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# Origin of FDI and domestic productivity spillovers: does European FDI have a 'productivity advantage' in the ENP countries?

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Vassilis Monastiriotis\*

## Abstract

The process of approximation between the EU and its 'eastern neighbourhood' has created conditions for deepening economic interactions and market integration, giving to the EU – and to EU businesses – an elevated role in the process of economic modernisation and transition in the neighbourhood countries. This raises the question as to whether European business activity in these countries produces indeed measureable economic advantages both in absolute and in relative terms (e.g., compared to business activity from other parts of the world). Similarly, a question arises as to whether European business activity reduces or amplifies spatial imbalances within the partner countries. This paper examines these issues for the case of capital flows (foreign ownership) and the related productivity spillovers, using firm-level data from the Business Environment and Enterprise Performance Survey (BEEPS) covering 28 transition countries over the period 2002-2009. We estimate the direct and intra-industry productivity effects of foreign ownership and examine how these differ across regional blocks (CEE, SEE and ENP), according to the origin of the foreign investor (EU versus non-EU), across geographical scales (pure industry versus regional spillovers) and for different types of locations (capital-city regions versus the rest). Our results suggest that FDI of EU origin plays a distinctive role in the countries concerned helping raise domestic productivity significantly more than investments from outside the EU. However, this process appears to operate in a spatially selective manner, thus enhancing regional disparities and spatial imbalances. This, then, assigns a particular responsibility for EU policy, as it continues to promote economic integration (and FDI flows) to its eastern neighbourhood, to devise interventions that will help redress these problems.

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# Table of Contents

<b>Abstract</b>	
<b>Introduction</b>	<b>5</b>
<b>Considerations for the analysis</b>	<b>8</b>
i. Origin of FDI	9
ii. Scale and regional differentiation of spillovers	11
<b>Data and methodology</b>	<b>14</b>
<b>Empirical results</b>	<b>17</b>
i. Aggregate effects	17
ii. Impact of origin and destination	19
iii. Geographical impact	23
<b>Conclusions</b>	<b>28</b>
<b>References</b>	<b>32</b>
<b>Appendix</b>	<b>36</b>

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# **Origin of FDI and domestic productivity spillovers: does European FDI have a 'productivity advantage' in the ENP countries?**

## **Introduction**

The collapse of communism more than 20 years ago unleashed a historically unprecedented process of economic restructuring and political transformation in the former communist countries. This process of transition involved a number of radical changes both in the political (democratisation, institution-building) and the economic sphere (marketization, liberalisation, restructuring). In this process, the inflow of foreign direct investments has obtained a heightened importance, not only in its role of removing capital shortages, containing current account imbalances and strengthening job creation, technology transfers and economic development (Fry et al, 1995; Markusen and Venables, 1999), but also for the effectiveness of, and commitment to, transition itself (Grabbe, 2006).

The process of transition was soon followed by – and in many respects became subordinated to – the process of approximation to the EU. Indeed, as early as in 1993, the EU effectively defined the process and content of transition with the establishment of the Copenhagen Criteria for accession. Whether intentionally or not, these became the guiding principles for successful transition and have been followed, albeit with variable degrees of

## Origin of FDI and domestic productivity spillovers

success or commitment, by virtually all transition countries in the broader European neighbourhood.

The effectiveness, or even relevance, of the EU and its framework of external relations for the countries in its broader neighbourhood has been an issue that has attracted a lot of attention in the literature. The success of this framework in fostering political-economic transformation in Central and Eastern Europe (CEE) in the pre-accession period (Hughes et al, 2004; Schimmelfennig and Sedelmeier, 2005) and especially in facilitating economic integration with the western 'EU core', inspired to a large extent the deployment of similar frameworks in countries further afield. In the Balkans (SEE), this took the form of 'extended conditionality' through the Stabilisation and Association process, to account for the specificities of the region relating to the conflict resolution initiatives following the wars of the dissolution of Yugoslavia (Phinnemore, 2003; Talani, 2008; Monastiriotis and Petrakos, 2010). In the eastern neighbourhood (as well as in the South Mediterranean), this framework was translated into what became known as the European Neighbourhood Policy (ENP). This policy offers conditional preferential economic and political relations in exchange of the recipient countries' adherence to the ENP (and Copenhagen) principles; but, as has been long identified in the literature (Emerson, 2004; Schimmelfennig and Scholtz, 2008; Sasse, 2008; Witman and Wolff, 2010), with a significantly weakened 'carrot' as the ENP framework explicitly excludes the prospect of accession.

Studies on the economics of the 2004 Enlargement (Brendon et al, 1999; Kaminski, 2001; Clausing and Dorobantu, 2005; Monastiriotis and Agiomirgianakis, 2009) have shown that this prospect of accession has been paramount in mobilising foreign investments, as western firms responded to the opportunities offered by the opening of the new markets by changing the geographical organisation of their production thus instigating a wider process

of restructuring for the European industry. As a result, these movements were part of a deeper integration process, reflecting the significant linkages that developed on the ground, which in turn facilitated sizeable technology transfers to the CEECs. In the countries of the wider neighbourhood and in the absence of the prospect of accession, this process was less intense and partly driven by different motives (Estrin and Uvalic, 2013). Volumes of FDI have been significantly lower; foreign investments have been more of the market-capture type and much less so part of a spatial reorganisation of production systems; and, as a result, the extent of integration with the local economies has been somewhat lower. Still, the ENP provides an institutional framework of association (including preferential trade agreements) which, arguably, gives EU firms a relative advantage at least in the sense of reducing entry costs and uncertainties (information asymmetries, legal barriers, etc).

If, as it is believed to have happened in the CEECs, the framework of association facilitates less speculative and more long-term strategic investments, then EU-originating investments in the ENP region are likely to be more organically linked to the local economies of the host countries thus, possibly, generating larger spillovers for domestic firms. In this paper we examine this hypothesis using firm-level data for the period 2002-2009 covering 28 transition countries. We apply a standard production-function approach to estimate the productivity spillovers accruing to domestic firms by the presence of foreign investments and examine how these spillovers vary (a) for groups of countries belonging to different processes with respect to EU association and (b) separately for investments of EU and non-EU origin. As spillovers are found to be of variable sizes along these dimensions at the national level (within sectors), we further investigate the localisation of these spillovers by examining how their intensity varies at different geographical scales (national – regional) and for different types of locations (capitals versus

the rest). The next section introduces in more detail our research questions, also discussing some theoretical considerations and reviewing parts of the literature that are relevant for the motivation of our analysis. Section 3 gives details about our data and method, while section 4 presents our empirical results. The last section concludes with a discussion of the policy implications of our findings.

