

Institutions and Equity Structure of Foreign Affiliates

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ABSTRACT

Manuscript Type: Empirical

Research Question/Issue: We combine agency and institutional theory to explain the division of equity shares between the foreign (majority) and local (minority) partners within foreign affiliates. We posit that once the decision to invest is made, the ownership structure is arranged so as to generate appropriate incentives to local partners, taking into account both the institutional environment and the firm-specific difficulty in monitoring.

Research Findings/Insights: Using a large firm-level dataset for the period 2003–2011 from 16 Central and Eastern European countries and applying selectivity corrected estimates, we find that both weaker host country institutions and higher share of intangible assets in total assets in the firm imply higher minority equity share of local partners. The findings hold when controlling for host country effects and when the attributes of the institutional environment are instrumented.

Theoretical/Academic Implications: The classic view is that weak institutions lead to concentrated ownership, yet it leaves the level of minority equity shares unexplained. Our contribution uses a firm-level perspective combined with national-level variation in the institutional environment, and applies agency theory to explain the minority local partner share in foreign affiliates. In particular, we posit that the information asymmetry and monitoring problem in firms are exacerbated by weak host country institutions, but also by the higher share of intangible assets in total assets.

Practitioner/Policy Implications: Assessing investment opportunities abroad, foreign firms need to pay attention not only to features directly related to corporate governance (e.g., bankruptcy codes) but also to the broad institutional environment. In weak institutional environments, foreign parent firms need to create strong incentives for local partners by offering them significant minority shares in equity. The same recommendation applies to firms with higher shares of intangible assets in total assets.

Keywords: Corporate Governance, Cross Border Ownership, Institutional Theory, Agency Theory, Minority Shareholders

INTRODUCTION

It is well established that weak institutions and weak corporate governance frameworks lead to more concentrated ownership structures of firms. Equally, there is a large literature arguing that because such environments fail to protect minority investors, this leads to the values of these investments being discounted (Boubakri, Cosset, & Guedhami, 2005; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998; Morck, 2007; Shleifer & Vishny, 1997; Wu, Xu, & Yuan, 2009). However, absent from this literature is any

discussion of the size of the stake which is offered to minority partners. We contribute to the literature by filling this gap with respect to the equity structure of foreign affiliates.

First, we argue that since foreign direct investment (FDI) is characterized by strategic interests, by a high degree of commitment and by exercise of control through equity (Aguilera & Jackson, 2003), the choice of ownership structure and the associated control over both physical capital and knowledge capital becomes critical (Carr, Markusen, & Maskus, 2001). In this context, the ownership structure of affiliates becomes an important consideration for retaining control of strategic assets, and seeking to mitigate the risks associated with differences in the attributes of institutional environments across countries (e.g., Brouters, 2002; Gatignon & Anderson, 1988; Meyer, Estrin, Bhaumik, & Peng, 2009). At the same time, domestic partners provide resources complementary to those of foreign partners, and offering larger minority shares to the

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former serves as a critical bonding mechanism, consistent with the agency perspective.

Moreover, we argue that the hazards of opportunistic behavior are amplified by the institutional environment. This is consistent with the direction of travel for governance research, signposted by Kumar and Zattoni (2013). While there is a large literature in both international business and strategy that treats ownership structure as an exogenous variable, in explaining firm performance, we argue that this approach is flawed, and that one has to explain variation in ownership structure in terms of both firm-specific and country-level phenomena, in the spirit of the framework suggested by Kumar and Zattoni (2013).

Here, we contribute by using an institutional theory framework that encompasses property rights, corporate governance regulation, and informal institutions, which builds on Williamson (2000), Dyck (2001), Judge, Douglas, and Kutan (2008), and Estrin, Korosteleva, and Mickiewicz (2013). We combine this framework with the agency perspective to explain the level of (minority) ownership in foreign affiliates held by local partners. Consistent with this, we posit that the inherent problem faced by the multinational enterprise (MNE) is how to leverage the opportunities that cross-country differences offer, while managing the inherent agency problem. Once the decision to invest is made, the ownership structure of the affiliate must generate appropriate incentives for local partners, while protecting the firm's strategic assets (e.g., minimizing technology leakage) and taking into account the attributes of the institutional environment as well as the local firm's composition of assets. We posit that both the weaker institutional environment and the higher share of intangible assets in total assets imply considerable difficulty in monitoring the management of assets in foreign affiliate firms. This in turn calls for the larger ownership share of the local partner, to create appropriate bonding.

Emphasizing links between the institutional context and one important aspect of organizational design at the firm level (ownership structure), we address the argument by Aguilera, Filatotchev, Gospel, and Jackson (2008). They posit that instead of a closed-systems approach, which sees corporate governance arrangements as universal across countries and time, one needs to take a more flexible perspective to capture the interdependencies between firms' organization and the institutional environments. Consistent with this, our analysis is at the interface of country-level corporate governance chains (Dyck, 2001) and the firm level, avoiding both over-contextualized (macro) and under-contextualized (entirely micro) perspectives (Kumar & Zattoni, 2013). In the wider context of organizational theory, our work may be seen as considering the structure–activity–environment configuration (Fiss, 2007; Grandori & Furnari, 2008).

We test our hypotheses by using data on MNEs from 43 countries investing in 16 Central and Eastern European countries over the period 2003–2011. As Eicher and Schreiber (2010) point out, the economic and institutional development of these host countries represents a "natural experiment" in terms of the diversity of institutional environments that has emerged from a very similar base.¹ In our empirical models, we include attributes of host and parent firms, as well as country-level institutional variables.

