formal institutions. Foreign investors will reduce their equity holding and increase the local partners' share. The role of 'progress in transition' can be best investigated by testing the following hypotheses:

H4a: The share of foreign equity in a country is positively related to the country's progress in transition.

H4b: The share of foreign equity holding in a country is: positively related to the interaction of the transition score and formal institutions

H4c: The share of foreign equity holding in a country is negatively related to the interaction of the transition score and informal institutions

Because of turbulent changes in transition economies, the management ties with government officials can help entrepreneurs to achieve desired results (Peng & Luo, 2000), leading to improved firm performance (Guo, Xu, & Jacobs, 2014). Under these circumstances, and with low quality of governance (better to say formal institutions), these relationships may lead to the growth of corruption as the so-called 'grease the wheel' concept suggests. But with a more established institutional setting, corrupt practices will harm the process of transition as the 'sand the wheel' concept suggests (Méon & Sekkat, 2005; Méon & Weill, 2010). Here, corruption becomes an

[2] 1 indicates very little change from the former centrally planned system while 4^+ indicates that the country has reached levels similar to that in developed market economies. Very recently, EBRD changed the scales and adopted a scale ranging from 1 to 10 (see EBRD, *Transition Report 2019-20)*.

[3] The list of papers using Transition Score is extremely long. Here, we give a few examples, appearing over the years and published in a variety of journals.

informal social norm providing advantages to the incumbent or firms sharing benefits with, incentivising government officials at the cost of newcomers (Aidis, Estrin, & Mickiewicz, 2008; Desai, Acs, & Weitzel, 2013). Thus, foreign investors in TEs find themselves in a situation where they feel the need for greater involvement of local entrepreneurs to make use of local networks, something which cannot be achieved without increasing the equity shareholding of local firms.

2.5.Infrastructure and transportation

Infrastructure, which refers to access to a wide range of public services and physical resources (communication, utilities, transportation, and land or space), plays an essential part in explaining foreign firms decision to enter a new market and, also, the share of equity they wish to hold in a joint venture. The physical infrastructure of a given region or a country, such as the availability and costs of land and real estate (commercial and residential) and the quality of traditional and alternative modes of transportation (roads, traffic), influence not only the foreign firms' decision where to locate their businesses but also their performance Recent evidence suggests that infrastructure, particularly elements such as the broadband, can enhance linkages between entrepreneurial opportunities and the ability of entrepreneurs to act upon and utilise those opportunities (Audretsch, Heger, & Veith, 2014). Furthermore, the physical infrastructure would positively influence entrepreneurship if combined with other types of infrastructure, such as the level of education and technology or the state of innovation (Kayalvizhi & Thenmozhi, 2018). These arguments apply equally to foreign firms' decision on whether or not they should enter a particular host country. Specific geographical locations are characterised by agglomerations and provide easy access to specialised resources such as risk capital, physical infrastructure, and skilled labour (Baker, Gedajlovic, & Lubatkin, 2005; Glaeser, Rosenthal, & Strange, 2010). In less developed countries, the infrastructure is among the biggest obstacles to the operation and growth of private firms, including foreign firms. For the latter, the absence of good infrastructure discourages them from taking a bigger equity share in their joint ventures. Economies in transition with different levels of development have disparate quality of infrastructure. Therefore, we would expect that countries with better infrastructure would have a more vibrant private sector and encourage more FDI and higher equity shares held by foreign investors. This discussion leads us to the following hypothesis:

> *H5: The level of foreign equity holding in a country is positively related to better infrastructure and transportation*

3. Methodology

3.1. Data

This paper investigates the institutional conditions shaping cross-national differences in foreign shareholding in private firms in 26 TEs.[4] The main database is a panel comprising three separate periods (1998-2002, 2002-2005 and 2005-2008/9) derived from the World Bank/EBRD firm-level Business Environment and Enterprise Performance Surveys (BEEPS) datasets. BEEPS is the only detailed, large scale cross-national dataset that employs the same methodology across all TEs and the three-time periods, and provides information on firms and their perception of the quality of each country's institutional and business environment. The number of firms in covered in each survey is over 3000. Key-decision makers complete survey questionnaires in firms, usually owners or top-level managers, covering the following dimensions of the institutional and business environment: taxes and contributions, tax administration and rates, trade and customs regulation, business licensing and permits, perceptions of corruption, functioning of the judiciary and courts, uncertainty about policy environment, the state of competition, transportation, electricity and access to land.

