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Abstract

This article investigates how the location behavior of Multinational Enterprises (MNEs) is shaped by the economic institutions of the host countries. The analysis covers a wide set of geographically proximate economies with different degrees of integration with the 'Old' 15 European Union (EU) members: New Member States, Accession and Candidate Countries, as well as European Neighborhood Policy (ENP) countries and the Russian Federation. The article aims to shed new light on the heterogeneity of MNE preferences for the host countries' regulatory settings (including labor market and business regulation), legal aspects (i.e. protection of property rights and contract enforcement) and the weight of the government in the economy. By employing data on 6,888 greenfield investment projects, the random-coefficient Mixed Logit analysis shows that, while the quality of the national institutional framework is generally beneficial for the attraction of foreign investment, MNEs preferences over economic institutions are highly heterogeneous across sectors and business functions.

JEL Classification: F23, P33, L20, R30.
Keywords: Multinational Enterprises; Economic Institutions; Location Choice; European Union

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Over the past two decades the European Union (EU) has strongly intensified economic and political relationships with its geographically neighboring countries. Two rounds of enlargement in 2004 and 2007 brought several ex-socialist economies under the aegis of the EU, Croatia joined in 2013, and more countries are currently candidate to membership. In addition, the European Neighborhood Policy (ENP) was launched in 2004, with the aim of creating a ring of countries across the Mediterranean and the East of Europe with which the EU could intensify economic linkages as well as develop peaceful and cooperative relationships (COM 2004). The complex set of connections that the EU has established with a wide range of actors in the area has gradually enhanced the economic and institutional integration between the EU itself and its counterparts. While full economic integration was attained with the New Member States (NMS), the interactions with candidate countries and ENP countries are still growing.

In this scenario, Multinational Enterprises (MNEs) from the Old EU-15 members have had wide and increasing opportunities to expand their operations within the continent and beyond its immediate borders. The aim of this article is to study the location of investments undertaken by EU-15 MNEs towards a wide set of locations integrated or linked to different extents to the Union: NMS, Accession and Candidate Countries as well as ENP countries and the Russian Federation.[1] This is a highly heterogeneous group of EU members, transition and developing economies, the latter two groups having in common their geographic proximity to the EU. This entails a set of privileged

[1] The countries here considered are 21, namely: (a) NMS: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia; (b) Accession and candidate countries: Albania, Croatia (which joined the EU in July 2013) and Turkey; (c) ENP: Ukraine; Algeria, Egypt, Israel, Jordan, Morocco and Tunisia; (d) Russian Federation.

relationships with the Union, ranging from full membership in the case of NMS, accession treaties, action plans within the ENP framework, and bilateral agreements in the case of Russia.

In particular the article aims to analyze the role of economic institutions in shaping MNE greenfield investment location decisions once new opportunities and geographic options are made available by tighter economic integration or more favorable preconditions for foreign investment as a result of formal agreements. By exploiting the unique conditions offered by the selected group of countries with varying degrees of economic integration with the EU and highly heterogeneous institutional conditions, the article focuses on three key dimensions of the recipient economies: (i) regulatory characteristics connected to both national labor markets and business conditions; (ii) legal aspects relevant in market transactions, i.e. property rights protection and degree of contract enforcement; (iii) weight of government intervention in the host countries' economies.

The contribution of the article is threefold. First, it innovatively combines the literature on institutional conditions with the analysis of MNEs location strategies by focusing, differently from other existing works, on economic institutions and their different dimensions. In fact, although the institutional environment of recipient countries has been the object of analysis of a number of studies, the great majority of this literature focuses on political, rather than economic, features of the national institutional setting. Second, the high heterogeneity of MNE behavior with reference to economic institutions takes central stage in the article, therefore making use in the empirical strategy of random-

coefficient Mixed Logit (MXL) models (still rarely employed in this field of research)[2] in order to fully capture this heterogeneity and its drivers. The investigation of the diversity of MNE preferences is still an underdeveloped area of enquiry, especially as far as quantitative analyses are concerned, while qualitative approaches have already started to explore such a dimension (e.g., Phelps and Wu 2009). Hence, this work contributes to the ongoing scholarly debate by empirically testing the nature and magnitude of MNE preferences with respect to recipient countries' institutions. In so doing, the article also explores how heterogeneous preferences in MNE localization strategies vary across different sectors of economic activity and business functions. Third, notwithstanding the increasing geo-political and economic importance of the EU 'neighborhood', there is very limited empirical evidence on the position of this set of countries in global investment networks. Filling this gap is crucially important for the design of appropriate development policies by the European Union, as well as for national governments and a number of international organizations active in the area (e.g., United Nation Development Programme and the World Bank among others). The effectiveness of industrial and development policies increasingly depends on the extent to which interactions and governance within GVCs are taken into account in the design of innovative strategies and policy tools: countries and regions participate differently into GVCs, with relevant implications for the support of local capacity upgrading (Humphrey and Schmitz 2002; Gereffi, Humphrey, and Sturgeon 2005).

[2] See Defever (2006; 2012) and Cheng (2008) for previous modelling of MNEs location choices with random-coefficient Mixed Logit.

The analysis is based on the combination of data on 6,888 greenfield investment projects undertaken between 2003 and 2008 by MNEs from EU-15 countries into a set of 21 destination countries, and Fraser Institute data on their economic institutional conditions. The article firstly applies a standard Conditional Logit model in order to maximize comparability with existing studies and, in a subsequent step, explores MNEs' behavioral heterogeneity by means of random-coefficient Mixed Logit. Although we should refrain from any causal interpretation of the results, the empirical analysis suggests that economic institutions are strongly associated to greenfield investment location decisions after controlling for other economic characteristics of the host economies, showing significant heterogeneity in MNEs' preferences over different institutional settings both by sector and function of the investment.

The article is structured as follows: the next section provides an overview of the relevant literature on MNE location behavior and on the role of economic institutions in attracting foreign investors, identifying the main research questions and hypotheses to be tested. Data and variables used in the analysis are presented, providing some descriptive evidence about the location of European foreign investment in the group of countries of interest and their institutional conditions. The methodology is then discussed, followed by the presentation of the empirical results. Finally, some concluding remarks and tentative policy implications are drawn in the final section of the article.

MNEs location strategies: Host economy advantages and institutional conditions

The analytical framework for the study of MNE location decisions is Dunning (1977, 1988)'s Ownership-Location-Internalization (OLI) eclectic paradigm. The OLI framework implies that the existence of ownership-specific advantages (O) possessed by some firms may lead to the decision to internalize (I) activities and to undertake operations in sites endowed with location-specific advantages (L). Consequently, the combination of (O), (L) and (I) advantages justifies MNEs' existence and their ability to maximize their productive efficiency while minimizing the impact of uncertain and imperfect markets on their operations.

However, whilst the interactions between ownership and internalization advantages have been extensively investigated (see, for example, the seminal work by Buckley and Casson 1976; Rugman 1981), the study of location advantages has suffered from a number of conceptual and empirical constraints, namely a problematic conceptualization of space and the severe restriction in data availability (McCann and Mudambi 2005; Iammarino and McCann 2013).

In the traditional empirical economics literature attention has been directed to factor endowments in a broad sense, including, among other location drivers, physical infrastructure (e.g., Coughlin, Terza, and Arromdee 1991), policy instruments (Basile, Castellani, and Zanfei 2008), and labour costs (e.g., Liu, Lovely, and Ondrich 2010). Urban and regional economics contributions have focused on agglomeration economies, spatially bounded externalities and the geographic concentration of economic activity as drivers of MNEs' location behaviour (e.g. Head, Ries, and Swenson 1995; Guimarães,

Figueiredo, and Woodward 2000;). Furthermore, empirical studies within the New Economic Geography have shown that not only MNEs tend to replicate the location decisions of previous firms with similar attributes, but agglomeration effects also act through demand linkages (Head and Mayer 2004) as well as specialized inputs supply (LaFountain 2005).

The Economic Geography literature has more recently focused on the fragmentation of international activities of MNEs along functional lines. This stream of research has highlighted that MNE location behavior and the fragmentation of production processes into different functions respond to spatial concentration mechanisms (Defever 2006, 2012). The concept of Global Value Chains (GVC) has been more recently added to this debate with the analysis of the linkages between MNEs location behavior along value chains (Saliola and Zanfei 2009; Crescenzi, Pietrobelli and Rabellotti 2014). These analyses suggest that the location of different MNE functions/value chain stages is influenced by different corporate strategies depending on the characteristics of the investor and the specific operation offshored. Such a segmentation of the production process at multiple spatial scales involves both intra- and inter-firm relationships and, at the same time, it entails that each stage of the production chain is embedded into local networks of actors and institutions (Coe, Dicken, and Hess 2008). In this respect, this article analyses the location of different business functions along the production chain, but only considering the intra-firm component of the network given the nature of our data (i.e. individual greenfield FDI). Interestingly, extant quantitative research on the intra-firm organization of activities at different value chain stages is still in its infancy (Yeung

and Coe 2015). Indeed, research on MNE location behavior has recently focused on the phase of firms' life cycle, highlighting a co-evolution of location decisions and accumulation of firms' capabilities (Stam 2007), and the effect of spatial heterogeneity on MNE entry modes through the interaction between the strength of local externalities and firms' competencies (Mariotti, Piscitello, and Elia 2014).