THEORETICAL FRAMEWORK: OWNERSHIP AND INSTITUTIONS

Ownership Structure in Foreign Affiliates

A standard approach in the literature is to assume that decisions over ownership structure are made by the foreign parent firm (e.g., Dikova & van Witteloostuijn, 2007). However, local partners provide knowledge of local governance structures and institutions, and may therefore have some leverage in negotiations over ownership shares. This is consistent with Brouthers and Bamossy (1997), who argue that while the initiative may typically belong to the foreign parent firm, it is in the interests of both partners to create an efficient ownership structure arrangement. In this context our focus is on the institutional environment and the local partner's knowledge capital.

Institutional Environment

For the purpose of this paper we adopt the approach proposed by Williamson (2000) and extended by Estrin et al. (2013). It involves a "hierarchy of institutions," which spans from the institutional attributes that are strongly embedded and change infrequently, to those that change often.

First, *corruption* is a socially embedded phenomenon that changes slowly and is therefore located at the highest level of the institutional hierarchy. In other words, it represents a deep level, informal institutional attribute (Estrin et al., 2013). An interesting and paradoxical characteristic of corruption relates to the fact that it becomes socially embedded without being perceived as legitimate (Jepperson, 1991). Corruption is likely to increase the information asymmetry problems that constitute a significant obstacle to capital flows across international borders (Portes & Rey, 2005; Portes, Rey, & Oh, 2001) and to FDI in particular (Daude & Fratzscher, 2008).

Second, the core "constitutional" element of the formal legal framework relates to the *rule of law* and remains the key attribute of the market economy. Its main economic dimension lies in the security of property rights, which Dyck (2001) identifies as "the first chain in the link of formal governance" (see also Mickiewicz, 2009; Roe, 2002). This dimension relates to the likelihood of arbitrary expropriation by the government, but also to potential private expropriation, where the judicial system offers no effective protection against fraudulent business partners. Estrin et al. (2013) argue that there is a significant difference in the way corruption and insecure property rights affect businesses. The very fact that corruption becomes institutionalized implies that it can often be seen as an additional cost, which is though predictable. In countries with a long tradition of corruption, the level of corruption may become stable, with standard "prices" ruling the informal dealings between businesses and officials (Judge & Naoumova, 2004). In contrast, while some elements of corruption (especially judicial corruption) may result in insecure property rights, as argued above, the threat of expropriation creates a more fundamental uncertainty (Acemoglu & Johnson, 2005; Dyck, 2001; Estrin et al., 2013).

The third institutional attribute that we wish to consider is the *corporate governance legal framework*, located at the lower

regulatory level of the hierarchy of institutions. In particular, the detailed regulations protecting shareholders may be deficient, even with low corruption and with fundamental guarantees of property rights. Indeed cross-country research identifies wide variation in the quality of corporate governance codes (Heugens & Otten, 2007; Zattoni & Cuomo, 2008), even within the group of developed countries that are characterized by strong “higher order” institutional attributes.

Brouthers (2002), Javorcik and Wei (2009), Rodriguez, Siegel, Hillman, and Eden (2006), and Uhlenbruck, Rodriguez, Doh, and Eden (2006) argue that the presence of local owners in foreign affiliates becomes more likely in the face of weak institutional environments. Thus, firms may seek a host country partner who provides familiarity with the environment and facilitates access to specific resources which, if sought otherwise, come with higher transaction costs (Makino & Delios, 1996; Meyer et al., 2009). While there is empirical evidence that foreign parent firms typically retain controlling equity stakes (Mani, Antia, & Rindfleisch, 2007), the critical question that is unexplored in the literature relates to the percentage share offered to local partners. The scope for opportunistic behavior by local partners is amplified under weaker institutional environments, as enforcement of mutual obligations of partners may be hampered, especially with respect to interests of foreign parent firms, by, for example, judiciary corruption. In turn, while local partners also face a risk of opportunistic behavior by foreign partners, this is less likely, as the reputational cost of such behavior is typically higher for MNEs (Filatotchev & Mickiewicz, 2007). We posit that these agency considerations will lead the foreign investor toward the strategic choice of offering higher ownership shares to local partners to generate a stronger bonding mechanism where the institutional environment is weaker. The reason is that with weak institutional protection of foreign partners’ interests, the cost of extracting private benefits by local partners is lower. Therefore offering higher ownership share is more important to counterbalance this and to make the local partners more interested in maximizing the value of the affiliate firm. This leads to our first hypothesis:

Hypothesis 1. The weaker the institutional environment in the host country, as represented by (1a) high corruption, (1b) uncertain rule of law, (1c) poor corporate governance legal framework, the higher the local partner’s ownership share.

Intangible Assets

While much of the literature focuses on technology or firm-specific assets (Blodgett, 1991; Chen & Hennart, 2002; Dikova & van Witteloostuijn, 2007; Driffield, Love, & Menghinello, 2010; Dunning, 1988; Geringer, 1991; Kim & Hwang, 1992; Meyer & Peng, 2005; Oviatt & McDougall, 1994; Xu & Shenkar, 2002), we extend this by arguing that it is not simply a firm’s motivation of technology sourcing or technology exploiting that determines the ownership structure, but also agency problems faced in the foreign affiliate. Specifically, we build on Schiehl and Bellavance’s (2009) argument that asset composition, especially the larger share of intangible assets, determines ownership where the “publicly

available financial measures are less informative on performance” (Schiehl and Bellavance, 2009: 102). This leads to information asymmetry, and as a consequence larger equity holdings, which dominate ownership design, with bonding preferred to monitoring. Schiehl and Bellavance (2009) relate this argument to the share of managers in equity, and label it “substitution effects among the incentive mechanism.” We argue that a similar “substitution effect” applies to the (minority) share of local partners. In particular, where short-term firm performance is more difficult to assess accurately, the higher equity share of the minority local partner may create appropriate incentives for local resource contribution. In extending the agency cost argument to the relationship between foreign and local equity partners, we follow Yamin and Golesorkhi (2010: 465), who posit: “When the asset . . . contributed by a partner to the IJV is more difficult to measure/monitor this is likely to increase the variability of the IJV performance and, therefore, impact positively on the demand for guarantees in terms of a larger equity share ownership by the other partner.” This is also consistent with Saliola and Zanfei (2009), who emphasize the importance of governance mechanisms, both internal and external to the firm, in the context of knowledge and intangible assets. They stress the importance of embeddedness in this setting and highlight the importance of cultural distance, from which they infer that the assets concerned are intangible rather than physical.