Respondents were asked to rate the extent to which each dimension acts as an obstacle or barrier to the operation and growth of their business. The ranking is based on a Likert scale ranging from 1-4 (1 indicating not an obstacle and 4 indicating a major/severe obstacle). To create national-level indicators for the empirical analysis, firm-level responses were averaged for each type of obstacle across all firms in each country (a similar approach has been used in Krasniqi and Desai, 2016 and Aidis et al., 2012). Other country-level variables were obtained from the EBRD's Transition Reports and the World Bank's World Development Indicators. For the purpose of econometric analysis (Mason and Brown, 2013; Reynolds et al., 2005) the final sample comprises of a panel of 26 countries for three periods, resulting in 78 observations.[5]

[4] Publicly owned, state-owned and majority state- owned firms are excluded from the study.

[5] The following countries are included in the study: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Hercegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Serbia, Slovak, Slovenia, Tajikistan, Ukraine and Uzbekistan.

3.2. Variables

The dependent variable, *foreign equity share* (forown), is the share of each firm's equity held by foreign investors, averaged for all firms in each country. The main explanatory variables are the extent to which *formal* and *informal institutions* act as barriers to the operation and growth of enterprises. The BEEPS questionnaire contains questions asking the respondent to rank many factors in terms of their adverse effect on their firm's operation and growth. Some of these factors reflect the formal institutional set up while others reflect the informal institutional features. Others reflect the state of the infrastructure.

Given that these factors are often related, it is not possible to use all of them together in the regression analysis. Instead, using Principle Component Analysis (PCA), we have shown that these barriers fall into three identifiable groups, each representing a cluster of institutional and infrastructural categories. The first group can be referred to as *formal institutional barriers* comprising of four measures related to the legal and regulatory procedures affecting firms: tax administration and rates, trade and customs regulations, and rules governing business licensing/permits. The second group can be referred to *informal institutional barriers* also comprising of four measures representing informal arrangements governing the relations between firms and the outside world: the functioning of judiciary and courts, anti-competitive practices of competitors, policy uncertainty and corruption. The third group can be referred to as infrastructural barriers, comprising of three dimensions: access to electricity, state of transportation and access to land. This group is used in the analysis as a control variable.

Additional country level variables reflecting the overall conditions in each country that could impact the share of foreign investors in a firm's equity are included as control variables. *Government size* (Aidis et al., 2012) is measured by the share of government expenditure in GDP. Larger government size can mean more administrative burdens (Fogel, 2006) and can influence the decision of foreign firms to increase or decrease their ownership stake. On the one hand, it could mean more oversight, leading to streamlined registration and licencing procedures; but on the other hand, it could mean more government agents are involved in firm entry who can engage in corrupt practices. If the second is the case, then foreign firms may choose to increase the involvement of the local entrepreneurs who are in a better position to deal with poor and unstable institutional environments.

GDP per capita. The level of economic development in a country, measured by its per capita GDP lagged one year, is an important factor in attracting foreign investors into that country. and, is added as a control variable.

University. Finally, the quality of human capital measured by the share of employees with a university degree is also included as this is an essential factor in the decision of foreign investors to enter a new host country. The quality of human capital is also a vital element of the absorptive capacity of host countries, influencing the extent to which domestic firms absorb the benefits of foreign investors.

The precise definitions of variables and data sources for each are listed in Table 1 (the correlation matrix and summary statistics are reported in the Appendix).

Table 1 about here

3.3. Empirical strategy

This study employs a two-step methodology based on the data reduction technique and GLS panel random effect estimation. The approach adopted here is based on Aidis et al. (2012) and Krasniqi and Desai (2016), which have first used the Principal Component Analysis (PCA) to reduce a large number of variables with an adverse effect on firms' operations to a few groups, each consisting of a set of variables which can be identified as formal or informal institutional or infrastructural barriers. After checking for consistency of survey questions in the three periods to ensure that survey questions are included in all three survey rounds, eleven individual variables, considered most relevant barriers for the firm's operations and growth, were subjected to exploratory factor analysis using Varimax-rotation with Kaiser normalisation. From the eleven individual types of barriers, the rotated matrix generated a three-factor solution with an acceptable value of adequacy (Kaiser–Meyer–Olkin measure of sampling adequacy = 0.782, p=0.000). Table 2 presents the three factors and their loadings. The PCA indicates that formal and informal institutional barriers are separate from each other conceptually and empirically.