### Considerations for the analysis

There is by now a large body of literature examining the impact of FDI in transition countries, both at the aggregate level and in terms of intra- and inter-industry spillovers. The literature has shown that, generally, vertical spillovers (through backward and forward linkages to the sector of foreign presence) are positive and often sizeable (Damijan et al, 2003; Javorcik, 2004; Gorodnichenko et al, 2007; Nicolini and Resmini, 2010; Damijan et al, 2013). In contrast, estimated horizontal (intra-industry) spillovers are often non-significant or even negative (Konings, 2001; Damijan et al, 2003; Javorcik, 2004; Sabirianova et al, 2005; Gorodnichenko et al, 2007) – similar with established findings in other parts of the world (Aitken and Harrison, 1999; Blomstrom and Sjöholm, 1999). More recent studies, however, have shown that significant positive spillovers do exist, but only conditional on a number of intervening factors<sup>1</sup>, including firm/sector characteristics (such as firm size – Pojar, 2012, Damijan et al, 2013; absorptive capacity and technological distance – Tytell and Yodaeva, 2005, Gorodnichenko et al, 2007, Halpern and Murakozy, 2007, Monastiriotis and Alegria, 2011; sector and geographical location – Sgard, 2001, Gorg and Greenaway, 2004, Monastiriotis and Jordaan,

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<sup>1</sup> See Gorg and Strobl (2001) for a discussion of this, based on a meta-analysis of studies mainly in the 1990s. See also Merlevede and Schoors (2007) and the review in Damijan et al (2013).



2010); characteristics of the recipient country (level of development, extent of corruption, political regime – Tytell and Yodaeva, 2005); and characteristics related to the foreign investors (extent of ownership – Javorcik, 2004, Monastiriotis and Alegria, 2011; export-orientation – Tytell and Yodaeva, 2005; country/region of origin – Javorcik and Spatareanu, 2011, Monastiriotis and Alegria, 2011). Additionally, Jordaan (2013a and 2013b) has shown that estimates of horizontal spillovers often suffer from problems of selection and endogeneity; whereas Monastiriotis and Alegria (2011) find evidence of a time-varying spillover effect (which they call *hysteresis*), consistent with more micro-level evidence showing that foreign-owned firms increase their domestic linkages with the passage of time (Gorg and Ruane, 2001).

Our attention in this paper deviates from what has come to be the main attention in the contemporary literature on the topic, namely issues such as absorptive capacity and technological distance (Damijan et al, 2013), the nature of backward and forward linkages (Barrios et al, 2011) and the role of domestic institutions (Farole and Winkler, 2012). Instead, our focus is with two issues that have attracted less attention in the transition literature, both relating to questions of geography and space – albeit in different dimensions. The first concerns the role of the *origin* of foreign investments for the size of the observed spillovers; the second concerns the *geography of spillovers* within the recipient countries.

### **i. Origin of FDI**

Concerning the first issue, there is evidence already in the literature that the origin of investors matters for the size and direction of the spillovers generated (Javorcik and Spatareanu, 2011, Monastiriotis and Alegria, 2011). There are two separate arguments to explain this. In the case of Javorcik and

## Origin of FDI and domestic productivity spillovers

Spatareanu (2011), in an argument that is more akin to the case of vertical spillovers, the mechanism of interest is the presumed higher propensity of foreign investors originating from more distant locations to make more intensive use of local resources and local supply chains (as maintaining traditional home-country suppliers becomes more costly with distance), thus producing more intense interactions with the local production base. This, it is hypothesised (and consistent evidence is presented), leads to stronger vertical spillovers for more distant foreign investors. Instead, the argument presented by Monastiriotis and Alegria (2011) has to do more with cultural and technological proximity. According to this argument, culturally ‘proximate’ foreign investors have a greater advantage in drawing on local knowledge and thus benefit more by engaging more systematically with the local economy. This, in turn, creates a greater scope for spillovers to local firms – which may, additionally, be easier to absorb, to the extent at least that cultural proximity correlates with technological proximity.<sup>2</sup> Although the authors argue that this mechanism applies more clearly to the case of horizontal spillovers, an extension of this argument to the case of vertical spillovers appears straightforward.

Thus, on the issue of ‘origin’, two conflicting arguments – both supported by relevant empirical evidence – have been proposed in the literature. Our empirical analysis in this paper provides some additional evidence for the role of the origin of the investors and in this sense adds to this developing literature. Our conceptualisation of the role of ‘origin’ however is not fully in line with the definitions used in the previous literature. Instead of pure *geographical distance* (Javorcik and Spatareanu, 2011) and relational *cultural proximity* (Monastiriotis and Alegria, 2011), our aim in this paper is to

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<sup>2</sup> The example used by Monastiriotis and Alegria (2011) is the case of Greek-owned firms in Bulgaria. The authors find a significant (in terms of the size of spillovers) advantage for Greek compared to both European (rest of EU) and non-European FDI.

examine the role played by *political-institutional proximity*, especially in relation to the process of EU approximation (be it in the context of accession – CEE; of pre-accession conditionality – SEE; or of neighbourliness – ENP). The hypothesis we put forward is that FDI originating from the EU will have greater productivity spillovers to the local economies of the ENP/association countries, for a number of reasons. First, because EU-originating investors are likely to see their investments as part of the approximation process and, in this sense, as part of a policy that aims at strengthening local capacities and integration with the EU. Thus, local links are encouraged and local synergies pursued. Second, because domestic producers may have similar perceptions about EU-originating investments and thus may be more inclined to cooperate and/or compete with these – resulting in more intensive processes of mimicking, learning and technology transfer. Third, because the very process of association may be creating institutional advantages that can be better internalised by European firms (e.g., transposition of legal frameworks and regulations to come more in line with EU norms and rules – Magen, 2006; Freyburg et al, 2009), which may also be giving a stronger advantage to EU-originating investors (inversely, to local firms) in their interaction with the local economy (with the European investors). Given the differentiation in the process and intensity of association between the EU and each of our three geo-political regions (CEE, SEE and ENP), we also derive group-specific estimates for the impact of European (EU15) and non-European FDI for each of these three regions.