As argued by Mudambi and Navarra (2004: 389), “subsidiaries that control a significant share of the MNC’s . . . intangibles therefore control the firm’s ‘crown jewels.’” At the same time, foreign partners find it difficult to control such affiliates, even though they own a majority of the equity. Thus, while maintaining majority control, foreign parent firms may be particularly interested in offering higher minority shares to the local partner as a solution to the agency problems. Combining these arguments leads to our second hypothesis:

Hypothesis 2. The higher the share of intangible assets in total assets, the higher the local partner’s ownership share.

DATA, VARIABLES, AND EMPIRICAL MODEL

Sample and Descriptive Statistics

Many existing studies on FDI flows are based on country-level datasets, which say little about the strategies of firms and about the choice of ownership structures in particular (e.g., Bevan & Estrin, 2004; Globerman & Shapiro, 2003; Henisz, 2000; Kaufmann & Wei, 1999; Merlevede & Schoors, 2009; for criticism of this approach, see Wu et al., 2009). In contrast, and in line with Hines (1995) and Javorcik and Wei (2009), we use matched information on foreign parent firms and their foreign affiliates in 16 CEE countries (Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, and Ukraine) for the period 2003–2011. The dataset has been drawn from ORBIS,² which has been widely used (e.g., Driffield, Mickiewicz, & Temouri, 2013; Lumineau & Malhotra, 2011; Temouri,

FIGURE 1
Share of Firms with Foreign Ownership in Total Number of Firms

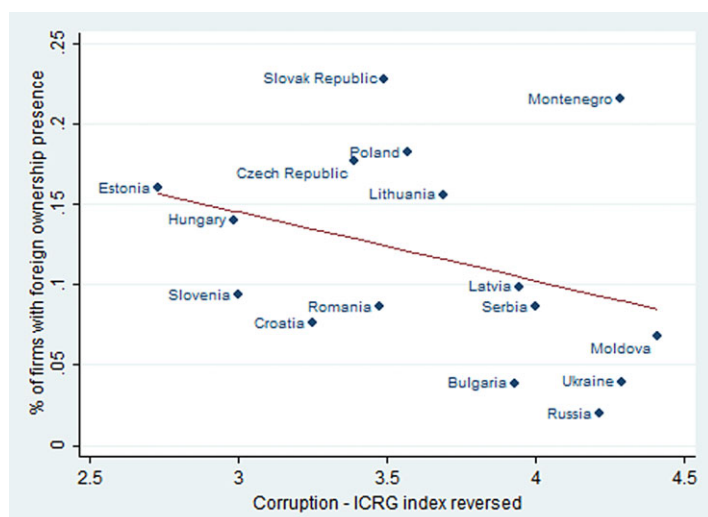
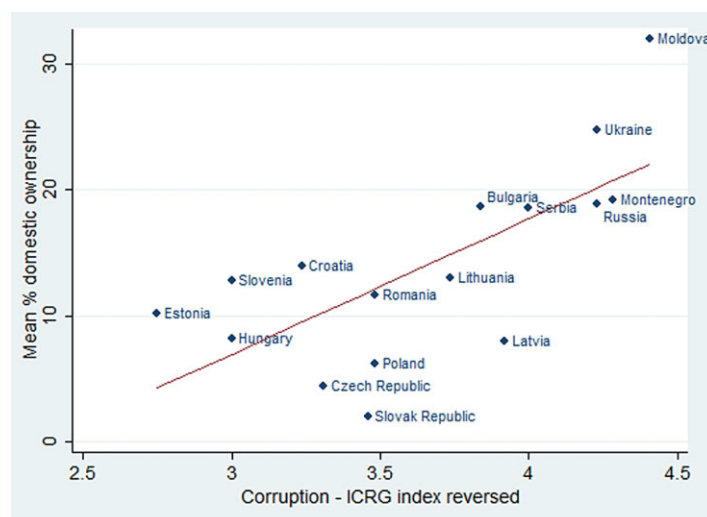


FIGURE 2
Average Share in Equity of the Local Partner in Firms with Foreign Ownership



Driffield, & Higon, 2008) and includes an unbalanced panel of, on average, 184,640 firms in CEE countries over 2003–2011. Only 6.6 percent of all firms have foreign investment and the remaining vast majority of the firms in the sample have no foreign investment.

As our panel is unbalanced, the number of firms in the sample period 2003–2011 differs: each firm may be in the panel for the entire sample period or only a few years, depending on its date of incorporation, its potential exit from the market, as well as its reporting requirements (e.g., very small firms are usually exempt from filing detailed firm information).

Thus, in terms of the sampling strategy, we started off with the entire population of firms in the 16 CEE countries as reported in ORBIS, which subsequently was reduced to firms for which we had information on the key variables in our analysis. We only included firms that showed ownership information (local or foreign), sales, employment, intangible and tangible fixed assets and material inputs, and other key variables that are crucial for the estimation of total factor productivity (TFP) in the subsequent analysis.³ Moreover, as we have the identity of the foreign partner in ORBIS, we were able to match the financial information of the foreign parent firm to the affiliate in the transition countries. This results in a sample of 4,137 affiliates, for which we have information on both affiliate and foreign parent firms from 43 countries of origin.

