FDI Flows and Regional Development: Lessons for Transition Countries

Kurt A. Hafner and Jörn Kleinert

1 Introduction

Multinational enterprises (MNEs) are important players on many goods and factor markets worldwide, while their foreign affiliates and FDI flows play an increasing role in spurring economic development. Firms set up by multinational firms are more productive and integrated in the international division of labor than the average domestic firm. Due to size and potential to substitute among intermediate goods and input factors, their impact on regional supplier and customers is also larger. Moreover, export activities of foreign affiliates allow domestic firms to (indirectly) compete in international market as local trade relationships increase and spillover effects arise. However, FDI flows do not necessarily increase the welfare of regions or push regional economic development if there is no match between the profile (and therefore the needs) of the region and the activities of MNEs. While the EU and its member states pursue FDI policy in several sectors and on different regional levels, the European territorial development policy and its Agenda 2020 focuses on the regional components of economic development for attracting MNEs. Research in international economics suggests that heterogeneous MNEs can pursue welfare-enhancing activities in some but not every foreign location. Obviously, a one-size-fits-all FDI policy does not work, as finding the best match between MNEs and host locations is not a simple task.

K. A. Hafner (✉)
Faculty of International Business, Heilbronn University, Max-Planck-Straße 39, 74081 Heilbronn, Germany
e-mail: kurt.hafner@hs-heilbronn

J. Kleinert
Institut für Volkswirtschaftslehre, Universität Graz, Universitätsstraße 15/F4, 8010 Graz, Austria
e-mail: joern.kleinert@uni-graz.at

J. Ateljević, J. Budak (eds.), *Entrepreneurship in Post-Communist Countries*,
https://doi.org/10.1007/978-3-319-75907-4_4

The appropriate match between the profiles of potential regions and the activities of MNEs seems to be the key factor for a positive effect of FDI on regional welfare and economic development. Not surprisingly, the heterogeneity of foreign affiliates of MNEs and regions for firm locations is huge. Firms differ, for example, with respect to their home country, sector category, motives of internationalization, size, activities, use of resources, and technological knowledge. Regions are very different too and compete according to their comparative advantage such as rural versus urban regions, capital cities versus second-tier cities, regions with a well-connected versus remote infrastructure, abundance of resources, labor skills, and sector expertise. While both lists are far from being complete, the challenge is to find the best firm-location match between the particular need (and strength) of the region and firm.

There are many empirical studies regarding FDI flows, location choices of MNEs, and their economic impact on both home and host countries. In the advance of our research project, we will add to the literature a fundamentally microeconomic view of an optimal location choice of a firm among heterogeneous regions. We take into account macroeconomic and regional characteristics and combine firm-specific characteristics with regional data to model the match between firms and locations. However, we refrain from delivering a precise micro-level analysis in this contribution as the data basis is still to be developed. Instead, we show the relationship between FDI flows and regional economic development across European countries on a Nuts-2 level. We back up the empirical analysis by a theoretical approach of a two-sided matching problem and address the following points: (1) the patterns of inward FDI flows to EU regions, (2) the impact of MNE activity on regional economic development in Europe, and (3) regional factors for attracting FDI. Specifically, we start from the empirical observation that regions conduct different policies to attract FDI and foreign affiliates of MNEs. We model the firm-location decision as a two-sided matching of firms and locations, where firms choose among different locations and regional administrations try to "guide" the decision by conducting different policies and offering specific incentives. While rankings of regions usually address vertical differentiation, our firm-location approach focuses on the horizontal component of regional differentiation. We address this in our empirical part and use regional data from the Eurostat Structural Business Survey (SBS) and the Eurostat Regional Competitiveness Index (RCI). Combining both data types at the NUTS-2 level, we expect insights between the matching of heterogeneous firms and regions.

The chapter is organized as follows. In Sect. 2, we review the literature on location choice of FDI and the impact of multinational firms' activities on regional development. The model of a two-sided matching of firms and locations is described in Sect. 3. We present descriptive empirical results for regional FDI flows and regional economic development across European countries in Sect. 4. Finally, we conclude in Sect. 5.