## **ii. Scale and regional differentiation of spillovers**

Surprisingly, the literature on FDI has much less to say about the geography of spillovers and the geographical impact of foreign ownership on (local)

## Origin of FDI and domestic productivity spillovers

domestic production. This is despite the voluminous research on the issue of locational spillovers in the agglomeration economics literature (for example, Rosenthal and Strange, 2004; Greenstone et al, 2008; Puga, 2010). Among the few exceptions to this, see the work of Driffield and Hughes (2003), Haskel et al (2007) and Girma and Wakelin (2009) for the UK<sup>3</sup>; Mullen and Williams (2007) for the case of the USA; Sgard (2001) for Hungary; Jordaan (2008 and 2013b) for Mexico; and especially of Monastiriotis and Jordaan (2010), whose work on Greece has shown that productivity spillovers from foreign ownership are not only stronger at the more localised level but also vary widely, and can even move in different directions, across different (types of) locations.<sup>4</sup>

Consistent with the brevity of empirical studies (and evidence) on the issue, also limited is the discussion about the theoretical mechanisms that may – or may not – be causing spatial differentiation in the local impact (spillovers) of FDI.<sup>5</sup> The main mechanism to be found in the literature – which is directly borrowed from the agglomeration economics literature – concerns the effects of concentration on local production through knowledge spillovers, labour pooling and network-sharing (Griliches, 1979; Audretsch and Feldman, 1996; Breschi et al, 2010; Marioti et al, 2010; Overman and Puga, 2010). If advantages from the presence of foreign firms have to do with processes such as the upgrading of workforce skills (either through training or by raising the demand for – and thus the investment in – skills in the local economy), day-to-day interaction (participation in common Chambers, demonstration effects, information-sharing) and pecuniary spillovers (demand-supply linkages,

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<sup>3</sup> Among these studies, Haskel et al (2007) find consistently negligible regional effects from foreign ownership. This finding is rare, but consistent with earlier findings in the literature for less developed countries (Sjoholm, 1999, Aitken and Harrison, 1999).

<sup>4</sup> See also Gorg and Greenaway (2004) for a meta-analysis of relevant studies, including ones that look at the role of geographical proximity to foreign-owned firms.

<sup>5</sup> This is partly because theoretical considerations in this literature concern more the question of the origin and types of spillovers (e.g., pecuniary versus technological – see Gorg and Strobl, 2004, and Jordaan, 2009).

sharing common distribution networks, etc.), it is easy to see why (co-)location would matter for the size and intensity of spillovers. If, on the other hand, foreign presence raises domestic productivity through technological spillovers (e.g., introduction of new technologies, processes and management practices, which are subsequently copied by local firms) and competition effects (creative destruction, survival of the fittest), then the resulting spillovers need not be at all localised – as learning and competition can take place at wider scales and/or through trade and are thus not necessarily linearly related to distance. Still, to the extent that knowledge spillovers are localised, it should be expected that the technological externalities of FDI will also be stronger with geographical proximity.

Another, less studied, mechanism accounting for the spatial differentiation of spillovers has to do with the capacities and characteristics of the recipient local economies.<sup>6</sup> More developed regions (often, those of Capital cities) are in general more extrovert and typically host larger agglomerations. In a way this means that they are already open to forces of (international) competition (and learning), more so than their national hinterlands. If so, the scope for benefits derived from the presence of foreign firms, both locally and nationally, may be more limited.<sup>7</sup> On the other hand, these areas will have a greater capacity to internalise any spillovers that may be generated and to withstand the additional competition from the foreign investors (e.g., managing to maintain their market shares). In this sense, the inflow of foreign investments may exacerbate existing spatial disparities in the recipient countries. The literature provides two sets of findings with regard to this. On the one hand, the studies by Driffield and Munday (2001) and Sgrad (2001) give evidence of stronger FDI spillovers in areas with larger agglomerations, higher levels of

<sup>6</sup> For exceptions see Sgrad (2001), Driffield and Munday (2001), Jordaan (2008) and Monastiriotis and Jordaan (2010).

<sup>7</sup> Inversely, more peripheral regions will have more to gain from the technological knowledge of foreign firms and perhaps may benefit more also from pecuniary spillovers.

development and greater proximity to markets. On the other hand, Monastiriotis and Jordaan (2010) have shown for the case of Greece that spillovers are maximised in areas with weaker agglomerations and lower levels of development. In our analysis we also examine this dimension, by estimating the productivity spillovers of foreign ownership separately for the capital-city regions and for the regions located elsewhere.

## Data and methodology

The data used in this paper comes from the Business Environment and Enterprise Performance Survey (BEEPS). This survey is implemented by the EBRD together with the World Bank and it enquires individual firms in Eastern Europe and Central Asia about their business and business environment. The paper uses an unbalanced panel from three waves – 2002, 2005 and 2009 – containing approximately 28,000 observations<sup>8</sup> from 28 transition countries, listed in Table A.1 in the Appendix.

The dataset contains information on sales, employment, fixed assets, share of foreign ownership, share of exports, sector (using NACE two-digit classification), country and region where the firm is located and origin of FDI. The availability of some of these variables (share and nationality of foreign presence; region; sector) is limited to certain years so, where available, we projected the values available in previous years or in the cross-sectional editions of BEEPS (e.g., assuming that the region, sector, or share of foreign

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<sup>8</sup> The dataset contains many missing values and some occasional problems with coding. After cleaning the data we are left with 22,009 observations with data on sales (output) and employment and information on ownership and sector. This number is approximately halved when we use the 'fixed assets' variable, as there are large gaps in the reporting of this information (questions 6a, 6b, 7a and 7b in the BEEPS). Sample sizes vary notably across countries, with only 82 observations in Montenegro and between 1,000 and 1,600 observations in Bulgaria, Ukraine, Russia, Turkey, Poland, Romania, Kazakhstan and Croatia.

ownership has not changed between two survey years). Some data-points on employment and capital have also been estimated, using either interpolations (when information was missing for an intermediate year) or projections.<sup>9</sup>