The percentage of firms with foreign presence differs across countries, and is higher for countries where the institutional environment is stronger. This is illustrated in Figure 1, where the horizontal axis corresponds to the corruption index (based on the International Country Risk Guide data, but with the sign reversed, so higher values represent more extensive corruption), and the vertical axis represents the percentage of firms in a given country that have some foreign ownership presence. In the lower right-hand corner, we find Russia and Ukraine, with high per-

ceived corruption and less than 5 percent of firms in our sample having any foreign presence. In contrast, Estonia and Hungary are the two countries with the lowest perceived corruption and about 15 percent of firms with foreign share.

In turn, for firms with foreign investment, the average percentage of equity held by the foreign partner is very high, ranging from 55 percent in Montenegro to 88 percent in the Czech Republic closely followed by Poland (86 percent), Slovakia (86 percent), Estonia (80 percent), Latvia (80 percent), and Hungary (79 percent). Some 60 percent of foreign affiliates have at least 90 percent of their equity held by the foreign parent, while 48 percent are wholly owned. This is in line with the findings of Mani et al. (2007), who report high equity shares retained by parent firms for their sample of Japanese investments in 38 countries. The average percentage held by a local partner is lower where the institutional environment of the host country is stronger. This is illustrated in Figure 2. In the upper right-hand corner are Moldova, Montenegro, Russia, and Ukraine, being the countries with the highest perceived corruption and the highest mean local ownership. In the lower left-hand corner are Estonia, Slovenia, and Hungary, with the lowest perceived corruption; in these countries, the mean local partner share in equity is around 10 percent.

Firm-Level Variables

We construct our dependent variable in the following way. First we identify CEE companies where the foreign owner is the largest shareholder. Next we look for the largest local shareholder, if any. The share of locally held equity becomes our dependent variable, with mean country values illustrated in Figure 2. There are only a handful of cases where the second largest shareholder is also a foreign owner and, as this does not affect our results, we retain these observations.

We include factors which may affect firms' ownership structure. First, for every host firm, we have the share of intangible assets in total assets (similar to Qian & Strahan, 2007, who use the ratio of tangible to total assets instead; and, for example, Barth & Kasznik, 1999). This proxies for a firm's knowledge capabilities, and includes formation expenses, research expenses, goodwill, development expenses, and all other expenses with a long-term effect. As argued above, this is assumed to increase the need for closer monitoring and the difficulty in defining resource contribution of local and foreign partners via contractual obligations, and therefore we relate this variable to hypothesis 2. We also control for host firm size based on assets, following Pan (1996), as larger size implies a higher absolute investment risk for the parent firm.

Next, we include host firm TFP derived as the residual of the production function using the Levinsohn and Petrin (2003) semi-parametric approach, which is an econometric technique to address endogeneity in inputs.⁴ Furthermore, we control for market share of a host firm, as product market competition may be a good substitute for incentivizing the stakeholders (Loredo & Suarez, 2000; Randøy & Jenssen, 2004). Consistent with this, we use a logarithm of market share in sales in a given sector (Cooper, 1993) and expect it to be associated with higher share of local ownership. As we have matched host firms with their foreign parent, we can also control for the share of intangible assets in the parent firm. Similar to what we use for the host firm, we utilize the share of intangible assets in total assets. We also take into account the size of the parent firm.

As in Judge et al. (2008), all our firm-level variables are lagged one year to alleviate simultaneity bias. We also include full sets of random host country-year effects and industry and country of origin dummies to control for industry-, country-, and time-specific factors that may affect a firm's ownership structure.

Country-Level Institutional Variables and Instrumenting

We introduce three institutional measures consistent with our discussion of institutions above.

Corruption. First, as argued above, corruption represents the informal level of the institutional hierarchy. For this, we rely on data from the International Country Risk Guide (ICRG) compiled by Political Risk Services Group, which is consistent with measures of corruption available either directly from Transparency International or from Heritage Foundation/ Wall Street Journal. We reverse the original scale used by ICRG so that a high value of the index indicates that the government officials are likely to demand illegal payments. This is expected throughout the lower levels of the government in the form of bribes connected with import and export licenses, exchange control, tax assessment, policy protection, or loans (PRS Group, 2013). Other corruption measures, in particular by the World Bank Worldwide Governance Indicators project (Kaufmann, Kraay, & Mastruzzi, 2009) are also available (e.g., Javorcik & Wei, 2009). Given the panel nature of our data, we decided not to use the World Bank measure as the time dimension is

a particular problem: Kaufmann et al. (2009) standardize distributions for each year (with mean zero and standard deviation of one), so data is not comparable over time (see Kaufmann et al., 2009).

Law and Order. Second, we use the ICRG measure of law and order as our proxy for security of property rights, which, as argued above, represents the "higher order" level of formal institutional environment. This measure captures a wide spectrum of risks including violence and threats of theft. Consistent with the argument above, weak legal protection may directly increase costs through private security, for example, and will also generate greater uncertainty as it is associated with increased arbitrariness in government.

Governance and Enterprise Restructuring. As our third institutional indicator, related to the lower level of regulation, we apply the "Governance and Enterprise Restructuring" index constructed annually by the European Bank for Reconstruction and Development (EBRD). It focuses on frameworks that facilitate "effective corporate control exercised through local financial institutions and markets, fostering market driven restructuring", corporate governance related to minority shareholdings, enforcement of bankruptcy regulation, and sound bank financing without soft budget constraint (EBRD, 2011: 174).