2 Literature Review

Theoretical advances in the field of international trade lead to a renewed interest in the empirical analysis of the location choice of MNEs. Summarized by Markusen (2002), the theoretical literature suggests that the location choice of foreign affiliates is driven by demand factors (i.e., market size and market potential), supply factors (i.e., labor costs, human capital, knowledge base, and costs of doing business such as corporate tax rates), firm heterogeneity, and agglomeration economies (i.e., spillover effects). Most of the empirical studies find that *market access* and *market size* are positively linked to a regions' probability being selected as a host (Head et al. 1999; Disdier and Mayer 2004; Head and Mayer 2004; Basile et al. 2008), while the evidence on the role of *labor costs* and *taxation* is somehow mixed (Devereux and Griffith 1998). Eaton and Kortum (2002) and Melitz (2003) introduced *firm heterogeneity* in general equilibrium models to study firm-specific location decisions, where firms differ systematically even within the same industry. Chen and Moore (2010) test the effect of firm heterogeneity on location-specific investment decisions using a sample of French multinational corporations. They find that MNEs' productivity affects their investment decisions and high productive MNEs are likely to invest in economies with a smaller market potential, higher fixed costs of investment, and lower import tariffs. At the regional level, Siedschlag et al. (2013) modeled 446 location decisions of R&D firms across EU regions over the period 1999–2006 and link the location choice to a range of region- and country-specific covariates. They find that the probability to choose a particular region is positively affected by the regions' FDI stock and endowments and therefore driven by comparative advantage. *Agglomeration economies* are found to play an important role in attracting foreign-owned firms (Basile et al. 2008; Head et al. 1995; Feldman and Audretsch 1999). Basile et al. (2008), for example, use data on 5509 foreign subsidiaries across 50 European regions in eight European countries over the period 1991–1999 to test the determinants of multinational firms' location choices. Using a mixed logit approach model, they find that agglomeration economies play a key role in determining location choices and that MNEs are more likely to set up new plants in locations, where firms from the same country of origin or the same business group are located. Head et al. (1995) provide evidence that Japanese firms tend to locate in regions with other firms from the same industry, whereas Feldman and Audretsch (1999) find that industries relying on the same technology tend to cluster geographically.

Turning to the impact of FDI on regional economic development, theoretical advances in endogenous growth theory renewed the interest on micro- and macroeconomic effects of FDI on host country's economic development. From the *microeconomic perspective*, FDI is a source of technology and knowledge transfer, which occur directly from parent firms to foreign affiliates, and indirectly from foreign affiliates to domestic firms (Hirschmann 1958; Markusen and Venables 1999; Rodriguez-Clare 1996). Moreover, FDI leads to positive technological spillover effects through competition, imitation, and training (Blomstrom and Kokko 1997; Smarzynska Javorcik 2004) and depends on the technological and social capabilities of the foreign affiliates and their host countries (Dunning 1994, 1996;

Verspagen 1991). Such spillover effects to arise require a minimum level of absorptive capacity by the local firms and are more likely if there is a (good) match between the firm and region. From the *macroeconomic perspective*, FDIs are thought to have an immediate impact on the host country in terms of higher physical capital stock and therefore higher GDP. Like physical capital investments, FDI flows are less volatile than other financial sources (e.g., portfolio investments) and foreign investors usually make long-term commitments. However, growth theories have not completely confirmed the role played by MNEs. Neoclassical growth theories suggest that an (exogenous) increase in the FDI stock (such as an increase in the physical capital stock) has a temporary effect on the growth rate of the host economy shifting their economy to higher GDP levels. However, there is an increase in the long-run growth rate only if FDI spurs technological change or increases the effective labor force. This leads us to the endogenous growth theories, where technological change, learning-by-doing, and technology diffusion are the important determinants for economic growth (Temple 1999). Accordingly, FDI flows are investments in fixed assets, knowledge (tacit and codified), and technology and therefore create economic growth endogenously through direct (and indirect) transfer of technology. Surprisingly, only few endogenous growth models explicitly model FDI as a main driver for long-run growth (De Mello 1997; Grossman and Helpman 1991; Baldwin et al. 1999), whereas empirical studies find mixed evidence for MNEs' activities in fostering long-run growth in host countries (Hafner 2008, 2014). Evidence for positive spillover effects from foreign firms varies by the level of human capital in the host country (Borensztein et al. 1998), the degree of openness of the host economies (Balasubramanyam et al. 1996), and the development of local financial markets (Alfaro et al. 2004).