Our main independent variable – the share of foreign-owned production in the sector, which for convenience we interchangeably label as ‘horizontal FDI’ – has been constructed using each individual firm’s reported share of foreign ownership and information on country, sector and yearly output of each firm. Firm-level output was first multiplied by each firm’s foreign-ownership share and aggregated to country-sector-year clusters. Our ‘horizontal FDI’ measure was then calculated as the ratio of this variable to total output in the cluster. The same approach was followed for the construction of our origin- and region- specific measures. We have favoured this output-based definition against alternative measures (e.g., employment shares of foreign-owned firms) because there are significant differences in labour productivity between foreign-owned and domestic firms in our sample and thus employment-share differences do not adequately reflect the importance of foreign presence in a sector. To separate between foreign-owned and domestic firms (e.g., in our regression specifications), we have used a minimum threshold (>10%) definition.<sup>10</sup> On the basis of this definition, foreign-owned firms in our sample are between 10% and 20% of the total number of firms (across countries) – although for some countries the share of foreign ownership is much lower (e.g., 3% in Turkey). Globally, the (unweighted) share of total sales accounted for by foreign ownership is 17.9% (of which 31% is of EU origin), although this ranges from 4.5% in Turkey to 36.1% in Latvia (see Table A.1 in Appendix). In firms with foreign presence, the average (unweighted) share of

<sup>9</sup> For example, missing data on employment for individual firms were predicted using available values for other years multiplied by the corresponding average rate of employment growth in the firm’s year-region-sector cluster. This affected only 61 observations and in the aggregate-level analysis has no influence on the obtained results.

<sup>10</sup> Alternative definitions (any foreign ownership (>0%); majority ownership (>50%); and full ownership (>99%)) were also tested but are not our focus in this paper.

## Origin of FDI and domestic productivity spillovers

foreign ownership is 73.9% (80.9% for EU-owned firms), ranging between 61.7% in Chemicals and 86.7% in Business services and between 56.7% in Turkey and 89.9% in Montenegro.

In our empirical analysis we use this data and estimate a standard production-function model that incorporates, in addition to the two main factors of production (capital, measured by fixed assets, and labour), the share of foreign presence in the sector where each firm is located. Additionally, the model includes various controls for the different dimensions of the sample, for example fixed-effects for countries and years. Our base estimating model is

$$y_{isct} = b_0 + b_1 l_{isct} + b_2 k_{isct} + b_3 h_{sct} + D_c + D_t + e_{isct}$$

where  $y$  is output;  $k$  is capital;  $l$  is employment;  $h$  is our measure of horizontal FDI;  $D_c$  is a vector of binary dummies for countries;  $D_t$  is a vector of time fixed effects;  $e$  is a normally distributed error; and the  $b$ 's are parameters to be estimated.

Given our controls for the factors of production, the parameter on the horizontal FDI variable gives the effect of foreign presence in the sector (or in the sector-region) on firm's  $i$  total factor productivity.<sup>11</sup> Because this variable is measured at the sectoral level, in our empirical analysis we cluster the standard errors across sectors (and, where appropriate, sector-regions). We estimate this model using alternatively OLS and fixed-effects (within) estimators, the latter in order to correct for the non-independence of repeated observations (firms) over time. The fixed effects estimation controls for unobserved firm-specific characteristics (e.g., management quality) but

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<sup>11</sup> Some studies correct for a possible endogeneity problem whereby firms, knowing their underlying productivity, invest selectively in capital so that more productive firms have higher levels of capital. This tends to inflate the capital parameter and to underestimate the measured TFP advantage of more productive firms. Unless, however, this selection operates along sectoral lines, it is not clear what its impact is on the parameter of interest (for horizontal FDI).



effectively removes from our estimating sample all those firms that only appear in the sample once. Thus, although we discuss the fixed-effects estimates, our main interest in the analysis is with the OLS full-sample results.

## Empirical results

### **i. Aggregate effects**

We start our empirical analysis with an exploration of the general effects of foreign-ownership on firm productivity, focusing in particular on the form that these effects take, namely internal versus external and linear versus non-linear (Table 1). As can be seen, the direct (internal) effect of foreign presence is positive and highly significant: firms with higher foreign ownership shares appear to have higher productivity. However, when we control for firm-specific time-invariant characteristics (second column), this effect loses its significance. This suggests that the positive association found in column 1 may in fact be due to a selection mechanism, whereby foreign investors channel their investments to high-productivity firms. Either way, the external effect of foreign ownership (horizontal FDI spillover) is negative and not statistically significant, although it does become statistically significant when we introduce interactive country-year fixed effects (col.3; sample restricted to domestic firms only), which account for time-varying country differences (e.g. in inflation rates). Interestingly, adding sectoral fixed-effects to this specification (col.4) weakens the adverse effect of horizontal FDI, suggesting an inverse selection into sectors (with low-productivity sectors having higher foreign presence, *ceteris paribus*).

**Table 1.** Base regressions: impact of foreign ownership on firm productivity

<i>Dependent: log(sales)</i>	(1) <i>all</i>	(2) <i>all</i>	(3) <i>native</i>	(4) <i>native</i>	(5) <i>native</i>	(6) <i>fs&lt;10%</i>	(7) <i>fs&gt;10%</i>	(8) <i>fs&gt;50%</i>
Employment (log)	0.826 <sup>a</sup> (0.013)	0.485 <sup>a</sup> (0.036)	0.831 <sup>a</sup> (0.013)	0.852 <sup>a</sup> (0.013)	0.460 <sup>a</sup> (0.039)	0.858 <sup>a</sup> (0.016)	0.851 <sup>a</sup> (0.016)	0.833 <sup>a</sup> (0.036)
Fixed assets (log)	0.190 <sup>a</sup> (0.017)	0.087 <sup>a</sup> (0.018)	0.189 <sup>a</sup> (0.019)	0.183 <sup>a</sup> (0.018)	0.073 <sup>a</sup> (0.020)	0.178 <sup>a</sup> (0.019)	0.183 <sup>a</sup> (0.020)	0.163 <sup>a</sup> (0.054)
Foreign share (own)	0.373 <sup>a</sup> (0.042)	0.239 (0.183)						
Foreign share (sector)	-0.040 (0.090)	-0.059 (0.130)	-0.204 <sup>b</sup> (0.074)	-0.125 <sup>b</sup> (0.056)	0.420 (0.406)	0.135 (0.595)	-0.171 <sup>b</sup> (0.060)	-0.856 <sup>b</sup> (0.377)
Foreign share squared (sector)					-0.905 <sup>c</sup> (0.545)			
Constant	7.572 <sup>a</sup> (0.285)	10.10 <sup>a</sup> (0.234)	7.444 <sup>a</sup> (0.337)	7.133 <sup>a</sup> (0.266)	10.27 <sup>a</sup> (0.257)	7.161 <sup>a</sup> (0.240)	7.109 <sup>a</sup> (0.252)	5.981 <sup>a</sup> (0.428)
Fixed effects	C, Y	F, Y	C(x)Y	C(x)Y, S	F, Y	C(x)Y, S	C(x)Y, S	C(x)Y, S
Observations	10,692	10,692	9,292	9,292	9,292	4,871	4,421	814
R-squared	0.802	0.660	0.808	0.825	0.638	0.831	0.823	0.805

Notes: Robust standard errors (clustered within sectors) in parentheses; *a*, *b* and *c* show significance at the 1%, 5% and 10% levels. Fixed effects correspond to countries (C), years (Y), firms (F) and sectors (S). See text for further details on estimation method and types of controls.