Systems of innovation conditions and their relationship with MNEs strategies have been increasingly in the focus of the literature at the intersection between Economic Geography and International Business (Beugelsdijk and Mudambi 2013; Iammarino and McCann 2013). The international spatial allocation of MNE activities tends to be marked by the existence of 'core and periphery' patterns according to the complexity of activities (McCann and Mudambi 2005), leading to differences in territorial trajectories and growth dynamics and to cumulative causation mechanisms (e.g., Cantwell and Iammarino 1998, 2001). Since technological development tends to be cumulative in nature and characterized by elements that are bounded in specific places, it is suggested that MNEs establish networks for innovation across locations by tapping into regional profiles of specialization and strengthening local technological competencies, thus feeding a regional hierarchy of centers across and within national boundaries (Cantwell and Iammarino 2003). The interactions between regional knowledge bases and MNEs technological strategies are investigated in terms of knowledge spillovers and externalities, particularly in the European (e.g., Cantwell and Piscitello 2005; Ascani and Gagliardi 2014; Crescenzi, Gagliardi, and Iammarino 2015) and the US context (e.g., Alcácer and Chung 2007).

As extensively discussed in the international business and strategy literature, MNE location is also influenced by the specific characteristics of investing companies as well as by the diversity of corporate strategies and objectives (e.g., Xu and Shenkar 2002). Although this heterogeneity on the side of MNEs plays a critical role in shaping location choices – especially when considering its interaction with specific location attributes – the focus of the present article remains on the geographic aspects of MNE strategies while exploring the heterogeneity of MNE preferences with specific reference to both investment sector and function. This choice is also dictated by the nature of our data, which, as discussed in a later section, takes MNE investment projects as the unit of observation. Therefore, while our empirical analysis benefits from detailed information on MNE activities, it cannot explore the role of MNE intrinsic diversity, as it is instead customary in most qualitative studies on MNE location behavior.

Economic institutions and MNEs investments

The importance of economic institutions for economic performance and investment is widely acknowledged in the political economy literature (e.g., Knack and Keefer 1995; Acemoglu and Robinson 2005). Economic institutions affect the structure of incentives in the economy, influencing the stability and predictability of market (and non-market) transactions. In this sense they play a crucial role in shaping capital accumulation and (public and private) investments at all levels. However, empirical research has primarily focused on domestic capital formation, with limited attention to the importance of economic institutions in driving foreign investment decisions. Institutions influence

MNEs' operations abroad by a) directly shaping the returns on their investments and the associated risk (direct effect); b) indirectly impacting upon other key investment drivers such as human capital and infrastructure (indirect effect) (see Knack and Keefer 1995).

In particular the existing literature – still rather limited in terms of geographic coverage – has failed both to agree on the direct importance of institutional conditions versus other location drivers, and to reach a clear consensus on what typologies of institutions matter (if at all) for MNE investment decisions. The seminal contribution by Wheeler and Mody (1992) – looking at foreign investments of US Multinationals – combines a number of institutional indicators (including stability of labor, red tapes, quality of the legal system, etc.) and compares them with classical factor endowment, agglomeration and openness indicators. The empirical analysis concludes that US investment abroad is not driven by the institutional environment of the recipient economies but by other factors only indirectly influenced by institutions.

This evidence has been challenged by a number of subsequent studies that try to open the institutional 'black-box', aiming to disentangle the relative importance of specific sub-components of the host institutional environment and its 'distance' from that of the MNE's home country. Very diverse sets of institutional conditions have been tested in different studies under the constraint of data availability for different groups of countries and time periods. Wei (2000) is the first study to re-open the debate by means of a comprehensive data set on bilateral FDI flows: his results suggest a negative relationship between corruption in the host country and FDI. Campos and Kinoshita (2003) suggest

that bureaucracy quality and rule of law are relevant drivers of FDI, while Globerman and Shapiro (2002) look at both inward and outward FDI in a large sample of countries, finding a significant and positive association between MNEs' investments and a composite indicator of institutional quality. Meon and Sekkat (2004) investigate the Middle East and North Africa (MENA) economies suggesting that it is political risk in general, rather than one particular institutional aspect, which limits FDI into a given country in the area. Bénassy-Quéré, Coupet and Mayer (2007, 780) – who look at the link between bilateral FDI flows and institutional quality (captured by means of Fraser Institute indicators as in the present article) – conclude that "good institutions almost always increase the amount of FDI received", at the same time stressing the heterogeneity associated to distance in terms of institutional arrangements between the origin and the destination country of the investment.

A few complementary studies have looked at MNE location strategies at the sub-national level: within countries the degree of economic integration is higher and (formal) institutional arrangements are generally more homogenous, making it easier to capture the impact of other aspects of governance quality. Phelps et al. (2003) find evidence of the importance of sub-national supportive institutions in different areas of the UK. Du, Lu and Tao (2008) investigate the location decisions of US MNEs investing in Chinese provinces over the period 1993-2001 by looking at several indices of economic institutions. Using a conditional logit model the authors suggest that US MNE location behavior reacts positively to stronger protection of property rights, relatively limited role of government in business, lower government corruption and more adequate contracting

environment. These elements provide strong incentives to US MNEs to locate in Chinese provinces.

Regulations, legal environments, and government intervention

Another small number of studies have concentrated their attention on specific economic institutions and MNE behavior. Three key dimensions emerge as the core components of *economic* institutions with a potential direct impact on the location decisions of foreign investments: regulatory framework conditions (with reference to both labor and capital investments, i.e. labor market and business regulations respectively), the legal environment (property rights and contracts' enforcement) and the role of public expenditure in the economy (government intervention).

Existing literature on the relationship between labor market regulation and foreign investment is scant. Using OECD data, Dewitt, Görg and Montagna (2003) highlight that unfavorable employment protection differential between destination and origin countries is harmful for investment. Other studies suggest that more flexible labor markets in recipient countries are positively correlated to higher inflows of investment from abroad (Javorcik and Spatareanu 2005). On the other hand, locating in a country with a more regulated labor market could be associated with a firm's higher productivity: thus, some stages of production or certain sectors will tend to locate in more regulated labour markets (Haucap, Wey, and Barmbold 1997). Therefore, beyond the conventional belief and weak evidence that more rigid labor markets represent a cost for foreign investors, it is possible to argue that countries with different labor market regulations attract different types of foreign investment. For instance, Lee (2003) suggests that the existence of labor

unions positively affects firms' greenfield location of new plants in the Korean automotive industry.

As Djankov, McLiesh, and Ramalho (2006) demonstrate, more business-friendly environments can be attractive for MNEs, given they can operate in a context where bureaucratic and administrative costs are less daunting. Daude and Stein (2007) suggest that the regulatory quality is the single most important investment driver. Similar conclusions are reached by Kaditi (2013) looking at South-eastern European countries. Positive effects of a more deregulated business environment are also suggested by Kaplan, Piedra and Seira (2011): however, the latter study also highlights that such effects are only temporary and much less important than conventional wisdom holds. Globerman and Shapiro (2002) conclude that it is not regulation per se that matters but the effectiveness of its implementation and enforcement.

The role of property rights is widely debated in the existing literature on economic institutions. Acemoglu, Johnson and Robinson (2001) claim that the protection of property rights plays a crucial role in shaping long-run development trajectories. First, more secure property rights both encourage individuals to invest and raise return rates by protecting against expropriation from the government or powerful groups (Besley 1995;). Secondly, uncertain property rights may determine costs that individuals have to pay to protect their property. Thirdly, secure property rights may facilitate gains from trade by enabling the mobility of assets as factors of production (Besley 1995). As a consequence, MNEs may prefer locations where property rights are better acknowledged and rightfully protected by the legal system. Again there is no consensus in the empirical literature on

the practical importance of this particular institutional aspect: Bénassy-Quéré, Coupet and Mayer (2007) and Du, Lu and Tao (2008) find a positive and significant effect, while Daniele and Marani (2011) suggest that only organized crime works as a deterrent for foreign investments while there is no effect of other property rights infringements.

Institutions that support contract enforcement are also important here given these help make market transactions, dispute resolution, and the general functioning of the economy more predictable. In this respect, Markusen (2001) suggests that MNEs benefit from locations with strong and reliable contract enforcement since they can credibly commit to investment. Daude and Stein (2007) find a positive and significant impact in a large cross section of world economies, Kaditi (2013) confirms this result for Southern-European countries and Du, Lu and Tao (2008) find evidence that better contract enforcement in Chinese regions attracts US multinationals.