To alleviate the problem of endogeneity between ownership and institutional heterogeneity, we follow Beck, Demircug-Kunt, and Levine (2003), Rodrik, Subramanian, and Trebbi (2004), and Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008), and in each case instrument our institutional variables. The first instrument is a French legal origin dummy (as in Beck et al., 2003). Legal origin is a variable that captures historical development from the past and is therefore strongly exogenous. There are four French origin countries in our sample (Lithuania, Romania, Russia, and Ukraine) and the rest are of German legal origin (La Porta, Lopez-de-Silanes, & Shleifer, 2008). Our second instrument comes from the Polity IV data (University of Maryland), which contains a set of variables defining political constitution features, which can legitimately be seen as exogenous for our purposes. We chose two variables for our analysis: durability of regime, defined as a number of years without a major regime change in a country, and Polity2 indicator, which summarizes several constitutional features on a scale from authoritarian regime to democracy (Marshall & Jaggers, 2007). We add each of these instruments in turn to the legal origin one. It turns out that the durability variable is not a good instrument, whereas Polity2 is. Our justification for Polity2 as an instrument hinges on the assumption of the more fundamental nature of political institutions compared with economic ones; a view often adopted in research on CEE countries, where economic institutional indicators are instrumented using political institutional indices; see, for example, Falcetti, Lysenko, and Sanfey (2006). The University of Maryland indicators that we draw upon are developed and discussed in this context in the seminal paper by Acemoglu and Johnson (2005).

In order to validate our instrumental variables approach, we follow the testing procedure outlined by Parker and van Praag (2006). This involves a version of the GMM estimator

TABLE 1
Summary Statistics

Variable	Mean	Std. Dev.
Host firms		
% local ownership	11.47	22.24
% foreign ownership	83.43	29.55
Host total factor productivity (logarithm)	1.52	0.73
Host intangible/total assets (%)	1.29	5.51
Host firm market share (logarithm)	-5.28	2.22
Host firm asset size	38,880	195,044
Parent firms		
Parent intangible/total assets (%)	30.6	27.7
Parent firm asset size	2.25×10^7	1.20×10^8
Country-level indices		
Host country corruption	-0.30	0.36
Host county law and order	0.21	0.48
Host country bureaucratic quality	0.79	0.89
EBRD governance indicator	0.54	0.58
Creditors' right index	-0.08	0.73
French legal origin	0.31	0.46
Polity2 (democratic v. autocratic regimes)	8.60	1.77

Note: Authors' calculations using the ORBIS database, ICRG, EBRD and Polity IV. All monetary values were deflated and expressed in thousands of US dollars before calculations. Figures are based on observations used in the second stage regressions (as in Table 4).

but with external instruments rather than merely using lags. Following Rodrik et al. (2004), we first confirm the validity of the instruments using F tests; these are always significant at least at the 0.1 percent level in our estimations. Subsequently, we apply the Hansen J test of overidentification, following Beck et al. (2003), where in each case we cannot reject the hypotheses that instruments are valid. Based on this, we conclude that when applying two instruments (French legal origin and Polity2), instrumenting in our models can be justified. We also verify that using just one instrument (French legal origin) leads to slightly higher values of coefficients on institutional variables, with at least the same significance levels. Finally, we account for the fact that there may be a number of omitted country-level dimensions (which may also vary over time) affecting our results. Therefore we augment all our specifications with random country-year effects.

Table 1 presents summary statistics and Table 2 presents correlations, for the variables in the model.

Empirical Model and Estimation

The essential problem here is to model the ownership structure of foreign affiliates allowing for the fact that most firms in a given location do not attract foreign investment. In order to do this, we employ the Wooldridge (1995) estimator.

Suppose in a given year the foreign ownership in the i -th host firm operating in the j -th sector is denoted by a variable F_{ijc}^* determined as follows:

$$F_{ijc}^* = \alpha_0 + \alpha_x X_{ijct-1} + \gamma_j + \gamma_c + \varepsilon_{ijc}$$

For a given year t , $t = 2003, \dots, 2011$, we use this ownership information F_{ijc}^* to construct the following binary foreign entry variable F_{ijc} , indicating whether the i -th host firm operating in the j -th sector in country c has been successful in attracting foreign investment:

$$F_{ijc} = 1 \text{ if } F_{ijc}^* > 0 \quad F_{ijc} = 0 \text{ if otherwise}$$

$$\text{Prob}(F_{ijc} = 1) = \text{Prob}(F_{ijc}^* > 0) = F(\alpha_0 + \alpha_x X_{ijct-1} + \gamma_j + \gamma_c) \quad (1)$$

Equation (1) thus provides an underlying structural model for the determination of the probability of foreign investment in a host firm. This is similar in spirit to the analysis of Agarwal and Ramaswami (1992) for example. The X vector is the set of one-period lagged explanatory variables explaining this probability, namely: TFP; firm size; intangible to total assets ratio; and the volume of cash available to the firm. Given the multi-level data at our disposal, we also allow for sector-specific (γ_j) and country-specific (γ_c) effects that capture common unobserved shocks at the relevant level. The remaining errors are included in the independently and identically distributed error term ε . Estimation of equation (1) for each year t in the sample allows us to determine the inverse Mill's ratios λ_{it} for $t = 2003, \dots, 2011$.

After selecting the firms with some foreign ownership ($F = 1$), we estimate a second model to determine the level of ownership of the local partner D_{ijct} in the i -th host firm with foreign ownership in sector j , country c and year t as follows:

$$D_{ijct}^* = \beta_0 + \beta_z Z_{ijct-1} + \beta_H H_{ijct-1} + \beta_C C_{ct} + \delta_j + \delta_t + \Sigma_t \lambda_{it} + v_{ijct} \quad (2)$$

where Z is the set of host firm characteristics, incorporating a subset of X from (1). H captures the foreign MNE characteristics, while C refers to the country-level characteristics, namely, measures of the institutional environment. In equation (2), industry-specific fixed effects are denoted by δ_j and year-specific fixed effects by δ_t . Note that the λ_{it} term is the so-called inverse-Mills ratio obtained from estimating equation (1) above, and used to control for potential selectivity bias. The remaining errors are included in the independently and identically distributed error term v .