Firm level studies of particular countries show that enhanced growth and positive spillovers from foreign to domestic firms are not the rule but rather the exception (Aitken and Harrison 1999; Haddad and Harrison 1993; Konings 2000; Altomonte and Resmini 2002). Interestingly, most of these studies do not pay serious attention to a bidirectional relationship between FDI and growth, although a bidirectional causality is very likely as GDP and its growth rate as well as the availability of infrastructure facilities and well-functioning institutions may influence the choice of the location and level of FDI. The few existing studies such as Ericsson and Irandoust (2001) and Zhang (2001) that explicitly address this issue provide evidence of both unidirectional and bidirectional causality.

3 Theory: Two-Sided Matching Model

We see the location choice for a foreign affiliate of an MNE as a two-sided matching problem as the firms decide about the engagement in a particular location and public authorities try to influence the firm-location decision. There is a wide range of regional targeted-policy actions both directly such as the permission to construct establishments and facilities and indirectly such as a well-disposed attitude toward

foreign engagement and rich cultural life. Each of the regional characteristics affects firms and their investment decisions differently. The availability of wood, for instance, is of particular interest for the paper industry but not for business services. Thus, Krugman's (1993) first nature (e.g., wood) and second nature (e.g., wood mill or furniture plant) characteristics of a location shape the investment decision of a firm.

Taking into account that firms choose their most preferred location among heterogeneous regions, we are unable to assess the mutual influence of each characteristic on realized and non-realized (but possible) firm-location matches. We rely instead on sample averages of characteristics that might affect firms' decision. Hence, we see matches as the rational choices of firms for their (most) preferred location and model the profit π_{ik} of firm k generated by the decision to invest in location i as:

$$\pi_{ik} = \underbrace{\sum_{j=1}^{m} \delta_j \omega_{ikj}}_{\omega_{ik}} + \varepsilon_{ik}, \tag{1}$$

where the vector $\boldsymbol{\omega}$ reflects the known characteristics of the firm, location, or firm-location relationship; δ is the weight of the characteristic in the profit function; and ε is the firm-location specific component of the decision. The latter is unknown to us but possibly known by the body deciding on behalf of the firm.

Firm k compares profits among different locations l and decides to invest in one location i. The probability P_{ik} of firm k to choose location i is thus given by:

$$P_{ik} = Pr\left[\omega_{ik} + \varepsilon_{ik} = \max_{l=1\ldots n} (\omega_{lk} + \varepsilon_{lk})\right], \tag{2}$$

where we do not know the firm-specific characteristics ω, but sector or region averages $\overline{\omega}_h$. We rewrite the firm-specific characteristic as: $\omega = \overline{\omega}_h + \vartheta$, where $h = i, k, ik$, and ϑ is the deviation from the characteristics' average. The unobserved component is thus the sum of $u = \sum_{j=1\ldots m} \vartheta_j + \varepsilon$. If the unobserved component u is normally distributed, the probability that firm k chooses location i is according to Anderson et al. (1992):

$$P_{ik} = \frac{e^{(\omega_{ik}-\mu)/\beta}}{\sum_{l=1}^{n} e^{(\omega_{lk}-\mu)/\beta}}, \tag{3}$$

where μ is the mean and β is a scale parameter (proportional to the standard deviation) of a logistic distribution. Hence, the probability that firm k chooses location i is affected by the characteristics of location i relative to the characteristics of all other locations. We will estimate the (average) weights δ of the different characteristics on the location decision using discrete choice logit or probit models. Since many of the location variables do not have the same effect on all firms, it is essential to aggregate over meaningful, not too heterogeneous, groups of firms or locations in order to reduce the deviation ϑ from the average realization of a specific characteristic.