Finally, government interventions or its excessive management economic institutions could lead to inefficiencies and rent-seeking (Shleifer and Vishny 1999). Therefore, MNEs may prefer location where governments play a relatively marginal role in the economy (e.g., Du, Lu and Tao 2008). On the other hand, however, governments often buy products from foreign firms, either directly or through state-owned enterprises, or purchase goods from domestic firms that are vertically connected with MNEs' subsidiaries. In this sense, larger public sector consumption may be an appealing feature for MNEs since it increases the size of host countries' markets.

Data: Measuring MNE investment and institutional conditions

We employ information on individual investment projects undertaken by MNEs over the period 2003-2008 provided by the *FDi Markets-Financial Times Business* database, which includes all cross-border greenfield and brownfield investment.[3] Foreign firms' operations are identified by *Financial Times* analysts through a wide variety of sources, including nearly 9,000 media sources, project data from over 1,000 industry organizations and investment agencies, and data purchased from market research and publication companies. Furthermore, each project is cross-referenced across multiple sources and more than 90 percent of investment projects are validated with company sources. As Crescenzi, Pietrobelli and Rabellotti (2014) show, investment decisions captured by this database are highly correlated with other macro-level data on FDI from UNCTAD and the World Bank.

In more specific terms, this article focuses on investment projects originated in EU-15 countries and directed towards EU New Member States (NMS) and European Neighboring Countries (NCs), the latter being Accession Countries (ACC), European Neighborhood Policy (ENP) countries and the Russian Federation.[4] Since the aim of the analysis here is to investigate MNE location choices, only data on greenfield investment are considered, since the location of brownfield investment is clearly a function of greenfield investments undertaken in previous periods: hence, only greenfield investment are subject to a choice based on location attributes. A further relevant consideration to

[3] In this database joint ventures are tracked only when they lead to new physical operations, whereas Mergers & Acquisitions as well as other equity investment are not included. Overall, the inclusion in the dataset is conditional on the fact that investment projects generate new employment or capital investment.

[4] Investment from the EU-27 and the whole world towards the same destination countries are also employed to test the attractiveness of the countries of interest with different samples.

make is associated with the existence of repeated investment undertaken by the same MNE over time. In presence of repeated investment, future locations decisions could be influenced by past investment. However, the proportion of this type of investment is very limited in our data. This is not surprising considering the relatively short time span considered, and the fact that most MNEs do not open new establishment very often in such a limited period of time in the geographic area under analysis.

Table 1 provides information on new investment projects in 2003-2008 originating from EU-15 countries in NMS (panel A) and NCs, that is Balkan and Eastern countries (panel B) and Northern African and Middle East countries (panel C). It is not surprising that about 62 percent of EU-15 investors still choose to remain in the EU by selecting a destination among NMS.[5] In this area, Romania, Poland and Hungary are the top three destinations, with about 14.7 percent, 10.9 percent and 9.8 percent of EU-15 investment, respectively. The trend over the 2000s, however, suggests that the huge attractiveness of NMS reached its peak in anticipation to the full EU membership and it is now declining, replicating a pattern rather typical of previous EU enlargements and restructuring. In the NCs, instead, MNEs' presence has increased particularly since the mid-2000s. In terms of cumulative inflows, the most selected destination outside the European Union is Russia, with a share of 19 percent. The rest of the Balkans and the East attracts an additional 10 percent of EU-15 investment in the area, whilst Northern Africa and Middle East account for about 8 percent.

[5] Most of NMS entered the EU in 2004, while Romania and Bulgaria joined in 2007.

[Table 1 around here]

Institutional Conditions

A large number of institutional variables are publicly available, ranging from measures of governance to political indicators. Nevertheless, as mentioned in previous sections, this article is primarily concerned with the notion of economic institutions. The aim is in fact to cover some aspects of national institutional settings that directly characterize a country's economic life and affect the degree of attractiveness towards foreign investment.

In line with other existing studies on foreign investment and institutions (e.g. Bénassy-Quéré, Coupet, and Mayer 2007), we employ data from the Fraser Institute as it provides information for all countries covered in our analysis. This dataset contains a number of indicators reflecting several economic dimensions of national institutional contexts. In particular, we employ the following four measures of institutional quality: labor market regulation, business regulation, protection of property rights, and legal enforcement of contracts. In addition, we use data from the World Bank's World Development Indicators (WDI) to include the relevance of government expenditure in destination countries. With these five indicators we cover three main areas of the economic-institutional environment: (i) regulatory aspects (in labour market and business), (ii) legal aspects (property rights and contract enforcement), and (iii) extent of public intervention in the economy.

Labor market regulation: our variable for labor market regulation proxies the flexibility of national labor markets. This is an index encompassing information on countries' hiring and firing rules, collective bargaining, worker dismissal costs, conscription, working hours and minimum wage. Higher values of the index are associated to more flexible regulatory settings.

Business regulation: this indicator includes costs associated to bureaucracy, taxes, bribes and other administrative burdens that may discourage MNEs from starting a business in a country. As above, this is an index with higher values reflecting a less regulated environment.

Protection of property rights: we measure property rights protection by means of an index assuming higher values when property rights are more protected.

Legal enforcement of contracts: this aspect refers to the capacity and effectiveness of courts to enforce rules and contracts between parties. This is measured with an index taking higher values for countries with better contracting environments.

Government intervention: we employ the percentage of general government's final consumption expenditure on GDP, as provided by the World Bank's WDI.

Table 1 above includes information on the characteristics of the economic institutions of the countries under analysis. Institutional conditions are heterogeneous across the countries of the EU geographic vicinity but generally comparable. The NMs show, on

average, higher values of the institutional indicators and generally higher shares of public expenditure in total GDP when compared to other countries in the group. The Balkans and the East, in comparison with the NMs, show lower average values for the economic institution indicators: this group includes some countries candidate to EU membership, a process that formally requires gradual institutional convergence towards EU standards. The final set of countries includes Northern Africa and the Middle East. In this group average values of the institutional indicators are upward biased by Israel and Jordan: after excluding these latter two countries, the average institutional quality of the area is lower than in the other groups. Overall, the countries covered in the analysis offer an ample variety of institutional arrangements that is deemed particularly suitable to test the location behavior of MNEs.

Other location drivers

The analysis of the link between MNE location choices and economic institutions requires taking into account other relevant characteristics of the host economies. In line with the literature on MNE location choices, this article employs several control variables that reflect different potential drivers for the localization strategies of MNEs.

First, demand is considered as one of the main factors attracting European investors into foreign markets. Both internal and external demand is taken into account. Internal demand fundamentally reflects the market size of the host countries and it is measured through their own GDP at constant prices, in 2005 US dollars. In line with theory and existing evidence, it is expected that a larger market size will attract more foreign

investors (Wheeler and Mody 1992). External demand is instead captured by means of a standard market potential indicator *á la* Harris (1954), as customary in the literature. Similar to the internal market demand, it is expected that market potential is positively associated with the location strategies of MNEs.

Trade costs are controlled for by employing a measure of geographic distance between the most populated cities of origin and destination countries in the sample: intuitively, greater geographic distance is expected to discourage foreign investors (Bevan and Estrin 2004). Furthermore, a dummy variable indicating national border contiguity between origin and destination countries is included.

Some characteristics of national labor markets are also controlled for. The education level of host countries is taken into account by means of the ratio of secondary school age population to total population. Notwithstanding the existence of better proxies of human capital at the national level, this appears to be the only available indicator for the destination countries in our sample. A positive relationship is expected between this variable and the location of MNEs. Moreover, the effect of average wage is indirectly captured through per capita GDP. Indeed, wage data are rarely available for most destination countries in the sample and per capita GDP may represent a fair alternative. A negative relationship is expected between this proxy for input cost and MNEs location behavior.

Furthermore, different measures of agglomeration economies are considered. The percentage of urban population on total population is included to control for the relative importance of cities in generating externalities (Glaeser et al., 1992; Head, Ries, and Swenson 1995). An indicator for the stock of past foreign investment in location *j* is constructed. This measure captures firm-specific agglomeration effects that may derive from the advantages accruing to an MNE by locating where other MNEs have previously invested. Hence, the existing stock of investment should inform whether firms' past experience drives further location decisions (Basile, Castellani, and Zanfei 2008). In constructing this variable available information on brownfield investment is also considered because corporate expansions signal to a new investor that previous multinational firms attach additional importance to a specific location. Since the mere count of investment projects undertaken in previous years does not reveal much about investors' behavior, the analysis takes into consideration the potential occurrence of a 'national ownership' effect in each time period, which would suggests the existence of patterns in the strategies of MNEs on the basis of their nationality. Therefore, a stock variable is generated for each location according to the MNEs' country of origin: in line with studies exploring the role of agglomeration externalities, a positive relationship is expected with the location choice (Wheeler and Mody 1992). The inclusion of this variable should also capture the influence that repeated investment operated by the same MNE has on future investment location decisions, although, however, the share of repeated investment in the data is not relevant (see above).