Interestingly, this negative effect of horizontal FDI seems to be driven by high concentrations of foreign presence. We examine this in two ways. First, by introducing a quadratic term into our model (col.5). Here, the linear term is now positive (but insignificant) while the quadratic term is negative and statistically significant (at 10%). Within-sample predictions suggest that the joint effect only turns negative for sectoral foreign-ownership shares of over 45% and it reaches an economically notable size (elasticity of over 0.1) only for values of foreign ownership beyond 65%. Second, in columns 6-8 we split our estimating sample into three sub-samples comprising of firms in sectors with below-median values of foreign presence (col.6), above-median values of foreign presence (col.7) and values of foreign presence above the mid-point of all possible values (50% - col.8). As can be seen, the estimated impact of horizontal FDI in low-FDI sectors is positive (but insignificant statistically). Instead, it is negative (and significant at 5%) in sectors with above-median

foreign shares, with the impact increasing in magnitude as we restrict our sample to sectors with very high concentrations of FDI (col.8).

All in all, the evidence from Table 1 suggests that, in our sample countries, foreign investments offer little benefits to the sectors in which they locate<sup>12</sup>: there is a direct positive effect for the firms receiving these investments and some evidence of positive spillovers in sectors with low foreign presence (although these are never statistically significant); firms in sectors with significant foreign presence show in fact lower productivity, while this effect rises dramatically for firms in sectors that are dominated by foreign-owned production (over 50%). As our regressions include controls for sectoral fixed effects (and, from results not shown, also of firm-specific fixed effects), it appears that this is not a compositional effect (whereby high foreign presence creams off, through take-overs, or crowds out, through exit, domestic high-productivity firms) but rather due to a pure negative externality.

## **ii. Impact of origin and destination**

As noted earlier, our interest is with how the impact of foreign ownership varies across space – both in its supra-national and in its sub-national dimension. Table 2 reports our results concerning the former, where we examine specifically the role played by EU-originating FDI and the differentiation of its effects across different regional blocks of the ‘European neighbourhood’. We start with the linear model used above including three-way fixed effects (for sectors, countries and years). In line with our prior expectations, European FDI appears to have indeed a remarkably different effect compared to that originating from non-EU countries: consistent with

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<sup>12</sup> This is not to say that they may not have positive vertical spillovers, or indeed macroeconomic and political effects, as discussed in the relevant literatures (see, inter alia, Fry et al, 1995 and Grabbe, 2006).

## Origin of FDI and domestic productivity spillovers

the evidence of Table 1, the latter has a negative effect which is over twice as large (more negative) and significant now even at 1% compared to the corresponding regression of Table 1. In contrast, the effect of EU presence is only marginally negative (it is sixteen times smaller than the estimated non-European effect) and highly insignificant (the associated p-value is 0.81). This result is consistently derived also in the specification including interactive year-country fixed effects, as well as in the fixed-effects specification (which includes firm-specific controls as well as time dummies) and in the quadratic specification (with EU origin having the hump-shaped effect found also in col.5 of Table 1 and non-EU origin having a strictly linear negative effect – results not shown but available upon request). Interestingly, the effect of EU-originating foreign presence becomes positive and significant (p-value=0.057) when we drop the country fixed-effects, suggesting in fact some degree of geographical selectivity for European firms (into countries with higher firm productivity); while the effect of non-EU firms becomes even more negative and is now significant even at 0.1%. The conclusion is clear that the impact of EU-originating FDI is indeed distinctive and less negative than that of FDI originating from other parts of the world.

The remainder of Table 2 shows how these results change for different regional host-country blocks. Columns 3-5 report the results for the total measure of foreign presence separately for the three regional blocks of interest here, namely the New Member States of the 2004 accession (CEE), the Candidate Countries of the Balkans (SEE), and the countries belonging to the European Neighbourhood Policy and the Eastern Partnership (ENP). As can be seen, the estimated effect from foreign presence in the CEE region tends to follow the hump-shaped relationship identified earlier for the full sample and found also elsewhere in the literature (Girma and Görg, 2007; Monastiriotis and Alegria, 2011). The effect remains non-linear (hump-shaped) in the case

of the SEE region but here it is not statistically significant. Arguably, the specificities of the region (including its slow transition, the legacy of conflicts and the low capital base and levels of development) may go a long way in explaining the statistical weakness of the observed hump-shaped relationship. In contrast to what is found for the CEE and SEE regions, the estimated horizontal spillover in the ENP region follows a U-curve, with the linear term being negative and statistically significant (p-value=0.06) and the quadratic term being positive but not significant statistically.<sup>13</sup> For firms in this region, it appears that foreign presence produces predominantly negative externalities (e.g., market-capture effects), as domestic firms presumably lack the degree of sophistication (absorptive capacity) that would allow them to gain from the foreign presence.