In addition, we are able to analyze comparative advantages of locations in attracting FDI and MNEs. This extends the two-sided matching model if the location characteristics can be adjusted and targeted toward groups of firms or individual firms (i.e., in terms of subsidies, land offers, specific infrastructure investments). Hence, locations compete for firms and their investments trying to increase their attractiveness and thus the probability by Eq. (3). Since characteristics of regions appeal differently to firms, a relative change leads not only to a change in the absolute number of firms but also in the firm mix. For example, a new school established abroad, where the teaching language is French, increases the (relative) attractiveness of the foreign region for MNEs headquartered in France. Locations can, thus, create comparative advantages rather than just to exploit them. As these advantages might accrue in a rather small area, regional data has to be analyzed. The region might, for instance, establish a new business or engage in a large investment in already established business areas. This can cause follow-up investment from suppliers and customers as well as competitors seeking proximity for enjoying spillover effects. The overall economic gain might be much larger than the gain from the new establishment as the probability of attracting other firms increases. A good measure of a region's success with respect to attracting investments is the number of newly attracted firms. For a large number of firms looking independently for their best match, the number of new establishments equals the product of the probability and the total number of firms investing in a (new) location. Hence, multiplied with the total number of FDI establishment N^{FDI}, we write the gravity equation explaining FDI activities by relative characteristics of locations and the total number of investment projects as:

$$N_i = \frac{e^{(\omega_{ik}-\mu)/\beta}}{\sum_{l=1}^{n} e^{(\omega_{lk}-\mu)/\beta}} N^{\mathrm{FDI}}. \tag{4}$$

Equation (4) is usually estimated by a Poisson regression, which addresses the problem of heterogeneity according to Santos Silva and Tenreyro (2006) and handles zero outcome of FDI in some locations.

4 Results: Empirical Evidence of FDI Flows

The empirical analysis focuses on the relationship between inward FDI flows, activities of foreign affiliates of MNEs, and their firm-location choice. Hence, a firm-level dataset that constructs the explanatory variables at the regional level by firm aggregation combined with a detailed regional dataset (preferably at a NUTS-2 level or more disaggregated) allows us to model the match between firms and locations. However, such a dataset is not available yet, but can be constructed using AMADEUS firm-level data and Eurostat data on regional development. While such an empirical analysis is beyond the scope of this contribution, it will be the goal of our research project to match the theory with a firm-location dataset on a regional level.

For the purpose of this contribution, we rely on the Eurostat Regional Competitiveness Index (RCI) (Annoni and Dijkstra 2013; Annoni et al. 2017) and its three subindexes available at a NUTS-2 level. The three subindexes are (1) the *basis* subindex reflecting the regional quality of institutions, macroeconomic stability, infrastructure, health, and basic education; (2) the *efficiency* subindex taking into account higher education and lifelong learning, labor market efficiency, and market size; and (3) the *innovation* subindex related to the level of technological readiness of enterprises and households, business sophistication, and innovation.[1] In addition, we make use of the regional data from the Eurostat Structural Business Survey (SBS) database to analyze the link between FDI flows and economic development across European regions.[2] The total RCI and its ranking show the strong component of horizontal differentiation among regions. In principle, higher ranked regions perform better, but the ranking reflects not the location choice of firms. The Northwest region of Romania, for example, is ranked 241 out of 275 NUTS-2 regions in 2016 but had been chosen by Nokia as the location for its mobile phone production in 2008. At that time, the regions' RCI position would have been comparable if the Eurostat had calculated such rankings. Although many locations (i.e., 240 out of 275 regions according to the RCI of 2016) are better ranked than Romania Northwest, Nokia decided to produce there and calculated the expected return by the use of Eq. (2), which exceeded the expected return in all other regions. Consequently, Nokia moved out of the German region Dusseldorf (i.e., ranked 32 out of 275 according to the RCI of 2016). Thus, there must be an important component of horizontal differentiation between regions in order to attract activities.