A set of cultural variables includes dummies indicating whether origin and destination countries share cultural characteristics, thereby controlling for whether countries speak common official or unofficial languages, had a common colonizer after 1945, had a colonial relationship after 1945, and have been a single national entity. These variables are frequently employed in studies on the internationalization decisions of firms (Rauch 1999). Finally, national fixed effects are included to control for any unobserved factor that operates at the country level and may play a role in attracting foreign investment.

Table A.1 in Appendix A (available online) provides a description of all variables employed in the analysis; all are available for years from 2003 to 2008.

Capturing MNEs heterogeneous preferences for economic institutions: Mixed Logit Models

Following McFadden (1974), the great majority of the empirical literature on investment location decisions implies that MNE strategies are fundamentally driven by individual maximization choices. In other words, it is thought that MNEs select locations on the basis of the expected utility or profit that each site may yield on the basis of the characteristics of the host economies. Conditional Logit (CL) models allow exploring the effect of alternative-specific attributes on the probabilities that firms select a particular location among the set of alternatives. The main assumption in the CL is the Independence of Irrelevant Alternatives (IIA), which implies that the error term ε_{ij} is independent across locations.

An extension of the analysis of MNE location behavior is developed by implementing a Mixed Logit (MXL) model. This is basically a generalization of the standard logit and offers the possibility to relax completely any restriction associated with the IIA. The existing literature on MNE location choices has rarely employed MXL, despite the advantages associated to it. Notable exceptions are relatively recent and include works by Defever (2006, 2012), Cheng (2008) and Basile, Castellani and Zanfei (2008). The present analysis implements a random-coefficient derivation of the MXL, in line with Defever (2006, 2012) and Cheng (2008), with the aim of analyzing whether MNEs have heterogeneous preferences over location attributes when they strategically select a location for greenfield investment.[6] The analysis of the literature has shown that it is unrealistic to expect unambiguous results. Indeed, this article aims to test if the lack of consensus on the role of specific institutional features of host economies might be explained precisely by the heterogeneity of MNEs' preferences over specific institutional attributes. It is plausible that some MNEs tend to prefer locations with weaker economic institutions because they aim at bypassing or eluding transparent market mechanisms when undertaking business operations abroad. For instance, weaker economic institutions might facilitate rent-seeking or moral hazard behavior, the creation of monopolistic positions, or simply allow capturing a share of host countries' public resources, through lobbying, subsidies or less legalized channels, such as corruption. This is particularly relevant in the case of the present study since the locations of interest encompass several transition and developing economies that are characterized by little transparency, weak democratic decision-making processes as well as strong vested interests that may

[6] Basile, Castellani and Zanfei (2008) adopt an error-component derivation aimed at investigating substitution patterns among alternative locations.

influence market mechanisms. To take this into consideration, random coefficients are attached to variables of economics institutions, while fixed coefficients are kept for the remaining location drivers.

Accounting for heterogeneity of MNE locations' characteristics formally means that the parameter β, associated with an observable characteristic x of location j, can vary randomly across MNEs. Formally, the profit equation that each firm maximizes when investing abroad can be specified as:

$$\pi_{ij} = \beta_i' x_{ij} + \varepsilon_{ij} \quad (1)$$

where the vector of parameters β' for firm i reflects firm's preference over observable location attributes x. Thus, in the setting of random-coefficient MLX parameters β are not fixed as in CL, but they can reveal MNEs' taste variation regarding location characteristics. Coefficients vary across MNEs in the population with distribution density $f(\beta)$. Following Train (2003), each MNE knows its own β_i (as well as ε_{ij}) for all alternatives and select the location that offers higher profit. However, random coefficients β_i remain unobserved and it is only possible to specify a distribution for them[7]. By doing this, parameters θ (i.e. mean b and standard deviation s) of the coefficients β_i can be estimated. In this article, a normal distribution is specified for random coefficients associated with economic institutions[8]. Thus, the analysis will inform whether MNEs

[7] If the researcher knows β_i, this would allow estimating a choice probability similar to CL.

[8] The rationale for this choice is that we expect coefficients on economic institutions to take either a positive or a negative sign. Conversely, by specifying log-normal distributions for coefficients on economic

exhibit heterogeneous tastes over different economic institutional settings. The unconditional choice probability to be estimated takes the following form:

$$P_{ij} = \int \left(\frac{e^{\beta' x_{ij}}}{\sum_k e^{\beta' x_{ik}}} \right) f(\beta|\theta) d\beta \quad (2)$$

This is the MXL probability, which basically consists of a weighted average of the product of logit equations evaluated at different values of β and where weights depend on the density $f(\beta \mid \theta)$ (Train 2003). As mentioned, the aim is to estimate parameters θ, which is possible by means of simulation methods, which allow approximating probabilities for any given value of parameters θ. Thus, the simulated probability *SP* is initially computed as an average probability at different levels of β:

$$SP_{ij} = \frac{1}{R} \sum_{r=1}^{R} \frac{e^{\beta^r x_{ij}}}{\sum_k e^{\beta^r x_{ik}}} \quad (3)$$

where *R* is the number of draws, or replications. Basically, for calculating the SP_{ij}, the logit equation (2) is computed with each draw *r*, and eventually averaged. In the present analysis, *R=500*. Successively, SP_{ij} is entered into the log-likelihood function to obtain the following simulated log-likelihood *SLL*:

$$SLL = \sum_{i=1}^{I} \sum_{j=1}^{J} y_{ij} ln SP_{ij} \quad (4)$$

institution variables, we would impose that the signs of these coefficients are the same for all MNEs (either positive or negative).

where $y_{ij}=1$ if firm i chooses location j, zero otherwise. Therefore, it is possible to obtain the Maximum Simulated Likelihood (MSL) estimator which takes the value of θ that maximizes SLL.

Empirical Results

All estimations are conducted for EU-15 MNEs investing in European New Member States, Candidate/Accession, ENP countries and the Russian Federation. Additionally, estimations on investment from the EU-27 and the whole world are also run as a benchmark and robustness check in order to increase the size of the sample of foreign investments.[9]

Baseline results

Table 2 presents the results from CL estimations. Column 1 provides information for the baseline specification. The results suggest that three out of five indicators of the quality of economic institutions exhibit a positive and statistically significant relationship with the location decisions of MNEs[10]: business regulation, government expenditure and legal enforcement of contracts. Conversely, labor market regulation and property rights protection are not significant. This specification includes controls for market demand variables, proxies for trade costs (i.e., geographic distance between origin and destination countries and a dummy for contiguity), as well as dummies for cultural characteristics.

[9] CL results are qualitatively identical to EU-15 results and are available upon request. The main MXL results are included in the tables. A log likelihood-ratio test is performed to confirm the relevance of the mixed logit over the conditional logit (results available upon request).

[10] In addition, to alleviate any concern associated with the possibility to treat only some institutional variables as random, it is important to highlight the very small p-value score (0.0000) on the chi-squared test for the joint significance of the standard deviations associated to the random covariates of economic institutions.

All controls show the expected sign. Next, in columns 2 and 3, labor market characteristics such as education level of the population and average wage are included. Both enter the regression with the expected signs, although average wage is only weakly significant. Finally, we take into account agglomeration forces in the last two columns of Table 2. These turn out to be strongly correlated with the location strategies of MNEs. With the gradual inclusion of all our controls, the relevance of economic institutions evidenced in column 1 remains unchanged. MNEs from EU-15 appear to be sensitive to some aspects of the national economic institutional setting of host countries. More favorable business regulation, a stronger presence of the state in the economy and an appropriate contracting environment are positively correlated with the decisions of MNEs to locate a new establishment through a greenfield FDI.

[Table 2 around here]

Moreover, our more extended specification (column 5) suggests that internal market size is positively associated with MNE decisions, whereas market potential becomes non-significant. Similarly, education loses importance, probably indicating that MNEs from EU-15 delocalize in the area of interest some business functions for which more basic skills are needed. Average wage is statistically insignificant. Finally, both measures of agglomeration are strongly and positively associated with the dependent variable. This suggests that agglomeration economies potentially play a role in attracting MNEs. Similarly, a pattern of localization that follows national ownership lines emerges. In other

words, MNEs from the same country of origin tend to concentrate their investment in the same destinations.

Overall, the CL estimations are in line with the existing literature. While it is impossible to find any association between MNEs and the functioning of national labor markets, a less regulated business environment is associated to higher intensities of MNE operations. Similarly, with respect to the legal aspects of economic institutions, different elements play different roles: the enforcement of contracts is a relevant institutional aspect in our analysis, suggesting that a correlation exists between the respect of formal contracts and the patterns of MNE investment. On the other hand, property rights protection does not appear to be associated to location decisions. Finally, the role of the state is positively and significantly associated with MNE choices, presumably because MNEs can take advantage from public intervention in the economy or because national governments expenditure is also aimed at consumption. These results suggest that a further investigation of the heterogeneity of MNE preferences is appropriate: thus, the following analysis explores the relationship between MNE strategic behavior and the economic institutional environment of recipient economies by means of MXL. This approach makes it also possible to relax the IIA assumption that treats the substitution of alternative locations rather unrealistically.