Following Amiti and Wakelin (2003), we argue that characteristics of the host firms (lagged values of firm size – medium and large, TFP as well as cash flow) play a crucial role in the probability of foreign investment. Note, however, that the cash variable is only included in equation (1) as cash availability may be driving investment decisions; thus it serves as an exclusion restriction for equation (2).

Testing Hypotheses

Testing hypotheses 1a–1c corresponds to estimating the β coefficients of host country indicators of institutional

TABLE 2
Correlation Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. % local ownership	1													
2. % foreign ownership	-.85***	1												
3. Host firm asset size	.01†	-.01**	1											
4. Host total factor productivity	-.09***	.13***	.06	1										
5. Host intangible/total assets	.01	-.02	.01*	.06***	1									
6. Host firm market share	-.10***	.13***	.21***	.20***	-.02	1								
7. Parent asset size	.14***	-.17***	.03*	-.01	.00	.07***	1							
8. Parent intangible/total assets	-.09***	.14***	.01	.12***	.03†	.08***	.19***	1						
9. Corruption	.09***	-.13***	.02***	-.08***	-.09***	-.19***	-.02	-.04	1					
10. Law and order	-.03†	.09***	.00	.04*	.04*	.02	.02	.09***	-.28***	1				
11. Bureaucratic quality	-.11***	.15***	.01**	.08***	.08***	.30***	.02	.06***	-.49***	.48***	1			
12. EBRD governance indicator	-.14***	.22***	.02***	.10***	.10***	.22***	.04***	.09***	-.61***	.37***	.89***	1		
13. Creditors' right index	.03*	-.06***	-.01***	-.01	-.08***	.06***	-.06***	-.01	-.00	.40***	-.10***	-.34***	1	
14. French legal origin	.11***	-.12***	-.01†	-.08***	-.07***	-.30***	-.01	-.03*	.45***	-.34***	-.94***	-.78***	.08***	1
15. Polity IV	-.11***	.15***	-.03***	.11***	.09***	.24***	.04***	.01	-.55***	.12***	.68***	.74***	-.32***	-.61***

***p < .001

**p < .01

*p < .05

†p < .10.

TABLE 3
First Stage Results – Probit Estimates of Foreign Equity Presence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
Host firm size	.000** (.000)	.000** (.000)	.000** (.000)	.000** (.000)	-.000 (.000)	.000 (.000)	.000*** (.000)	.000*** (.000)	.000** (.000)
Host TFP	1.348*** (.244)	1.315*** (.217)	1.596*** (.198)	1.640*** (.188)	1.569*** (.200)	1.418*** (.190)	1.480*** (.176)	1.094*** (.166)	1.226*** (.188)
Host intangibles/Total	.195*** (.008)	.200*** (.006)	.199*** (.006)	.216*** (.006)	.258*** (.006)	.264*** (.005)	.257*** (.005)	.265*** (.005)	.272*** (.005)
Host market share	.140*** (.006)	.136*** (.005)	.125*** (.004)	.109*** (.004)	.098*** (.004)	.076*** (.004)	.077*** (.004)	.071*** (.004)	.068*** (.004)
Host cash flow	.000** (.000)	.000** (.000)	.000** (.000)	.000** (.000)	-.000 (.000)	.000 (.000)	.000*** (.000)	.000*** (.000)	.000** (.000)
Constant	-.910*** (.102)	-.820*** (.088)	-.812*** (.083)	-.643*** (.078)	-.208** (.078)	-.088 (.080)	-.135+ (.078)	-.100 (.082)	-.040 (.068)
Observations	36,602	75,278	84,879	87,948	81,882	89,023	94,923	98,373	91,355

Note: Standard errors are in parentheses. All firm-level regressors are lagged one period. Full set of year, industry, and country dummies included but not reported.

***p < .001

**p < .01

*p < .05

†p < .10.

weakness. The test of hypothesis 2 focuses on the sign and significance of the coefficient of the share of intangible assets in total assets of host firms, *ceteris paribus*. All these tests rely on the estimation of our baseline model of equation (2) for the matched sample of parent firms and affiliates. This includes country of origin information, and examines the importance of institutional weakness (hypotheses 1a–1c) and firm-level source of agency costs (hypothesis 2). Our prior is that the coefficients on the institutional terms will be negative (positive for corruption), and positive on the share of intangible assets in total assets for host firms.

EMPIRICAL RESULTS

Estimates of the first stage foreign entry selection equation (1) as specified above are presented in Table 3. The results in these models are consistent, with most coefficients being highly significant across years. Foreign investment is more likely in firms with higher shares of intangible assets, those with higher market shares, and more cash.

Our primary focus is, however, on results derived from the estimation of equation (2), which determines the share of a local partner among host firms attracting some foreign investment. For this, we used the country of origin–host country matched sample of firms. The estimations results are shown in Table 4.

RESULTS

Following the framework we adopted, we examine the role of corruption (model 1), and replace it with the law

and order (model 2), and corporate governance (model 3), in separate specifications, corresponding to hypotheses 1a–1c.

Our first headline result confirms Hypothesis 1a: model 1 suggests that foreign affiliates in more corrupt countries tend to have higher levels of minority local ownership. The coefficient on the law and order variable (H1b) has the expected size but is not significant. In contrast, the coefficient on the EBRD index of governance is highly significant (at 1%) confirming H1c.

These results confirm two things. Firstly, the underlying relationship between institutional quality and the minority local partners' holdings in foreign firms is supported. Secondly, our hierarchical approach to institutional quality is also valid, in that the alternative institutional measures enter the models with the expected signs, but with varying degree of significance. In particular, with respect to formal institutions, the effect of the governance indicator (regulatory level) is far stronger compared with the indicator of the rule of law located at the higher level of institutional hierarchy. The legal frameworks most directly related to corporate governance seem to matter most.