We use the discrete choice model by Eq. (2) to analyze vertical and horizontal differentiation within and across regions. In the case of perfect vertical differentiation, the market shares by the use of Eq. (3) of all locations except one location would be zero. In the case of perfect horizontal differentiation, the market shares for all locations would be the same. However, the total RCI pattern shown in the data is different. Figure 1 shows the regional distribution of the total RCI of 2016 with respect to the national average for 28 EU countries arranged by an increasing order. The vertical element is shown by the dominance of the capital region in almost all countries, whereas the horizontal element becomes apparent by the within-country variances of the regions in Fig. 1. Specifically, there is no capital region that is below the country average, and it outperforms the average in all countries with the exception of Germany. In many countries, the capital region is the only region

[1] See http://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_competitiveness_statistics

[2] There is a wide range of data on FDI flows and activities of MNEs from different sources and aggregation levels. Regional data can be found in the Eurostat Structural Business Survey (SBS). At a country level, MNE data is provided by OECD databases, whereas the United Nations Conference on Trade and Development, World Bank, International Monetary Fund, and International Trade Center provide FDI data. Moreover, the AMADEUS database of the Bureau van Dijk offers regional FDI stocks, number of foreign-owned firms, sales, value added, and employment of MNEs and their affiliates. However, access and use of the AMADEUS database is restricted to subscriptions.

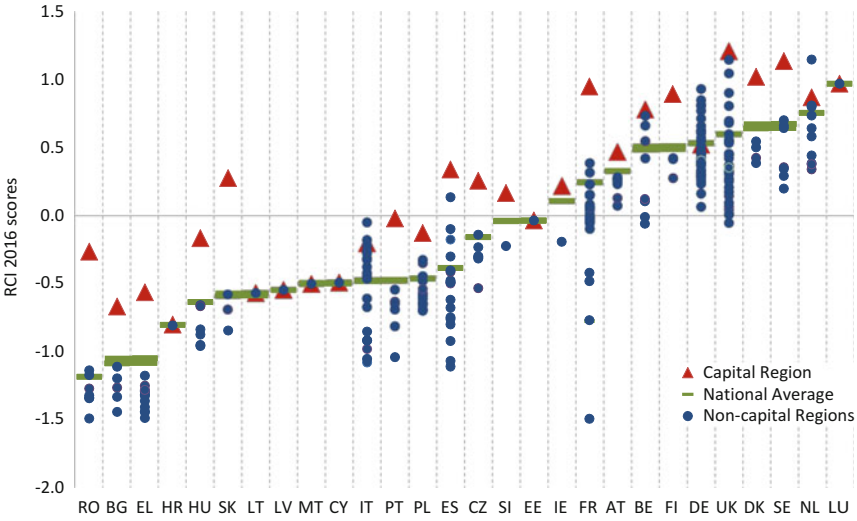

Fig. 1 Distribution of RCI scores between and within countries, 2016. Source: Annoni et al. (2017, p. 6)

above the average. The within-country variance is smallest for Austria, Germany, Finland, and Denmark and largest for Romania and Greece, which is likely to be the results of very heterogeneous regions compared to their capital region within countries of the European periphery.

Unfortunately, regional FDI flows are not available from Eurostat, which leads us to the RCI subindex "innovation" as a (regional) proxy for FDI flows. It reflects most likely the regional impact of FDI activity, as technological readiness and innovation competence are key characteristics of MNEs. For the economic development in 272 European regions, we use the indexed GDP per capita of 2011 (i.e., with value of 100 for the 2011-regional average of the EU-28 countries) and, as an alternative indicator, the RCI of 2013 as it reflects the readiness and capabilities of regions to compete at different dimensions. Since NUTS-2 regions are very heterogeneous, various patterns across regions and countries emerge. We therefore group the EU-28 countries and their regions into four country aggregates (i.e., nine "EU-core countries," three "Mediterranean countries," three "post-cold war countries," and thirteen "Eastern-enlargement countries") according to the year of EU accession.[3]

Figure 2 shows the scatterplot of the subindex "innovation" across regions and country aggregates, respectively, both GDP per capita in the left panel and RCI in the right panel, while the last two columns of Table 2 in the appendix show the correlation coefficients. Looking at country aggregates, there is a common pattern of FDI flows across countries and regions irrespective of whether we use GDP per capita or total RCI as an indicator for economic development. On average, regions

[3]Tables 1 and 2 in the appendix provide specific information and descriptive statistics for the regions of the EU-28 countries and their country aggregates.