Preference heterogeneity

In the MXL estimations heterogeneity is allowed to occur only for coefficients associated with economic institutions (variables of interest), while other regressors are kept fixed.

Therefore, MXL estimates coefficient parameters θ, namely means b and standard deviations s, for variables that are specified to be random. MXL estimation results are presented in Table 3, where the extended specification is run for EU-15, EU-27 and world MNEs (columns 1, 3, and 5, respectively). As far as economic institutions are concerned, previous results are largely confirmed by the estimated means b of coefficients. Regulation is positively associated with MNEs location choices in the context of national business environments, but not in labor markets, although the mean coefficient for the latter is weakly significant when we consider MNEs from the whole world. A strong role of government expenditure in the countries under analysis is also significantly associated with MNEs location strategies, potentially because this is perceived as a positive signal by EU-15 MNEs and world MNEs, while it does not seem to be very relevant for the EU-27 sample (possibly because some of these investors are from NMS, which may be relatively more deterred by a large government role in the host economy). With respect to the national legal framework, a more effective contracting environment represents an important location factor for foreign investment for all MNEs across specifications; as in previous results, property rights protection exhibits insignificant mean coefficients.

The MXL estimation also provides standard deviations s for the coefficients of economic institutions, which are specified to vary randomly. Some of the estimated standard deviations of these coefficients are statistically significant, suggesting that parameters do vary across the population of MNEs under analysis. Therefore, standard deviations can be interpreted as heterogeneity terms and suggest that different MNEs attach different

importance to economic institutions, explaining the lack of consensus in the existing literature on the importance of some of their components. Values of *b* and *s* are employed in columns 2, 4 and 6 in order to gain insights on the extent of the heterogeneous preferences of MNE strategies over economic institutions. For instance, in the case of EU-15 MNEs, the variable for business regulation takes parameters *b=0.475* and *s=0.472*, such that for 84.4 percent of the MNE population the parameter is above zero, while for the 15.6 percent it is below. In other words, the large majority of FDI originating in the EU-15 systematically locates where doing business is characterized by weaker bureaucratic burdens, while the rest locates where business is more strongly regulated. This figure only varies slightly when EU-27 and world MNEs are considered (80.2 percent and 76.1 percent, respectively). More heterogeneous preferences emerge when we look at parameters related to the protection of property rights. In the case of EU-15 and EU-27 MNEs, estimates indicate that the population is indeed split into two halves. This balance between shares of the population with respect to opposite preferences over property rights protection also explains the insignificance of the mean coefficient. Finally, as far as the legal enforcement of contracts is concerned, taste variation over this aspect of economic institutions is far less pronounced, with most MNEs location choices being associated to destinations where the contracting environment is generally certain. Nevertheless, there is a very small portion of MNEs in the population that tends to locate where contract enforcement is weaker.

[Table 3 around here]

Figure 1 depicts probability density functions for economic institutions by employing parameters estimated by MXL: the graphs refer to those aspects of economic institutions that exhibit significant heterogeneity terms *s*. The heterogeneity of these relationships, particularly regarding property rights, poses interesting questions on MNEs strategies and their motives for investing abroad. The source of heterogeneous tastes may be associated with unobserved factors operating at the firm-level. Therefore, in order to explore the systematic nature of heterogeneity of preferences over economic institutions, the MXL models are run by exploiting information for sectors and business activities of the investment projects undertaken by MNEs. Data in *FDi Markets* provides information on these aspects. On this basis, following the NACE (rev.1.1) classification, we group sectors into four categories: High-Medium Technology Manufacturing, Medium-Low Technology Manufacturing, Knowledge-intensive Services (KIS) and Less-knowledge-intensive Services (LKIS). Similarly, following Crescenzi, Pietrobelli and Rabellotti (2014), we generate three alternative groups of business functions: Headquarters and innovative activities (HQ & Inno); Services, sales and logistics (SSL); Production. Tables A.2 and A.3 in Appendix A show the classification of sectors and business functions, respectively.

[Figure 1 around here]

Table 4 presents the results for MXL estimations of EU-15 location decisions performed for different sectors[11]. In columns 1 and 2 of Table 4, regressions are run for High-Medium Technology Manufacturing sectors. The MXL reveals that regulation of labor markets does not influence MNE decisions, while the intervention of the regulator in business exhibits an ambiguous association with investment projects: the majority of MNEs in High-Medium Technology Manufacturing target countries where administrative and bureaucratic aspects of running a business are less invasive (62.9 percent), while the rest are in countries where businesses are subject to more regulation. Government expenditure does not play any role in driving MNEs' behavior in these sectors. As far as legal aspects are concerned, MNEs in High-Medium Technology activities attach importance to property rights protection only in 33 percent of cases. This result might seem surprising since it implies that a large group of MNEs from EU-15 investing in the area of neighboring countries is located where less robust property rights exist. However, this suggests that MNEs operating in High-Medium Tech sectors might strategically exploit a weaker enforcement of property rights to facilitate domestic firms' upgrading and learning (for example in the area of intellectual property rights, IPRs), while MNEs rely on internal firm-level protection mechanisms (see Wu [2000] for the case of IPRs in China). With respect to the legal enforcement of contracts, almost three quarters of MNEs in High-Medium Technology Manufacturing systematically locate in places where this aspect of economic institutions is more adequately protected.

[Table 4 around here]

[11] Plots of the heterogeneous relationships that emerge from the estimations are available upon request.

Columns 3 and 4 report results for Medium-Low Technology Manufacturing. EU-15 MNEs in these activities react more homogeneously to the quality of national economic institutions than those in High-Medium Technology Manufacturing sectors. Indeed, a very large share of MNEs seems to consider strong regulation in business as an obstacle (87.1 percent). Also the coefficient on labor market regulation turns to be marginally significant and positive, suggesting that MNEs in these activities tend to prefer countries where labor markets are more flexible, although the statistical relevance of this relationship remains weak. This finding is perfectly plausible since we are considering EU-15 MNEs that localize in the EU neighborhood area operations characterized by a lower level of sophistication. This is also evidenced by the strongly negative coefficient associated to our proxy for average wage, signaling that MNEs in Medium-Low Technology Manufacturing sectors can be motivated by the supply of inexpensive workforce that is generally low-skilled. With respect to government expenditure, we find that the mean coefficient *b* is not significant and the standard deviation *s* is only weakly significant. Although these parameters provide a figure of 99.9 percent of MNEs driven by more public spending, they should be cautiously interpreted given their very low statistical significance. MNEs in Medium-Low Technology Manufacturing activities do not seem to be sensitive to the degree of protection of property rights, while there is a clear correlation with locations characterized by stronger enforcement of legal contracts.

With respect to control variables, MNEs in High-Medium and Medium-Low Manufacturing sectors seem to be associated with different factors. Geographic distance

and the previous presence of MNEs from the same origin country are the only common trait in MNEs strategies. MNEs in High-Medium Technology Manufacturing activities are substantially associated with agglomeration forces, suggesting that MNEs tend to concentrate this kind of activities in urban areas where they can access a larger supply of labor and competences. Surprisingly, the education level of the population remains statistically insignificant, although our proxy for human capital only takes into account secondary education, which is probably inadequate for High-Medium Technology activities. MNEs in Medium-Low Technology Manufacturing activities, instead, can be connected to market-seeking and efficiency-seeking rationales, as suggested by the strongly significant coefficients of market size and average wage. This finding is in line with the great majority of literature on FDI in transition economies, which highlight that foreign investors search for new markets as well as cheap labor in Central and Eastern European countries (Resmini 2000).

The right-hand part of Table 4 reports results for services: columns 5 and 6 regard KIS, whilst columns 7 and 8 present results for LKIS. MNEs decisions in KIS are invariably correlated with business regulation and the legal enforcement of contracts. Again, parameters on property rights suggest that this element is an ambiguous element in shaping EU-15 MNE strategies in EU neighboring countries. As far as LKIS activities are concerned, results only slightly vary. The enforcement of contracts turns out to be unimportant for this kind of services, whilst investment strategies in LKIS seem to be positively linked to labor markets that are more regulated and to larger government

spending. Control variables in these regressions reveal that KIS benefit of a more educated workforce and also that location choices globally follow nationality patterns.