**Table 2.** Impact of foreign ownership by region of origin and destination

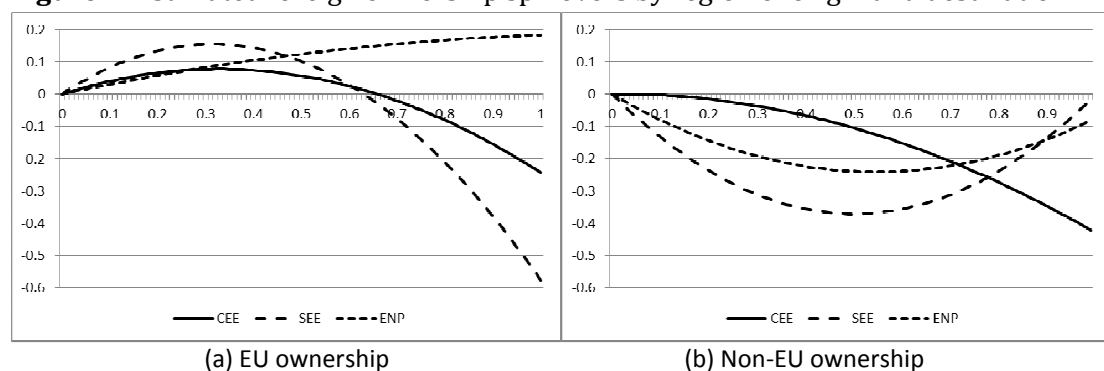
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ALL	ALL	CEE	SEE	ENP	CEE	SEE	ENP
Employment	0.849*** (0.014)	0.671*** (0.021)	0.882*** (0.011)	0.721*** (0.042)	0.874*** (0.017)	0.882*** (0.011)	0.721*** (0.042)	0.875*** (0.017)
Fixed assets	0.184*** (0.016)	0.368*** (0.025)	0.159*** (0.014)	0.269*** (0.044)	0.173*** (0.015)	0.160*** (0.013)	0.268*** (0.044)	0.173*** (0.016)
Horizontal (total)			0.429* (0.236)	0.511 (0.409)	-0.516* (0.258)			
Horizontal squared (total)			-0.686** (0.289)	-0.826 (0.573)	0.549 (0.330)			
EU horizontal	-0.0224 (0.093)	0.549* (0.270)				0.469 (0.327)	0.982** (0.439)	0.313 (0.377)
EU horizontal squared						-0.713 (0.413)	-1.559** (0.590)	-0.130 (0.553)
Non-EU horizontal	-0.364*** (0.094)	-1.054*** (0.277)				0.009 (0.336)	-1.482*** (0.505)	-0.883* (0.426)
Non-EU horizontal sq.						-0.439 (0.403)	1.479** (0.662)	0.807* (0.449)
Constant	7.362*** (0.252)	5.721*** (0.271)	7.952*** (0.175)	6.357*** (0.534)	6.820*** (0.181)	7.962*** (0.170)	6.290*** (0.510)	6.777*** (0.185)
Fixed effects	C, Y, S	Y, S	C, Y, S	C, Y, S	C, Y, S	C, Y, S	C, Y, S	C, Y, S
Observations	9,292	9,292	4,225	1,579	3,488	4,225	1,579	3,488
R-squared	0.814	0.723	0.853	0.750	0.800	0.853	0.751	0.800

Notes: Standard errors in parentheses; \*, \*\* and \*\*\* show significance at the 10%, 5% and 1% levels.

<sup>13</sup> The negative linear effect is also derived from alternative specifications, including when we control for firm-specific fixed-effects, when we add interactive country-year fixed effects, and when we remove the quadratic term (results available upon request).

In the last part of Table 2 we examine how these effects are differentiated depending on the origin of the foreign investor. Consistent with what we saw before, in all cases EU-originating FDI appears to have a productivity advantage compared to FDI from outside the EU. The EU effect is statistically significant in the SEE region, with a positive effect in sectors with low concentration of EU-firm presence but a negative overall effect for high concentrations (above 65%). In contrast, the presence of non-EU firms in the SEE region, as well as in the ENP countries, produces a U-shaped effect, which however remains negative for all possible values of foreign concentration (up to 100%). Figure 1 presents in graphical form the size of the estimated effects across all possible values of foreign-firm concentration by region of destination and region of origin.

**Figure 1.** Estimated foreign ownership spillovers by region of origin and destination



Note: Estimated total effects of horizontal FDI (sectoral share of foreign-owned firms) on domestic firms' productivity (vertical axis) across different levels of horizontal FDI (horizontal axis), by origin of foreign investors and region of destination – derived from cols 6-8 of Table 2.

Overall, the evidence in this section offers support to our underlying hypothesis that the origin of FDI matters, not only in itself but also in relation to the recipient country. In the CEECs, where levels of development are comparatively (to the other regions) high and foreign investment is more mature, the effect of foreign presence is similar (in shape) between European

and non-European concentrations, albeit still more positive for the former – at least for sectors with average concentrations of foreign presence. In contrast, in the other two regions, where levels of development and firms' absorptive capacities are lower, the estimated impacts differ drastically between European and non-European investments. Especially in SEE, European ownership appears associated with positive productivity spillovers for all but a very small minority of cases<sup>14</sup>, while non-European ownership produces negative spillovers throughout. In the case of the ENP countries, the non-European effect is flatter but still negative throughout; whereas the effect of European ownership tends to be positive almost in a linear fashion – albeit without passing the conventional thresholds of statistical significance. Still, the result suggests to us that European investments – even in this region, where EU's involvement is much less significant but still preferential and, arguably, highly influential – produce more advantageous spillovers compared to investments originating from other world regions.

### **iii. Geographical impact**

Notwithstanding the findings about the distinctive role of European FDI, our overall results suggest that foreign presence has rather limited intra-industry effects. In this sub-section we examine whether this is due to a scale issue, as our attention thus far has been on country-wide sectoral spillovers. We start by examining whether intra-industry spillovers operate more strongly at the local level (within regions). Despite our prior expectations, based at least on the body of knowledge deriving from the knowledge spillovers literature, the concentration of foreign presence within region-sector clusters (i.e., within sectors within regions) is not found to be associated with higher levels of

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<sup>14</sup> The effect becomes negative at foreign ownership shares above 65%, which corresponds to less than 3% of cases in our sample of SEE firms.

## Origin of FDI and domestic productivity spillovers

productivity for domestic firms in the cluster. As is shown in col.1 of Table 3, the effect is negative but highly insignificant and, moreover, it remains so across alternative specifications (firm-specific fixed-effects, interactive dummies, etc – results not shown but available upon request). As was the case before, concentration seems to play an important role in this relationship, but this time the hump-shaped coefficients fail the test of statistical significance (col.2). It should be noted here, however, that when we split our sample across destination groups (not shown) we find a very strong and highly significant hump-shaped relationship in the CEE group of countries but no significant relationship in the SEE and ENP groups. For the CEE group this result suggests that FDI spillovers in this region are rather localised – and, as before, they only get exhausted at very high sectoral-regional concentrations of foreign presence (above 75%). For the other two groups of recipient countries, the results confirm the earlier conclusion that spillovers are at best weak; and in this case, they also appear not to be particularly localised.