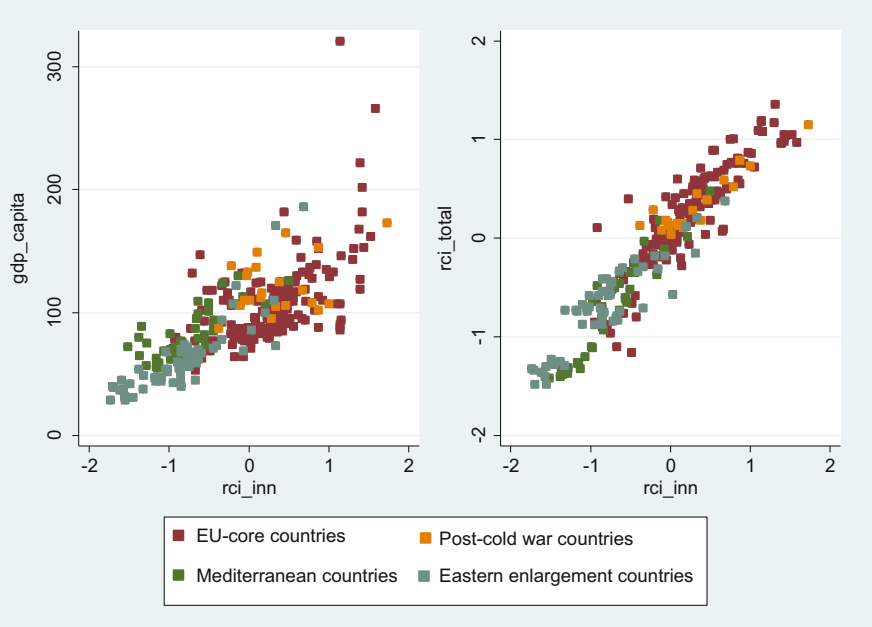

Fig. 2 Regional competitiveness subindex "innovation," 2013. Source: Annoni and Dijkstra (2013), own calculation

belonging to "EU-core countries" or "post-cold war countries" score higher in terms of both economic development and FDI flows compared to those belonging to "Mediterranean countries" or "Eastern enlargement countries." Not surprisingly, there is a high correlation (i.e., 90% or higher according to Table 2 in the appendix) between total RCI and its subindex "innovation" irrespective of whether regions belonging to a certain country aggregate or not. In contrast, no such correlation is shown in the case of GDP per capita especially within regions of "EU-core countries" or "post-cold war countries." Hence, FDI flows seem to be an important key factor for Europe's economic development of its periphery regions as the correlation coefficient is much higher in regions of "Mediterranean countries" and "Eastern enlargement countries."

To sum up, there are regions with particularly large or low innovation capacities given their GDP per capita and total RCI, but to elaborate further we have to rely on disaggregated firm data. It will be interesting to relate firm data to FDI inflows at a regional level in order to analyze if the RCI index reflects investment decisions of individual firms. Moreover, size distributions, home-country and sector concentration measures, heterogeneity, and specialization measures at a regional level allow us to make inference regarding a regions' capacity (and success) to attract new firms.

5 Conclusion and Discussion

The European integration process exposes its regions to a particular relationship of intensive competition and exchange of goods and services. While looking for trading partners to exploit their comparative advantages, regions also compete with each other for resources and (foreign) investment. Public authorities can affect the firm-location decision. We see the location choice for a foreign affiliate of an MNE as a two-sided matching problem as the firms decide about the engagement in a particular location and public authorities try to influence the firm-location decision. There is a wide range of regional targeted-policy actions both directly such as the permission to construct establishments and facilities and indirectly such as a well-disposed attitude toward foreign engagement and rich cultural life.

With further economic integration, foreign affiliates of MNEs and FDI flows play an increasing role in regional economic development. If regional policies succeed to include multinational enterprises in their development strategy in the interest of both, the region has gained a powerful ally in regional economic development. To find the partners that help to boost economic activities in the regions without relying too much on state-allocated resources is the challenge of regional development. This requires a strategy for a future development path based on the contributions (and support) of firms guided by incentives rather than directed by influence. The encouraging result of this contribution is that there is a suitable strategy for every region building on its strengths and visions as regional heterogeneity is large and regions are likely to find a niche and thereby the suitable partners.