Table 5 presents the results of MXL performed for different groups of business functions[12]. Columns 1 and 2 in Table 5 refer to operations of MNEs in HQ and Inno activities. Parameters on economic institutions are only significant with respect to business regulation and property rights protection. The former exhibits a weak and positive mean coefficient *b*, while the latter is still affected by a significant heterogeneity term *s* that splits the distribution of preferences into two halves. Our proxy for human capital, although positive, is not statistically significant, likely due to the fact that we only consider secondary education. In general, we do not detect strong coefficients analyzing the location decisions of MNEs as far as HQ & Inno activities are concerned. A different picture emerges instead for SSL activities (columns 3 and 4). A more flexible regulation of business operations is a positively correlated with location strategies for the great majority of MNEs (83.4 percent); whilst for the regulation in the labor market almost 60 percent of MNEs have a positive perception of flexibility, the rest seem to have a preference for more regulated frameworks. With respect to legal aspects, nearly all MNE location choices are connected to a more solid legal enforcement of contracts (92.1 percent). In addition, SSL can be suggestively interpreted as market-seeking motivated, as emerging from the coefficient on internal demand. Also, MNE location is correlated to a relatively educated and less expensive labor force. Finally, columns 5 and 6 provide MXL results for production activities, whose picture appears less complex than for other

[12] Plots of the heterogeneous relationships that emerge from the estimations are available upon request.

business functions. Economic institutions have a very homogeneous impact and heterogeneity terms are never relevant: more flexible regulation in business, stronger government spending and relative easiness in enforcing legal contracts are similarly related to MNE production operations. Moreover, control variables suggest that production activities of EU-15 MNEs are located where larger national markets are present, and they also tend to be associated with local low-skilled and cheap labor.

[Table 5 around here]

Conclusions

In recent years the EU has intensified economic and institutional integration with its neighboring countries, though with different intensity. Some countries have become EU members, some are candidate for membership, and some others are part of the European Neighboring Policy. In this scenario of growing integration, European MNEs have increased their operations in neighboring countries through the setting up of new foreign affiliates.

This article has examined how recipient countries' economic institutions shape the location strategies of EU-15 MNEs in a large set of developing and transition countries that are geographically close to the EU. In so doing, the article contributes to the literature on MNE location behavior by exploring the heterogeneity of MNE preferences for the economic institutions of the countries hosting their investment. This heterogeneity

– largely overlooked in previous quantitative analyses – is unveiled, quantified and linked to the different sectors of economic activity and business functions of investment projects by means of a random-coefficient MXL, rarely adopted in studies on firms' location decisions.

Table 6 provides an overall summary of the results on MNE heterogeneous preferences for economic institutions. In line with the existing literature our results confirm that the flexibility of the labor market – one of the top items in 'traditional' institutional reform packages – is not systematically associated with the attraction of foreign investments. On the contrary, favorable business regulation is clearly correlated with MNE location choices: when looking at the entire sample of MNEs large part of the distribution attaches a positive value to this characteristic. In addition the heterogeneity of preferences seems to be largely linked to the most sophisticated activities in sectoral (High-Medium tech sectors) and functional (HQs and Inno) terms.

The analysis of the role of the protection of property rights explains why the existing literature has so far failed to reach a clear consensus on its importance: MNEs are indeed strongly divided with reference to this specific dimension, particularly in the case of the most sophisticated sectors and functions. Conversely, for the enforcement of contracts the results highlight clear-cut MNEs' preferences for more 'certain' framework conditions across sectors (with the exception of LKI sectors) and functions. Finally, the relevance of public expenditure seems to be limited to production activities, where the government plays an important role in supporting demand.

[Table 6 around here]

These results should be interpreted with caution. First, it is important to bear in mind that the methodology makes it impossible to draw any causal conclusions. The analysis of location patterns is able to control for a large number of possible confounding factors but reverse causality is still a possibility. Second, the time span covered by the analysis is still limited and the global economic crisis started in 2008, as well as the dramatic political changes in some of the countries covered in the analysis, call for extra care in the interpretation of the findings. Third, even though the innovative use of quantitative methods makes it possible to shed new light on the heterogeneous behavior of MNEs with reference to economic institutions, more qualitative work is necessary (and is in our agenda for future research) in order to explore the firm-specific determinants of MNEs' diversified preferences.

Having acknowledged these limitations, our results provide policy makers with relevant insights to support institutional reform and institution building initiatives as tools to favor (and complement) internationalization processes. The empirical results suggest that some MNEs prefer locations where specific dimensions of economic institutions are weaker. This may appear counterintuitive, but indeed there could be situations in which economic actors may prefer loose economic institutions in order to gain selective economic rewards. This institutional subversion phenomenon is particularly well documented in the case of transition economies, where political and economic elites replicate a system of

flawed institutional environments that provide them with various types of advantage over the rest of the local population (Helmann 1998; Helmann, Jones, and Kaufmann 2000). Similarly, weak property rights allow wealthier foreign actors to benefit from unproductive activities such as rent-seeking, at the same time maintaining expropriation instruments over the rest (Sonin 2003). The subversion of economic institutions is also intimately associated with within-country inequality, and less secure property rights and weaker legal systems favor a country's power establishment, which aims at perpetuating the mechanisms that allow the concentration of power and wealth (Glaeser, Scheinkman, and Shleifer 2003). In this vein, it is argued that political incumbents support imperfect institutions in order to maintain their benefits (Glaeser and Shleifer 2002). On the basis of these considerations, often made with respect to transition and developing countries, it can be argued that some MNEs are oriented towards locations where they can establish influential connections with political and economic elites, which in turn allow them taking advantage of institutional poorness by obtaining rents or circumventing market rules. Again, this may represent one explanation for the heterogeneity of results associated to the protection of property rights in particular. However, validating these results and investigating further the relationship between economic institutions and MNEs remain an open research field and a crucial challenge for policy design in a growing number of countries and regions worldwide.

In this sense, the political behavior of MNEs is an important aspect that is often overlooked by academic research (Boddewyn 1988; Boddewyn and Brewer 1994), as well as the influence of the distance between institutional contexts – at both origin and

destination – on MNE heterogeneity (e.g., Xu and Shenkar 2002). Furthermore, our results suggest that the intra-firm organization of different segments of the production process is also subject to MNE heterogeneous preferences with respect to the local institutional environment. This represents an interesting finding in the light of the GVC literature (e.g., Gereffi 2014; Yeung and Coe 2015), as it provides an informative hint on the coordination of MNE cross-border expansion through FDI. Overall, as indicated by recent interdisciplinary work (e.g., Beugelsdijk, McCann, and Mudambi 2010), MNE firm-level heterogeneity represents a highly promising area of investigation and cross-fertilization – both conceptually and empirically – between the fields of evolutionary economic geography and international business studies. A better understanding of heterogeneous behaviors of firms (both foreign and local) is critical to enhance place-based policy approaches aiming at capturing intra-firm and inter-firms GVC dimensions.

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Table 1

EU-15 investment projects and quality of economic institutions, 2003-2008.

	MNEs Investments		Quality of Economic Institutions				
Host Countries	N of investment	% investment	Labor market regulation	Business regulation	Protection of property rights	Legal enforcement of contracts	Government expenditure
A. New Member States							
Bulgaria	551	8.00	6.96	5.60	4.09	4.77	17.97
Czech Republic	443	6.43	7.47	5.16	5.72	3.59	21.46
Estonia	142	2.06	5.87	7.37	7.25	6.02	17.58
Hungary	674	9.79	6.84	6.12	6.51	7.06	22.45
Latvia	152	2.21	6.43	6.29	5.88	7.25	18.50
Lithuania	139	2.02	5.45	6.50	5.80	7.35	19.04
Poland	748	10.86	6.52	5.49	4.66	4.27	18.12
Romania	1,012	14.69	5.91	6.54	4.77	5.17	12.19
Slovakia	319	4.63	7.61	5.85	5.98	4.59	18.42
Slovenia	100	1.45	5.44	6.34	6.27	3.93	18.46
Subtotal / Average*	4,280	62.14	6.45*	6.13*	5.69*	5.40*	18.42*
B. Balkans and the East							
Albania	38	0.55	5.79	5.67	3.30	5.17	9.31
Croatia	139	2.02	5.65	5.62	4.70	5.40	19.95
Russia	1,315	19.09	6.03	4.73	3.34	7.53	17.38
Turkey	298	4.33	4.09	6.29	5.06	6.16	12.34
Ukraine	263	3.82	6.22	4.08	3.40	5.29	18.18
Subtotal / Average*	2,053	29.81	5.56*	5.28*	3.96*	5.91*	15.43
C. Northern Africa and Middle East							
Algeria	105	1.52	4.96	5.62	4.25	4.39	12.43
Egypt	84	1.22	5.01	5.06	5.77	3.41	12.03
Israel	37	0.54	4.84	6.64	6.98	3.46	25.71
Jordan	23	0.33	8.38	6.45	7.18	3.38	22.01
Morocco	203	2.95	3.62	6.09	5.62	4.3	18.31
Tunisia	103	1.50	6.30	6.79	7.00	4.88	16.67
Subtotal /Average*	555	8.06	5.52*	6.11*	6.13*	3.97*	17.86*
Total /Overall Average*	6,888	100	5.97*	5.92*	5.41*	5.11*	17.55*

Source: own elaboration based on FDi Markets – FT Business and Fraser Institute Data