Concerning the EU – non-EU split, again we find consistent evidence of an EU ‘advantage’. The impact of non-European foreign presence is found to be negative and statistically significant both in the sample as a whole (col.3) and in each recipient region individually (results not shown). In contrast, the estimated impact of European presence is positive but not statistically significant in the full sample but obtains a hump-shaped effect in the CEE and SEE sub-samples (significant at the 5% and 1% levels, respectively) and a linear positive effect in the ENP region (significant at 5%). As these results are stronger than the ones obtained in Table 2 (for the nationwide sectoral shares of foreign presence), it seems safe to conclude that the effect of foreign presence is rather localised, in the sense that it is stronger inside the recipient sub-national areas where the foreign presence is concentrated. This



localisation effect of the FDI spillovers only applies, however, to specific cases, predominantly of European FDI and usually in cases where foreign presence does not dominate the sectors and regional economies where it is located (low-to-medium concentrations of foreign presence).

Our next question, then, concerns the possible spatial heterogeneity in these sector-wide and sector-region specific (localised) spillovers. Column 4 shows the estimated spillover effects of country-wide foreign presence in a sector, separated between firms that are located in capital-city and non-capital-city ('peripheral') regions within each sector. The effect appears to be strongly negative in peripheral regions and positive but not significant in the capitals. The result is even stronger and even more emphatic in the case of the region-specific measure of foreign presence (col.5), which shows now a positive and statistically significant effect in capital-city regions and an adverse effect in peripheral regions which is now significant even at the 1% level. When we re-specify these models in quadratic form (columns 6 and 7), the results remain consistent. Regions of capital cities benefit more from foreign presence (with a hump-shaped effect), whereas the rest of the regions do not enjoy positive productivity spillovers. From results not shown, it appears that destination geographies matter here too: the hump-shaped capital-region effect is stronger in the CEE region and weakest in the ENP region; while the negative spillover effect found for non-capital regions is strongest in the ENP region (significant at 1%) and weakest in the CEE. These results point again to the issue of absorption capacity, as we find spillovers to be positive in the more developed regions of the most developed countries in our sample (capital regions of CEE countries) and to be most negative in the least developed regions of the least developed countries in our sample (peripheral regions in the ENP group).

## Origin of FDI and domestic productivity spillovers

**Table 3.** Local and spatial effects of foreign ownership

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Employment	0.849*** (0.0138)	0.849*** (0.0138)	0.849*** (0.0138)	0.848*** (0.0137)	0.849*** (0.0138)	0.848*** (0.0137)	0.848*** (0.0138)	0.853*** (0.0130)
Fixed assets	0.184*** (0.0159)	0.184*** (0.0160)	0.183*** (0.0159)	0.184*** (0.0159)	0.183*** (0.0160)	0.184*** (0.0159)	0.184*** (0.0161)	0.183*** (0.0181)
FP (region-sector)	-0.0213 (0.0606)	0.143 (0.120)						
FP^2 (region-sector)		-0.240 (0.145)						
EU FP (region-sector)			0.0680 (0.0812)					
Non-EU FP (region-sector)			-0.309** (0.134)					
<b>Interactions</b>								
Capital regions (x) ...								
FP (sector)				0.187 (0.113)		0.715** (0.279)		
FP (sector-region)					0.183* (0.0871)		0.771*** (0.184)	
FP^2 (sector)						-0.889** (0.326)		
FP^2 (sector-region)							-0.909*** (0.224)	
EU FP (region-sector)								0.238** (0.0918)
Non-EU FP (sector)								-0.176 (0.181)
Other regions (x) ...								
FP (sector)				-0.157** (0.0689)		-0.250 (0.168)		
FP (sector-region)					-0.171*** (0.0590)		-0.297** (0.136)	
FP^2 (sector)						0.194 (0.235)		
FP^2 (sector-region)							0.218 (0.186)	
EU FP (region-sector)								0.0108 (0.0911)
Non-EU FP (sector)								-0.340*** (0.109)
Constant	7.353*** (0.258)	7.346*** (0.258)	7.349*** (0.254)	7.366*** (0.250)	7.389*** (0.255)	7.368*** (0.250)	7.391*** (0.256)	7.103*** (0.269)
Observations	9,292	9,292	9,292	9,292	9,292	9,292	9,292	9,292
R-squared	0.814	0.814	0.814	0.815	0.815	0.815	0.815	0.825

Notes: Standard errors in parentheses; \*, \*\* and \*\*\* show significance at the 10%, 5% and 1% levels. All regressions include country, year and industry fixed effects and have been estimated with OLS.

The last column of Table 3 reports the results from the model that examines the capital – periphery distinction separately for EU and non-EU firm ownership shares.<sup>15</sup> Consistent with all our previous results, EU-originating

<sup>15</sup> While experimenting with a number of alternative specifications, in Table 3 we only report the most interesting of the obtained results. Full results can be made available upon request.

FDI appears to have an advantage relative to non-EU FDI in both types of regions. The EU effect is positive and statistically significant in capital cities and positive but highly insignificant outside capital-city regions; it is moreover stronger for foreign presence within the region-sector cells. In other words, the effect of EU-originating FDI seems to be positive in capital-city regions and rather localised. In contrast, the effect of FDI of non-EU origin is non-localised (stronger within nationwide sector cells) and it is non-positive (negative but not significant statistically) in capital-city regions but significantly negative (even at the 1% level) in peripheral regions.

All of these results point to the same conclusion: although the presence of foreign-ownership in a sector is often associated with non-positive productivity spillovers, invariably the largest benefits, even in cases where the overall effect is negative, accrue to firms located in capital-city regions and are accounted for by concentrations of European firms. There are two important implications emanating from this for our sample countries. First, foreign-firm presence, even in cases where its overall effect is positive (e.g., moderate concentration, European origin), has a detrimental spatial effect as it tends to increase the distance (in terms of firms' total factor productivity) between capital-city regions – which usually possess higher levels of development and greater agglomeration and other advantages – and the rest of the country. Second, foreign-firm presence, again even in 'suitable' cases (moderate concentration, in capital-city regions), is not unequivocally beneficial but it is only so when it concerns investments originating from European firms. Either way, however, it is clear from our results that foreign-firm presence – European or not – magnifies regional disparities in the host economies of the CEE, SEE and ENP regions.