Appendix

Table 1 Country aggregation (Annual data for 28 EU countries of 2011 and 2013)

EU-28 countries	Country aggregates
EU-core countries: six founding members in 1967 (i.e., Belgium, France, Germany, Italy, Luxembourg, the Netherlands) and 1973-enlargement countries (i.e., Denmark, Ireland, United Kingdom)	"EU-core countries"
Mediterranean countries: Greece (1981), Portugal (1986), and Spain (1986)	"Mediterranean countries"
Post-cold war countries (1995): Austria, Finland, and Sweden	"Post-cold war countries"
Eastern enlargement countries (2004, 2007): Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia	"Eastern enlargement countries"

Notes: Country aggregates according to EU accession

Table 2 Descriptive and correlation analysis (Annual data for 28 EU countries of 2011 and 2013)

	Obs.	Mean	Std. Dev.	Min	Max	GDP per capita	RCI Total
EU Nuts-2 regions							
GDP per capita	272	95.83456	36.78067	29.00	321.00	1	
RCI total	272	−0.05526	0.68121	−1.48	1.36	0.7077	1
RCI innovation	272	−0.09313	0.75427	−1.74	1.73	0.7395	0.9474
EU-core countries							
GDP per capita	153	107.33990	35.25194	53.00	321.00	1	
RCI total	153	0.29013	0.52710	−1.16	1.36	0.5482	1
RCI innovation	153	0.28549	0.57569	−0.95	1.58	0.5953	0.8982
Mediterranean countries							
GDP per capita	39	83.64103	20.47269	55.00	130.00	1	
RCI total	39	−0.70897	0.49431	−1.42	0.48	0.7849	1
RCI innovation	39	−0.74872	0.44957	−1.52	0.50	0.7758	0.9435
Post-cold war countries							
GDP per capita	22	122.04550	22.71034	87.00	173.00	1	
RCI total	22	0.35500	0.29479	0.04	1.15	0.3182	1
RCI innovation	22	0.34227	0.48958	−0.38	1.73	0.3528	0.9265
Eastern enlargement countries							
GDP per capita	58	63.74138	29.63554	29.00	186.00	1	
RCI total	58	−0.68241	0.43892	−1.48	0.38	0.7931	1
RCI innovation	58	−0.81621	0.56036	−1.74	0.68	0.8396	0.9101

Notes: Country aggregates according to EU accession

References

Aitken, B. J., & Harrison, E. (1999). Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. *American Economic Review, 3*, 605–618.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: The role of local financial markets. *Journal of International Economics, 64*, 89–112.

Altomonte, C., & Resmini, L. (2002). Multinational corporations as a catalyst for local industrial development. The case of Poland. *Scienze Regionali. The Italian Journal of Regional Science, 2*, 29–58.

Anderson, S., De Palma, A., & Thisse, J. (1992). *Discrete choice theory of product differentiation*. Cambridge, MA: MIT Press.

Annoni, P., & Dijkstra, L. (2013). *The EU regional competitiveness index 2013*. http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/6th_report/rci_2013_report_final.pdf

Annoni, P., Dijkstra, L., & Gargano, N. (2017). *The EU regional competitiveness index 2016* (Working Papers 02/2017). http://ec.europa.eu/regional_policy/sources/docgener/work/201701_regional_competitiveness2016.pdf

Balasubramanyam, V. N., Salisu, M., & Sapsford, D. (1996). Foreign direct investment and growth in EP and IS countries. *Economic Journal, 106*, 92–105.

Baldwin, R., Braconier, H., & Forslid, R. (1999). *Multinationals, endogenous growth and technological spillovers: Theory and evidence*. CEPR discussion paper 2155, London.

Basile, R., Castellani, D., & Zanfei, A. (2008). Location choices of multinational firms in Europe: The role of EU cohesion policy. *Journal of International Economics, 74*(2), 328–340.

Blomstrom, M., & Kokko, A. (1997). *How foreign investment affects host countries* (The World Bank Policy Research Working Paper n. 1745). Washington, DC: The World Bank.

Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics, 45*, 115–135.

Chen, M., & Moore, M. O. (2010). Location decision of heterogeneous multinational firms. *Journal of International Economics, 80*(2), 188–199.