Table 2

Conditional Logit estimation of EU15 MNEs location behavior

Dep.Var.: Location choice	(1)	(2)	(3)	(4)	(5)
Labor Market Regulation	0.018	0.028	0.044	-0.004	-0.010
	(0.043)	(0.044)	(0.045)	(0.049)	(0.049)
Business Regulation	0.401***	0.393***	0.382***	0.371***	0.434***
	(0.057)	(0.057)	(0.058)	(0.058)	(0.058)
Government Expenditure	0.059***	0.065***	0.0623***	0.067***	0.045***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)
Protection of Property Rights	0.0017	0.012	0.026	0.010	0.005
	(0.039)	(0.039)	(0.040)	(0.040)	(0.040)
Legal Enforcement of Contracts	0.567***	0.559***	0.560***	0.683***	0.591***
	(0.128)	(0.129)	(0.127)	(0.138)	(0.139)
ln Market Size $_{t-1}$	-0.455	0.352	1.189	0.919	2.441**
	(0.781)	(0.837)	(0.961)	(0.974)	(0.988)
ln Market Potential $_{t-1}$	1.728**	2.405***	2.591***	2.044**	0.979
	(0.860)	(0.891)	(0.896)	(0.911)	(0.917)
Distance	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ln Education Level		1.291***	0.977**	0.487	0.709
		(0.470)	(0.495)	(0.527)	(0.530)
ln Average Wage			-1.343*	-0.402	-0.963
			(0.777)	(0.854)	(0.860)
Urban Agglomeration				0.149**	0.151***
				(0.058)	(0.058)
National Ownership					0.003***
					(0.001)
Observations	148,783	148,783	148,783	148,783	148,783
Cultural dummies	Yes	Yes	Yes	Yes	Yes
Geographic contiguity	Yes	Yes	Yes	Yes	Yes
National dummies	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.193	0.194	0.194	0.194	0.196
log likelihood	-17084	-17080	-17078	-17075	-17037

Table 3

Mixed Logit estimation of MNEs location behavior

		(1)	(2)	(3)	(4)	(5)	(6)
		EU15 MNEs		**EU27 MNEs**		**World MNEs**	
Dep. Var.: Location Choice	θ	Value	% > 0	Value	% > 0	Value	% > 0
Labor Market Regulation	*b*	0.007		0.024		0.072*	
		(0.051)		(0.049)		(0.039)	
	s	0.015		0.171		0.008	
		(0.036)		(0.192)		(0.016)	
Business Regulation	*b*	0.475***	84.4%	0.522***	80.2%	0.403***	76.1%
		(0.064)		(0.063)		(0.047)	
	s	0.472***		0.613***		0.567***	
		(0.113)		(0.100)		(0.074)	
Government Expenditure	*b*	0.035**		0.021		0.025**	
		(0.016)		(0.015)		(0.012)	
	s	0.001		0.001		0.001	
		(0.001)		(0.001)		(0.001)	
Protection of Property Rights	*b*	0.002	50.4%	0.035	54.4%	0.001	
		(0.043)		(0.042)		(0.032)	
	s	0.229**		0.322***		0.133	
		(0.097)		(0.085)		(0.103)	
Legal Enforce of Contracts	*b*	0.570***	98.4%	0.500***	94.7%	0.467***	89.3%
		(0.148)		(0.138)		(0.110)	
	s	0.265***		0.309***		0.376***	
		(0.097)		(0.094)		(0.069)	
ln Market Size $_{t-1}$		1.963*		2.688***		2.148***	
		(1.018)		(0.748)		(0.563)	
Distance		-0.001***		-0.001***		-0.001***	
		(0.000)		(0.000)		(0.000)	
ln Market Potential $_{t-1}$		1.247		1.080		-0.588	
		(0.977)		(0.885)		(0.680)	
ln Education Level		0.536		1.184**		0.708*	
		(0.552)		(0.478)		(0.392)	
ln Average Wage		-1.490*		-1.997***		-1.662***	
		(0.887)		(0.729)		(0.576)	
Urban Agglomeration		0.146**		0.0754*		0.098***	
		(0.060)		(0.041)		(0.031)	
National Ownership		0.004***		0.006***		0.006***	
		(0.001)		(0.001)		(0.001)	
Observations		148,783		165,724		251,276	
N of Cases		6,888		7,709		11,745	
Geographic contiguity		Yes		Yes		Yes	
Cultural dummies		Yes		Yes		Yes	
National dummies		Yes		Yes		Yes	
log likelihood		-17030		-18974		-29437	

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

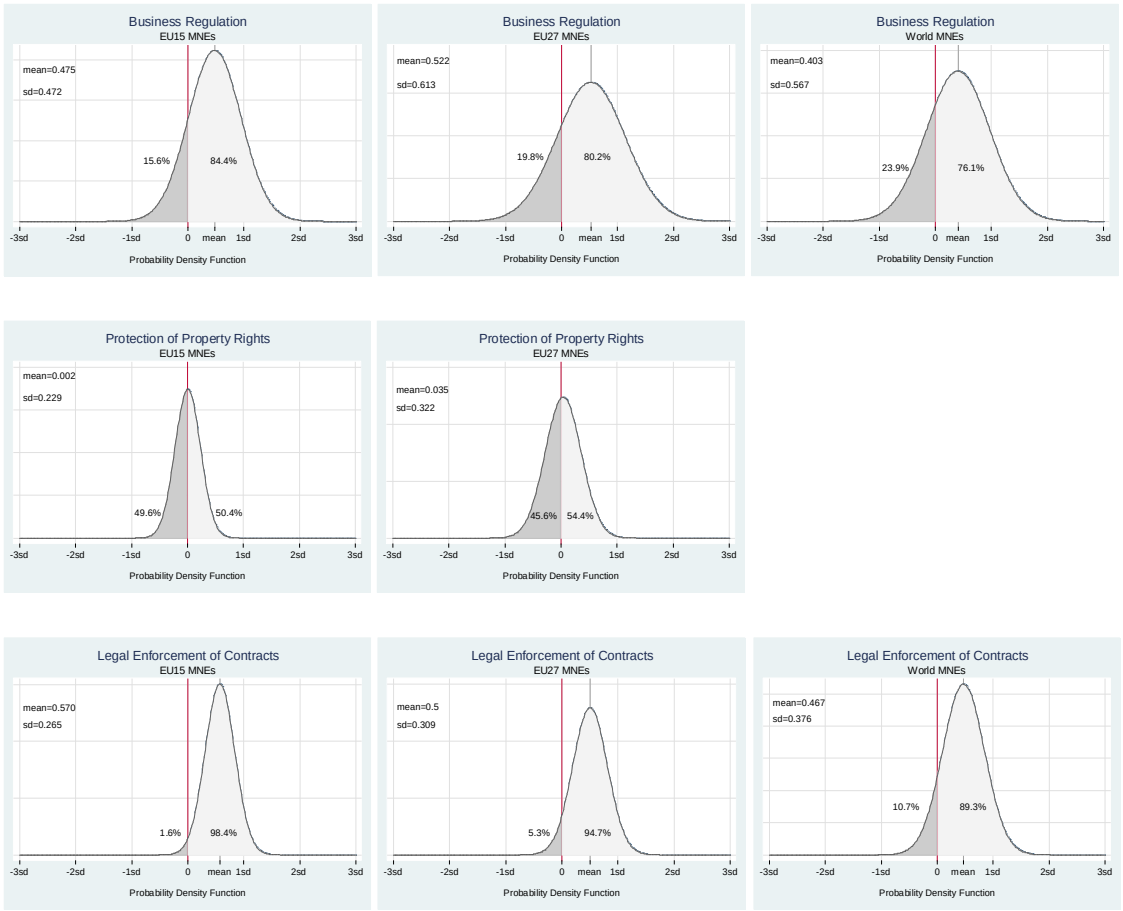

Figure 1: Probability Density Functions for economic institutions exhibiting significant standard deviation in Table 3