Table 2 about here

4. Estimation of the model

To evaluate the impact of institutional quality on country-level variations in foreign equity shares in TEs, we turn to the second step of our empirical approach, the GLS panel data estimation. To test our hypotheses, we estimate the following econometric model, which includes the three institutional and infrastructural composite variables or factors generated by PCA, as well as other control variables (GDP per capita, government size and share of employees with university degrees), using the following model:

$$Y_{it} = \alpha + \beta_1 X_{1it} + u_{it}\ (i = 1, \dots., N; t = 1, \dots, T) \quad (1)$$

where the dependent variable Y_{it}, *foreign equity share* is a vector of dimension NxT that contains observations of the country i in period t (in our case, three periods); X_{it} is the vector of independent variables; u_{it} is the error term $u_{it} \sim i.i.d.(0, \sigma^2)$; subscript *i* refers to (26) countries and *t* to years 2002, 2005 and 2009. Explanatory variables are assumed to be independent of disturbances, and observations have been extracted from the same population.

GLS random estimates are conditional concerning unobserved heterogeneity. The Hausman test suggested that the random effect panel model provided a better fit of data across the majority of specifications compared to the fixed effect model. Explanatory variables are correlated at levels below 0.5 (see the Correlation Matrix in the Appendix), showing that multicollinearity is not a problem in our data. Variance inflation factor (VIF) confirms this with values below 1.92. Following Wooldridge (2013), the robust cluster inference is applied to account for serial correlation in the panel data context. This is appropriate when N is substantially larger than T, but not vice versa. Here, N (26) is comparatively larger than T (3).

5. Results and Discussion

GLS estimation is used to test the influence of institutional context (formal and informal) and control variables on the share of foreign investors in firms' equity across 26 TEs. Five separate specifications have been estimated. Model 1 is the base model that includes institutional and infrastructural barriers only. Model 2 adds control variables GDP per capita and the size of the government. Model 3 adds the interaction variables (formal and informal institutional barriers). Model 4 introduces the variable *transition score* to measure the impact of overall transition reforms, while Model 5 presents the interaction of formal and informal institutional barriers with

the transition score. Model 6 introduces the variable *University education.* Results are reported in the Table 3. Findings in the six estimations are largely consistent, so the results will be discussed for Model 5.

Table 3 about here

The variable *formal institutional barriers* have a negative and significant effect on *foreign equity shares* (-7.748, $p<0.05$). The severity of informal institutions is found to positively influence *foreign equity shares* (9.087, $p<0.05$). This could be interpreted as follows: the more informal institutions are perceived as problematic for business operations, the more equity foreign investors want to take on average. This is in line with previous firm level studies on the role of heterogeneity of institutions (see Stenholm et al., 2104; Belitski et al., 2016) on "context-dependent" economic outcomes (Autio and Acs, 2010).

In model 5, we test how formal and informal institutions influence foreign equity share in economies which are considered to have reformed rapidly as measured by the *transition score* variable compared to the slow reforming economies. For this purpose, we introduce two interaction terms in our original model: *transition score*Formal institutions* and *transition scores*Informal institutions*. Interestingly, when the interaction terms are included in Model 5, we find that both formal (0.951; $p<0.05$) and informal (1.033; $p<0.1$) become statistically significant. The interaction variable *Transition score * formal institutions* is statistically significant and positive (2.073; $p<0.1$) while interaction variables *transition scores*Informal institutions* is statistically significant and negative (-2.743, $p<0.05$). The interaction term *transition score*formal institutions* is positive and significant with *foreign equity shares*, indicating that formal institutions in more rapidly transforming economies positively influence foreign equity shares. In addition, the interaction term *transition score*informal institutions* has a negative sign and is statistically significant with foreign equity shares, indicating that informal institutions in more rapidly transforming economies negatively influence foreign equity shares.

The findings from Model 5 indicate that informal institutions are negatively associated with *foreign equity shares* under slower institutional reform conditions. This finding reflects the de facto practices of the legal system, regardless of what is written into law (Krasniqi and Desai, 2016). Our findings indicate that informal institutions could complement formal institutions by

greasing the wheels for business (Méon & Sekkat, 2005) not only by locals but also by international investors through local entrepreneurs who have more knowledge about these informal practices. In contrast, informal institutions may be less useful to facilitate transactions in fast-reforming TEs where reforms and rule of law have gained momentum. This suggests that when reforms are slower, firms may use informal ties more to deal with formal institutions, which discourages foreign investors from holding more equity. In line with the international business literature, the freeing investors in a highly informal business environment prefer to involve more local entrepreneurs who may be the strategy to overcome institutional barriers.