For H2, we obtain a positive and significant sign for the share of intangible assets in total assets in the host firm, as expected. That is, firms with higher percentage of intangible assets in total assets tend to have a larger share of local ownership.

Interestingly, in all specifications reported in Table 4, the share of intangible assets in total assets for parent firm is insignificant. This is consistent with our H2, in the sense that we stress a corporate governance interpretation and highlight the agency costs associated with the composition of

TABLE 4
Selection Corrected Wooldridge Estimates of percent Share of Local Partner
(Host – Country of Origin Matched Sample)

	(1)	(2)	(3)	Expected coefficient sign
Host firm assets size	.00 (.00)	.00 (.00)	.00 (.00)	Ambiguous
Host firm total factor productivity	-2.96*** (.48)	-2.91*** (.51)	-2.98*** (.48)	Negative
Host firm intangible/total assets	17.09** (6.12)	20.24*** (6.14)	14.87* (6.07)	Positive (H2)
Host firm market share	-.19 (.27)	.11 (.39)	-.52† (.27)	Positive
Parent firm assets size	.00*** (.00)	.00*** (.00)	.00*** (.00)	Ambiguous
Parent firm intangible/total assets	-1.89 (1.44)	-.44 (1.46)	-2.06 (1.43)	Positive
Host country corruption	4.41* (1.78)			Positive (H1a)
Host country law and order		-30.92 (31.77)		Negative (H1b)
Host corporate governance			-3.22*** (.78)	Negative (H1c)
Constant	16.51*** (2.44)	19.87** (6.26)	18.18*** (2.37)	
Observations	4,017	4,017	4,066	
Number of country-years	122	122	126	
R-squared	.18	.06	.18	

Notes: Selection-corrected (Wooldridge) estimator; corresponding first stage probit estimates shown in Table 3. Full set of year, industry and home country and random host country-years effects included in all specifications. All firm-level regressors are lagged one period. Standard errors in parentheses. Institutional indicators in all equations instrumented with French legal origin and Polity2 variable from Polity IV database.

***p < .001

**p < .01

*p < .05

†p < .10.

assets of the foreign affiliate, not the asset endowments of the parent firm.

Most other results from these models are as expected. Interestingly, parent firm size is highly significant in all specifications, suggesting that the largest foreign parent firms offer higher minority stakes to local partners. This may suggest a line of interpretation, also consistent with a corporate governance perspective: a larger parent firm may face coordination problems, and therefore may seek to incentivize local partners, as direct monitoring by parent firms becomes relatively less efficient and more costly. Overall, linking our models back to country of origin is important as shown by the set of dummy variables representing country of ownership, which is highly significant in all the specifications.

Robustness Checks and Extensions

We also estimated regression models without a set of dummy variables representing the foreign partner home

country and models without instrumenting the institutional indicators and detected no differences in relation to our hypotheses. We experimented with two others institutional indicators at the regulatory level: creditors' rights (from Djankov, McLiesh, & Shleifer, 2007) and bureaucratic quality (from ICRG) and found the former insignificant and the latter significant.

In order to test for nonlinearity in firm size, we replaced the continuous firm size variable (both for host and for parent companies) by a vector of categorical ones. These confirm the positive relationship expressed in the results reported.

We also tested an alternative specification including profitability rather than internal efficiency (TFP), but this turned out to be a poor predictor of ownership. We verified that lagged productivity is a far stronger control than an alternative of using the lagged returns on assets; the correlation of the latter with our dependent variable is at 0.05 percent. This is potentially because of the noise in profitability data, especially in the context of efficiency-seeking FDI.

Given that our paper is concerned with determinants of (minority) ownership shares of local partners, we use the share of the largest local partner as our dependent variable. However, we also tested the models using the foreign partner share as dependent variable. Our inferences drawn from this alternative specification did not change.

With respect to ownership distribution, it could also be that the local statutes (commercial law) will attach special significance to some specific ownership levels, for example 25 percent. Accordingly, we looked for possible peaks in the distribution of equity. While we could not detect such an effect for the 25 percent ownership threshold, we could see a clear effect at 50 percent with a peak in the distribution. Accordingly, we experimented with applying alternative estimators, where the ownership variable was categorized for different ranges of ownership, with 50 percent as a separate category. However, such estimators (ordered probit, multinomial probit or logit) proved too demanding for our data, regardless of the alternative categorization we applied, and we could not get convergence when estimating these models.

Next, we investigated whether our results are robust to using employment as a measure of size. This did not affect our hypotheses testing in any significant way. In addition, to account for possible dynamic effects, we interacted our institutional measures with time dummies. None of these proved significant.

Finally, while Petersen (2009) makes a strong case for appropriate clustering of standard errors, the clustering is problematic when used with relatively unbalanced panels (Thompson, 2011) as with our data. Accordingly, we were not able to estimate standard errors clustered on firms, even when we applied bootstrapping. However, Petersen (2009) emphasizes that bias in standard error may also be attenuated by the structure of the model. Thus, in our second stage we include selectivity corrections controlling for selection bias derived from the first stage Wooldridge panel estimator, a full set of industry dummies, full set of parent countries dummies, and country-years random effects. We also added a full set of time effects, but given that we had already included them in the first step of the estimation, these turned out to be insignificant and were excluded from the final models.

DISCUSSION AND CONCLUSIONS

Our analysis provides managers of MNEs with evidence and a framework which allows them to better identify the complex relationships resulting in agency problems when deciding ownership design. We offer a link between the corporate governance (e.g., Dyck, 2001) and the international business and strategy literature (e.g., Doh, Rodriguez, Uhlenbruck, Collins, & Eden, 2003). While the corporate governance literature is aware of the complexity of the links between institutional environments and ownership structure, much of the international business and strategy research simply highlights that weak institutions deter foreign firms from investing. This, however, ignores the fact that these disadvantages can be alleviated by choosing an appropriate ownership structure that takes the prevailing

institutional environment into account. Accordingly, an efficient arrangement between the firm- and country-level environment is the main lesson we wish to highlight, which is consistent with Aguilera et al. (2008), Morck (2007), Roe (2008), and more generally with organization theory (Fiss, 2007; Grandori & Furnari, 2008). However, there are other important strategies to alleviate agency costs in international business dealings, including strategic alliances and hybrid forms, suggesting the need for further work in this area.