Table 4

MXL estimation of EU-15 MNEs location behavior by sector

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Manufacturing				**Services**			
		High-Medium Tech.		Medium-Low Tech.		Knowledge-intensive		Less-knowledge-int.	
Dep. Var.: Location Choice	θ	Value	% > 0	Value	% > 0	Value	% > 0	Value	% > 0
Labor Market Regulation	*b*	-0.030		0.149*		0.002		-0.246**	
		(0.128)		(0.083)		(0.112)		(0.123)	
	s	-0.105		0.005		0.013		0.206	
		(0.688)		(0.020)		(0.026)		(0.244)	
Business Regulation	*b*	0.232	62.9%	0.572***	87.1%	0.383**		0.406***	
		(0.160)		(0.106)		(0.157)		(0.152)	
	s	0.707***		0.507***		0.310		-0.014	
		(0.265)		(0.145)		(0.405)		(0.020)	
Government Expenditure	*b*	-0.013		0.043	99.9%	0.022		0.086**	
		(0.040)		(0.026)		(0.034)		(0.039)	
	s	-0.016		0.002*		0.008		-0.000	
		(0.026)		(0.001)		(0.011)		(0.001)	
Protection of Prop. Rights	*b*	-0.189**	33.0%	0.086		-0.011	49.2%	0.046	55.6%
		(0.093)		(0.069)		(0.099)		(0.105)	
	s	0.423*		-0.019		0.528***		0.333*	
		(0.217)		(0.019)		(0.113)		(0.178)	
Legal Enforc. of Contracts	*b*	0.539	72.6%	0.740***		0.725**		0.095	
		(0.381)		(0.239)		(0.325)		(0.318)	
	s	0.894**		0.229		0.235		-0.004	
		(0.389)		(0.221)		(0.234)		(0.025)	
ln Market Size $_{t-1}$		-0.648		4.576***		0.910		0.450	
		(2.518)		(1.242)		(1.742)		(1.814)	
Distance		-0.001***		-0.001***		-0.001***		-0.001***	
		(0.000)		(0.000)		(0.000)		(0.000)	
ln Market Potential $_{t-1}$		2.338		0.720		3.135		0.717	
		(2.752)		(1.593)		(1.922)		(2.377)	
ln Education Level		-1.262		0.286		2.844**		0.101	
		(1.400)		(0.830)		(1.286)		(1.367)	
ln Average Wage		0.593		-3.821***		-0.234		-0.905	
		(2.172)		(1.289)		(1.799)		(1.764)	
Urban Agglomeration		0.432***		0.105		-0.029		-0.021	
		(0.142)		(0.072)		(0.090)		(0.107)	
National Ownership		0.003***		0.004***		0.004***		0.003***	
		(0.001)		(0.001)		(0.001)		(0.001)	
Observations		31,039		56,795		28,065		27,357	
Geographic contiguity		Yes		Yes		Yes		Yes	
Cultural dummies		Yes		Yes		Yes		Yes	
National dummies		Yes		Yes		Yes		Yes	
log likelihood		-3497		-6394		-3230		-3039	

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

Table 5

MXL estimation of EU-15 MNEs location behavior by business function

		(1)	(2)	(3)	(4)	(5)	(6)
		HQ & Inno		**SSL**		**Production**	
Dep. Var.: Location Choice	θ	Value	% > 0	Value	% > 0	Value	% > 0
Labor Market Regulation	*b*	-0.003		0.069	58.7%	-0.078	
		(0.138)		(0.081)		(0.077)	
	s	0.011		0.312*		0.037	
		(0.008)		(0.185)		(0.089)	
Business Regulation	*b*	0.328*		0.527***	83.4%	0.443***	
		(0.190)		(0.109)		(0.088)	
	s	0.512		0.541***		0.265	
		(0.369)		(0.157)		(0.239)	
Government Expenditure	*b*	-0.029		0.015		0.083***	
		(0.041)		(0.025)		(0.024)	
	s	-0.002		0.001		-0.006	
		(0.003)		(0.002)		(0.005)	
Protection of Prop. Rights	*b*	-0.015	48.8%	0.071		-0.070	
		(0.118)		(0.066)		(0.064)	
	s	0.550***		-0.097		0.193	
		(0.138)		(0.249)		(0.159)	
Legal Enforce of Contracts	*b*	-0.027		0.544**	92.1%	0.764***	
		(0.397)		(0.221)		(0.207)	
	s	-0.271		0.386**		0.203	
		(0.231)		(0.157)		(0.155)	
ln Market Size $_{t-1}$		0.816		4.108***		2.505**	
		(2.070)		(1.234)		(1.094)	
Distance		-0.001***		-0.001***		-0.001***	
		(0.000)		(0.000)		(0.000)	
ln Market Potential $_{t-1}$		0.794		1.960		-1.596	
		(2.199)		(1.522)		(1.433)	
ln Education Level		1.849		1.839**		-1.458*	
		(1.559)		(0.767)		(0.880)	
ln Average Wage		0.953		-2.382*		-2.790**	
		(2.117)		(1.219)		(1.153)	
Urban Agglomeration		0.037		0.099		0.116*	
		(0.106)		(0.069)		(0.063)	
National Ownership		0.003***		0.004***		0.004***	
		(0.001)		(0.001)		(0.001)	
Observations		19,994		64,381		64,408	
Geographic contiguity		Yes		Yes		Yes	
Cultural dummies		Yes		Yes		Yes	
National dummies		Yes		Yes		Yes	
log likelihood		-2293		-7372		-7204	

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

Table 6

Summary Table of the Results on MNEs heterogeneous preferences for Economic Institutions

	All MNES	Sectoral Heterogeneity				Functional Heterogeneity		
		Manufacturing		Services				
		High-Medium tech	Medium-low tech	Knowledge Intensive	Less Knowledge Intensive	HQ & Inno	SSL	Production
Regulatory settings								
Labour Market Regulation	NO	NO	NO	NO	NO	NO	NO	NO
Business Regulation	+*** s*** (84%)	s*** (63%)	+***	+**	+***	NO	+*** s*** (83%)	+***
Legal Framework								
Property Rights	s*** (50%)	-** s* (33%)	NO	s***(49%)	NO	s*** (49%)	NO	NO
Enforcement of Contracts	+*** s***(98%)	s**(73%)	+***	+**	NO	NO	+** s**(92%)	+***
Weight of the Government								
Share of Public Spending	+**	NO	NO	NO	NO	NO	NO	+***

+/- denotes the sign of the estimated *b* coefficients in tables 3,4 and 5. Asterisks denote significance as in original tables. Percentages reported in parentheses are %>0 in the preferences distribution. 'NO' stands for 'No significance'

Appendix A

Table A.1

Variable definitions and sources

Variable	Description	Source
	Dependent	
Location Choice	Dummy indicating location choices among 23 destination countries	FDi Markets
	Independent	
Economic Institutions		
Labor Market Regulation	Index (0-10) indicating the flexibility of labor market in location *j*.	Fraser Institute
Business Regulation	Index (0-10) indicating the administrative and bureaucratic burdens for business in location *j*.	Fraser Institute
Protection or Property Rights	Index (0-10) indicating the extent to which government protects property rights in location *j*.	Fraser Institute
Legal Enforcement of Contracts	Index (0-10) indicating the extent to which contracts are enforced by courts in location *j*.	Fraser Institute
Government expenditure	Percentage of general government final consumption expenditure on GDP in location *j*.	WDI
Demand		
Ln Market Size$_{t-1}$	Log of GDP of destination *j* at time *t-1*.	WDI
Ln Market Potential$_{t-1}$	Log of the sum of distance-weighted GDP of all countries *c* within 1,000km from location *j* at time t-1, *i* for each $c \neq j$.	WDI / CEPII
Trade Costs		
Geogr. Distance	Physical distance measured in km.	CEPII
Geogr. Contiguity	Dummy equal to 1 if country of origin *r* and destination *j* are contiguous.	CEPII
Labor Market		
Ln Education Level	Log of the ratio between secondary school age population and total population in location *j*.	UNESCO
Ln Average Wage	Log of per capita GDP in location *j*.	WDI
Agglomeration		
Urban Agglomeration	Percentage of urban population on total population.	WDI
National Ownership	Stock of investment in location *j* from the same country of origin *r* of firm *i.*	FDi Markets
Culture		
Official Language	Dummy equal to 1 if country of origin *r* and location *j* share an official common language.	CEPII
Unofficial Language	Dummy equal to 1 if country of origin *r* and location *j* share an unofficial common language.	CEPII
Common Colonizer after 1945	Dummy equal to 1 if country of origin *r* and location *j* had a common colonizer after 1945.	CEPII
Colonial Link after 1945	Dummy equal to 1 if country of origin *r* and location *j* had a colonial tie after 1945.	CEPII
Same Country	Dummy equal to 1 if country of origin *r* and location *j* have been part of the same country in the past.	CEPII

Table A.2

Classification of sectors

Manufacturing	
High-Medium Technology	**Medium-Low Technology**
Aerospace	Beverages
Automotive components	Building and Construction Materials
Automotive OEM	Consumer Products
Biotechnology	Food and Tobacco
Business Machines and Equipment	Metals
Ceramic and Glass	Minerals
Chemicals	Non-Automotive Transport OEM
Consumer Electronics	Paper, Printing and Packaging
Electronic Components	Plastics
Engines and Turbines	Rubber
Industrial Machinery, Equipment and Tools	Textiles
Medical Devices	Wood Products
Pharmaceuticals	
Semiconductors	
Services	
Knowledge-Intensive	**Less Knowledge-Intensive**
Business Services	Hotels and Tourism
Communications	Leisure and Entertainment
Financial Services	Real Estate
Healthcare	Transportation
Software and IT Services	Warehousing and Storage
Space and Defense	

Table A.3

Classification of business functions

Headquarters and innovative activities
Business Services
Headquarters
Design, Development and Testing
Education and Training
Research and Development
Services, Sales and Logistics
Customer Contact Centre
Logistic, Distribution and Transportation
Maintenance and Servicing
Recycling
Retail
Sales, Marketing and Support
Shared Services Centre
Technical Support Centre
Production
Construction
Electricity
Extraction
ICT and Internet Infrastructure
Manufacturing