De Mello, L. (1997). Foreign direct investment in developing countries and growth: A selective survey. *The Journal of Development Studies, 34*(1), 1–34.

Devereux, M. P., & Griffith, R. (1998). Taxes and the location of production: Evidence from a panel of US multinationals. *Journal of Public Economics, 68*(3), 335–367.

Disdier, A.-C., & Mayer, T. (2004). How different is Eastern Europe? Structure and determinants of location choices by French firms in Eastern and Western Europe. *Journal of Comparative Economics, 32*(2), 280–296.

Dunning, J. (1994). Re-evaluating the benefit of foreign direct investment. *Transnational Corporation, 3*(1), 23–51.

Dunning, J. (1996). The Geographical sources of the competitiveness of firms. *Transnational Corporations, 5*(3), 1–30.

Eaton, J., & Kortum, S. (2002). Technology, geography, and trade. *Econometrica, 70*(5), 1741–1779.

Ericsson, J., & Irandoust, M. (2001). On the casualty of foreign direct investment and output: A comparative study. *International Trade Journal, 15*(1), 122–132.

Feldman, M., & Audretsch, D. (1999). Innovation in cities: Science-based diversity, specialization and localized competition. *European Economic Review, 43*(2), 409–429.

Grossman, G., & Helpman, H. (1991). *Innovation and growth in the global economy*. Cambridge, MA: MIT Press.

Haddad, M., & Harrison, H. (1993). Are there positive spillovers from direct foreign investment? Evidence from panel data from Morocco. *Journal of Development Economics, 42*(1), 51–74.

Hafner, K. A. (2008). The pattern of international patenting and technology diffusion. *Applied Economics, 40*(21), 2819–2837.

Hafner, K. A. (2014). Technology spillover effects and economic integration – Evidence from integrating EU countries. *Applied Economics, 46*(25), 3021–3036.

Head, K., & Mayer, T. (2004). Market potential and the location of Japanese investment in the European Union. *The Review of Economics and Statistics, 86*(4), 959–972.

Head, K., Ries, J., & Swenson, D. (1995). Agglomeration benefits and location choice: Evidence from Japanese manufacturing investments in the United States. *Journal of International Economics, 38*(3–4), 223–247.

Head, K., Ries, J., & Swenson, D. (1999). Attracting foreign manufacturing: Investment promotion and agglomeration. *Regional Science and Urban Economics, 29*(2), 197–218.

Hirschmann, A. O. (1958). *The strategy of economic development*. New Haven: Yale University Press.

Konings, J. (2000). *The effects of direct foreign investment on domestic Firms: Evidence from firm level panel data in emerging economies*. CEPR Discussion paper 2586.

Krugman, P. (1993). First nature, second nature, and metropolitan location. *Journal of Regional Science, 33*(2), 129–144.

Markusen, J. (2002). *Multinational firms and the theory of international trade*. Cambridge, MA: MIT Press.

Markusen, J., & Venables, A. (1999). Foreign direct investment as a catalyst for industrial development. *European Economic Review, 43*, 335–356.

Melitz, M. (2003). The impact of trade on aggregate industry productivity and intra-industry reallocations. *Econometrica, 71*(6), 1695–1725.

Rodriguez-Clare, R. (1996). Multinationals, linkages, and economic development. *American Economic Review, 86*(4), 852–873.

Santos Silva, J. M. C., & Tenreyro, S. (2006). The log of gravity. *The Review of Economics and Statistics, 88*(4), 641–658.

Siedschlag, I., Zhang, X., Smith, D., & Turcu, C. (2013). What determines the location choice of R&D activities by multinational firms? *Research Policy, 42*, 1420–1430.

Smarzynska Javorcik, B. (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *American Economic Review, 94*(3), 605–627.

Temple, J. (1999). The new growth evidence. *Journal of Economic Literature, 37*(1), 112–156.

Verspagen, B. (1991). A new empirical approach to catching up or falling behind. *Structural Change and Economic Dynamics, 2*, 359–380.

Zhang, K. (2001). How does FDI affect economic growth in China? *Economics of Transition, 9*(3), 679–693.