We argue that weak institutions may deter foreign entry due to increased uncertainty. However, if the firm-specific advantages are sufficient to counterbalance this uncertainty, then the foreign firm will invest but increase the share offered to local partners in order to alleviate agency problems and provide sufficient incentives. We stress that ownership incentives for local partners need to vary with agency costs, and that helps us to understand the ownership structures adopted in foreign affiliates. Similar arguments apply to firms with higher shares of intangible assets, where contribution of partners is more difficult to monitor. In firms with higher ratios of intangible to total assets, there is a high potential for agency conflict between foreign affiliates and foreign parent firms (Mudambi & Navarra, 2004; see also Yamin & Golesorkhi, 2010). Accordingly, another important managerial implication is that for companies with larger shares of intangible assets, foreign parent firms also need to create strong incentives (bonding) for local partners. This is because the probability of settling any dispute fairly with a host partner is particularly low for these companies. High share in equity given to local partners may counterbalance the risk by incentivizing them to maximize the value of the foreign affiliate.

Our results imply that one has to distinguish carefully between incentivizing the local partner and retaining control of key strategic assets. This presents an interesting dilemma for policymakers, who wish to attract FDI as a source not only of employment but of new technology. While our results suggest that international technology transfer may be associated with higher (minority) ownership shares, this in turn means higher levels of exposure to that technology for locals. Hence, there is a consistency between the foreign partners' and the local policymakers' objectives in this respect.

We therefore offer an extension to the literature that merely focuses on the extent to which corruption deters FDI (thus placing the onus on government to clean up corruption if it wishes to link to global technology and investment flows), or on mode of entry. We stress the need to overlay the standard resource theories applied in this area with agency considerations. In terms of organizational theory, we focus on the arrangement first between an ownership structure and the institutional environment, and then between the former and the nature of a firm's activity (Fiss, 2007; Grandori & Furnari, 2008).

With regards to methodological issues, modern organization theorists argue that classical regression analysis is not able to distinguish between the necessary and sufficient conditions of organizational design (e.g., ownership structures) and does not allow for considering alternative configurations that may lead to similar efficient outcomes (i.e., equifinality is not considered; Fiss, 2007). However, we

demonstrate that when examining minority ownership, applying a regression-based approach can be a fruitful future research avenue.

A limitation of our study is the dimensions of our data. For example, we cannot capture the actual negotiations between partners and do not know the prices paid for shares. It would be very interesting to understand better how exactly these ownership structures are shaped in business deals. Another limitation relates to the fact that the results may not be easily transferable to environments where foreign investors face serious constraints imposed on their shareholding, so that they have to remain minority shareholders, for example. In contrast, in our context of foreign investment in Central and Eastern Europe, foreign investors face little limitation and are therefore able to shape the ownership structures, as assumed by our models.

Our hypotheses stress substitutability effects, yet there is also increased understanding in corporate governance research based on the agency perspective that some complementarities in governance factors (external and internal) are also likely (Hoskisson, Castleton, & Withers, 2009; Ward, Brown, & Rodríguez, 2009).

As we discuss a solution to specific agency problems between dominant foreign owners and the host country partners, this suggests that a future avenue of research could be to consider directly the nature of the latter, and their local political or institutional connections, to determine whether this influences ownership share or technology transfer by the inward investor. This paper should be seen as a tentative step in the direction of understanding how ownership shares may be adjusted to institutional environments and firm's characteristics, and more work in this direction is needed.

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NOTES

1. "The fall of the Iron Curtain provides a unique controlled, or natural, experiment in that the initial institutional change is clearly exogenous . . . It also provides a unique opportunity to analyze the impact of subsequent structural policy changes . . . in a sizeable number of countries, with similar initial conditions, over the same period of time" (Eicher & Schreiber, 2010: 169).
2. The ORBIS dataset is collection of business records on public and private firms. Although the most basic company information (e.g., name, location, industry affiliation) is available for millions of firms, the size of the database shrinks considerably if

one isolates firms which report detailed figures for a set of key variables, such as the ones used in this paper. There are a number of reasons for this. Firstly, even though the ORBIS data is sourced from national statistical offices and business registers in the various countries, there are still reporting thresholds. Many small sized firms are exempt from reporting full annual accounts. Some firms enter the market and new firms have almost two years to submit their first annual accounts and thus will not show figures immediately. However, this bias has become smaller as the dataset has been extended over the last few years to include more SMEs that do report balance sheet figures (Ribeiro, Menghinello, & De Backer, 2010). Finally, ORBIS allows the construction of longitudinal panels as it collects firm-level information over a period of ten years, but many firms are observed for a shorter period of time, making the panel unbalanced and exits of firms cannot be attributed to non-reporting. For a detailed review of the ORBIS dataset, see the OECD report by Ribeiro et al. (2010), who assess in detail the many advantages and shortcomings of the dataset compared with the characteristics of official statistical databases, as well as the level of representativeness of data samples sourced from datasets available by Bureau van Dijk.

3. ORBIS reports firms' accounts in either consolidated or unconsolidated form. We include only unconsolidated accounts as they represent the domestic activities of firms and exclude any information from affiliates at home or abroad.
4. As the full description of the estimation algorithm is beyond the scope of the paper, readers interested in more detail are referred to Levinsohn and Petrin (2003) and to instructions detailing the implementation using the software STATA by Petrin, Poi, and Levinsohn (2004).

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