## Conclusions

The literature on the intra-industry productivity spillovers of foreign firm ownership has made significant advances over the last ten years or so, and has expanded notably, producing a large body of empirical evidence on the nature of these spillovers and the range of factors that condition them (including factors such as technological distance and absorptive capacity, domestic institutions and legal frameworks, firm size and export-orientation, etc). Despite these advances, only a handful of studies exist that examine the issue of the origin and type of the foreign investor as one of the mediating factors determining the size and direction of spillovers. Similarly, and despite the theoretical origins of this literature in the broader literatures of knowledge spillovers and agglomeration economies, studies that examine the geographical scale and spatial distribution of these productivity spillovers accruing from foreign ownership are really scarce.

This paper takes up these observations and examines these two issues (origin of investor and geography of spillovers) for a case of particular interest and policy significance. The European Neighbourhood Policy, launched by the European Union in 2004 at the time of the EU's eastward enlargement, has been an innovation that has transformed the Union's external relations with its near neighbourhood and has linked them inexorably with processes of institutional adaptation (Europeanisation) and economic integration (trade liberalisation and preferential agreements). Because of this, and despite its political and foreign-policy origins, the ENP has become today one of the main economic-policy instruments in the Continent and has accelerated and intensified economic flows and interactions between countries and between businesses across the two regional blocks. These dynamics necessitate an examination of the usefulness and economic benefits of processes of economic

integration and the identification of any possible unintended consequences that they may have.

Within this context, this paper examined the size and direction of productivity spillovers accruing to the domestic economies of the countries in the eastern part of the ENP region and, comparatively, the countries belonging to the CEE and SEE regions. We examined the differentiated spillovers generated by European and non-European FDI, at the national-sectoral level, and proceeded to investigate the geographical scale and spatial differentiation of these effects, asking whether positive FDI spillovers, which may be beneficial nationally, may be exacerbating regional disparities and existing spatial asymmetries.

Our results offer a range of interesting findings, three of which we want to emphasise here. First, EU-originating FDI appears to have a 'productivity advantage' over investments from other parts of the world, in the sense that it tends to generate greater productivity spillovers for domestic firms or, at least, less significant negative effects. This result is consistent across specifications and for different definitions of our policy variable. Although theoretically it is possible that this result may emanate purely from technology and other advantages possessed by European firms relative to other investors, in practice it is difficult to argue that European multinationals would be systematically more advanced than multinationals of other origins. If this assertion is valid, then it can be argued that at least part of this productivity advantage must be related to the process of EU association, which gives a preferential access to European firms in the economies examined here and harmonises their institutional and legal environment.

Second, FDI spillovers, including European ones, have not reached their maximum value in the ENP region. In the CEECs, which today form part of

## Origin of FDI and domestic productivity spillovers

the EU, and even more in the SEECs, where the EU has a deeper involvement, such spillovers are very positive and strong. This in turn suggests that further approximation with the countries of the region and further intensification of economic links and capital flows may prove to be increasingly beneficial for the domestic economies of the countries in the 'eastern neighbourhood'.

Third, the observed productivity spillovers, although not particularly localised, tend to be significantly stronger and more positive for firms located in the capital-city regions of the recipient countries. As FDI tends to concentrate in, or near, capital cities anyway, it follows that it indeed acts to amplify within-country spatial disparities. European FDI appears to have the strongest contribution to this adverse geographical effect, partly owing to the fact that its effect is also stronger, or more positive, at the national level. This finding raises important concerns about the role and consequences of foreign capital inflows in the former transition countries of the eastern and southeastern periphery of Europe. Processes of transition, development and internationalisation (openness) are long known to be related to widening regional disparities, as they benefit, at least in their initial stages, the most dynamic, extrovert and human-capital abundant parts of an economy. If the role of FDI is similarly geographically inequitable and spatially uneven, policy-makers in FDI-receiving countries face an important policy problem, in the form of a trade-off between higher technology transfers and higher regional disparities.

This observation leads us to the main conclusion that we wish to draw from our analysis in this paper. Through its policy of approximation and conditionality, the EU has affected in fundamental ways the market orientation and external political and economic relations of the countries in its neighbourhood. This influence, and the very gravitational pull of the EU economy (even during the time of the Eurozone crisis), limits the ability of

countries in the EU periphery to control the pace at, and areas in, which processes of integration and market openness take place. In this sense, the EU shares a responsibility, together with the countries concerned, to address any adverse consequences and any imbalances generated by these processes of approximation and openness. From this perspective, the issue of spatial imbalances, and in particular of the impact that the processes of approximation and openness may have on these, is not only important but also an issue of shared EU responsibility. Although the evidence we present in this paper is novel and, as such, requires further scrutiny in future replications, our results provide a clear indication that the effects of FDI in the European periphery, and particularly of European FDI there, are favouring geographical differentiation and regional disparities. If this is true, then the recommendation follows that the 'neighbourhood' policies of the EU should obtain a much more specific geographical focus and attention, and develop actions and interventions that will seek to identify and correct the regional imbalances that are generated by otherwise well-intentioned and probably on-the-aggregate beneficial policies

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## Appendix

**Table A.1.** Sample size and foreign ownership shares by country and region

<i>Country</i>	<i>Domestic firms</i>	<i>Foreign firms (&gt;10%)</i>	<i>%sales by foreign-owned firms</i>
<b>CEE</b>			
Bulgaria	1423	205	27.8%
Czech Republic	556	84	28.2%
Estonia	512	116	32.9%
Hungary	777	180	33.5%
Latvia	481	100	36.1%
Lithuania	540	75	20.3%
Poland	1249	136	14.2%
Romania	940	149	14.8%
Slovakia	418	70	18.4%
Slovenia	575	79	18.8%
<b>SEE</b>			
Albania	437	70	18.2%
Bosnia	461	54	8.5%
Croatia	897	116	14.7%
FYROM	429	64	20.3%
Montenegro	77	5	8.0%
Serbia	532	78	25.2%
Turkey	1165	38	4.5%
<b>ENP</b>			
Armenia	638	65	12.8%
Azerbaijan	393	51	22.5%
Belarus	558	100	9.1%
Georgia	493	59	15.0%
Kazakhstan	962	91	10.3%
Kyrgyz	378	78	17.2%
Moldova	638	88	20.2%
Russia	1328	115	7.8%
Tajikistan	550	51	10.8%
Ukraine	1061	379	21.5%
Uzbekistan	711	134	13.4%
<b>Total</b>	<b>19179</b>	<b>2830</b>	<b>17.9%</b>

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