The results for control variables are in general as expected and in conformity with previous studies. The infrastructural barriers are found to be negatively associated with foreign equity shares (-6.176; $p<0.01$, model 6). As a higher score indicates a higher barrier, this implies that as difficulties related to electricity supply, transportation, communication and access to land increase, foreign investors are discouraged from taking a higher ownership stake in their joint ventures.

The level of economic development, measured by *GDP per capita*, positively influences foreign equity share in all model specifications – in the final model (4.307, $p<0.01$). The higher GDP per capita expands the market opportunities for foreign investors and, therefore, motivates them to increase their equity shares. *Size of government* has a negative and significant effect in all specifications (-1.986, $p<0.05$), indicating that more government involvement may increase the administrative burden and thus the need for local ownership stake to increase to mitigate the risk. As the literature suggests, a larger government indicates a more extensive bureaucratic apparatus that could give greater power to government agents and thus facilitate corruption – even though it may also be associated with increased public oversight (Belitski et al. 2016; Fogel 2006).

Human capital, measured by the share of employees with university education at the country level, has no significant effect on foreign equity share. The result for human capital is interesting in the light of previous research which has found a negative relationship between the university education of employees and export or firm performance (Ramstetter, 1999; Willmore, 1992; Hashi and Krasniqi, 2011). Indeed, the variable education in transition context maybe measures the percentage of employees who have obtained university diplomas and not necessarily those with advanced skills, reflecting the low quality of educational institutions in many TEs (Krasniqi and Mustafa, 2016).

6. Conclusion

This paper has examined the effect of the institutional environment on foreign equity shares in 26 transition economies. The study also accounted for the country-level differences in economic development, human capital, and size of government. Using BEEPs firm-level data averaged at the country level results from this study offer insights into how these factors affect foreign equity shares holdings in TEs.

The findings show that the foreign equity share is affected positively by informal institutional barriers and negatively by formal institutional barriers. In addition, we find that infrastructural barriers discourage foreign equity shareholdings. The interaction of formal and informal institutions with transition score variables significantly impacts foreign equity shares. This has important implications for policymakers and managers, suggesting that the role of institutional barriers could be assessed only if we control for the level of institutional quality in TEs. In terms of managerial implications, this could mean that foreign companies' managers use informal practices to overcome unfavourable host country intuitional conditions in countries with low levels of institutional reform.

The paper finds that the share of workers with a university degree is not significant on the human capital factors, signalling the low quality of formal education in these countries. Finally, the government size negatively affects the GDP per capita positively affects foreign equity shares. The paper concludes with theoretical implications for foreign equity and institutional research and policy recommendations to attract foreign investment

The findings are valuable for policymakers and managers interested in investing in transition and emerging countries with similar institutional features. In particular, the controls for transition reform stages and interaction with formal and informal institutions provided information that policymakers can consider specifically for promoting foreign direct investment and particularly for increasing foreign equity shares which potentially would lead to more spillover effect for the local economy.

With regards to future research, studies should take into account the importance of home country institutions in explaining foreign equity shares because so far the importance was given to total FDI inflow and not considering the importance of the level of foreign equity shares which in

turn influences the level of engagement of foreign investors. To do so, more extensive and more extended panels would be helpful to combine country-level indicators based on survey data with country-level economic indicators to have a broader view of the heterogeneity of institutional factors and equity shares held by foreign investors.

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Table 1: Variable names, definitions and sources

Name	Definition	Source
	Dependent variables	
Forown	Share of foreign investors in firms' equity, averaged across all firms with foreign shares in each country, in percentages (country average)	Business Environment and Enterprise Survey (BEEPS) database
	Explanatory and control variables	
Formal institutional barriers	A group of factors acting as barriers to firms' operation and growth related to formal institutional settings in each country. They consist of four dimensions: Tax administration, tax rate, trade and customs regulation, business licensing and permits (country average)	Business Environment and Enterprise Survey (BEEPS) database
Informal institutional barriers	A group of factors acting as barriers to firms' operation and growth related to informal institutional features of each country. They consist of four dimensions: functioning of the judiciary/courts, uncertainty about regulatory policies, anti-competitive practices of other competitors and corruption (country average)	Business Environment and Enterprise Survey (BEEPS) database
Infrastructure	A group of factors acting as infrastructural barriers to firms' operation and growth. They consist of: : access to electricity, transportation and access to land (country average)	Business Environment and Enterprise Survey (BEEPS) database
University	Proportion of employees of firms with university degree in percentages (country average)	Business Environment and Enterprise Survey (BEEPS) database
Government size	General government final consumption expenditure as a percentage of GDP	World Bank's World Development Indicators
GDP per capita	Gross domestic product per capita of each country, lagged by one year (in thousand Euros)	World Bank's World Development Indicators
Transition score	Progress of a range of reforms in transition economies. Scores assigned to reform levels range from 1 to 4+ (1, 1+, 2-, 2, 2+, 3-, 3, 3+, 4-, 4, 4+). "+" and "-" ratings are treated by adding 0.33 and subtracting 0.33 from the full values. 1 indicates very little market economy reforms and 4.3 indicates well developed reforms and similarity with established market economies.	EBRD *Transition Report, various years*

Table 2: Factors identified by PCA data reduction technique

Factors	Component		
	Factor 1	Factor 2	Factor 3
Formal institutional barriers			
Tax administration	.906		
Trade and customs regulations	.810		
Tax rate	.727		
Business licensing and permits	.650		
Informal Institutional barriers			
Functioning of judiciary and courts		.787	
Anti-competitive behaviour of competitors		.770	
Policy/political uncertainty		.722	
Corruption		.562	
Infrastructural and transportation barriers			
Electricity			.879
Transportation/telecommunication			.866
Access to land			.835
The percentage of variance explained	18.453	9.753	47.360
Kaiser-Meyer-Olkin measure of sampling adequacy 0.782, Bartlett's Test $p<0.000$. Cumulative explained variance: 75.60%			

Table 3: Panel GLS estimation results for random effect models (dependent variable: share of foreign investors in firms' equity at country level)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Infrastructure and transportation	-6.098***	-6.235***	-6.229***	-6.201***	-6.159***	-6.176***
	(1.196)	(1.185)	(1.180)	(1.180)	(1.168)	(1.190)
Formal institutions	-2.348***	-0.761	-0.755	-0.718	-7.748**	-7.684**
	(0.814)	(1.090)	(1.095)	(1.023)	(3.678)	(3.737)
Informal institutions	1.057	0.668	0.675	0.497	9.087**	9.112**
	(1.024)	(1.005)	(1.026)	(0.902)	(4.384)	(4.435)
Transition score				1.299	-0.0311	-0.0845
				(2.736)	(1.735)	(1.821)
*Transition score * formal institutions*					2.073*	2.059*
					(1.190)	(1.221)
*Transition score * informal institutions*					-2.743**	-2.751**
					(1.329)	(1.347)
Government size (natural logarithm)		-2.198***	-2.206***	-2.067**	-1.986**	-1.992**
		(0.737)	(0.748)	(0.824)	(0.852)	(0.927)
GDP per capita (natural logarithm)		4.636***	4.621***	4.158**	4.307***	4.372**
		(1.241)	(1.259)	(1.747)	(1.569)	(1.952)
*Formal*informal institutional barriers*			0.189			
			(0.758)			
University degree						0.00975
						(0.0897)
Constant	72.63***	83.69***	83.99***	80.34***	82.62***	82.11***
	(1.116)	(12.27)	(12.79)	(14.42)	(13.87)	(12.48)
Observations	78	78	78	78	78	78
Number of countries	26	26	26	26	26	26
R^2	0.40	0.49	0.49	0.49	0.52	0.49
Wald χ^2	32.21***	67.75***	84.74***	69.00***	78.55***	70.79***

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix

A1. Summary statistics for model variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Foreign equity shares (%)	78	72.63	10.55	35.66	90.66
Infrastructure and transportation	78	0.00	1.00	-1.21	2.48
Formal institutional barriers	78	0.00	1.00	-2.40	2.34
Informal institutional barriers	78	0.00	1.00	-2.81	1.77
Transition score	78	3.33	0.53	1.80	4.30
GDP per capita	78	8.09	1.12	5.25	10.09
Government size (%)	78	22.10	1.57	18.47	26.26

A2. Correlation matrix of variables

	(1)							
	gdpcapl~1	gdpgrowth	uni	prof	infrast~e	formal_~t	informa~t	logsize~v
gdpcaplag1	1							
gdpgrowth	-0.265	1						
uni	-0.388**	0.371**	1					
prof	-0.0897	0.229	0.692***	1				
infrastr~e	-0.269	0.253	0.0275	-0.00635	1			
formal_i~t	-0.407**	0.141	0.0912	-0.151	0.262	1		
informal~t	0.00796	-0.476***	-0.273	-0.449***	-0.116	-0.0150	1	
logsizegov	0.363**	-0.193	-0.323*	-0.140	-0.445***	-0.198	0.177	1

* p<0.05, ** p<0.01, *** p<0.001